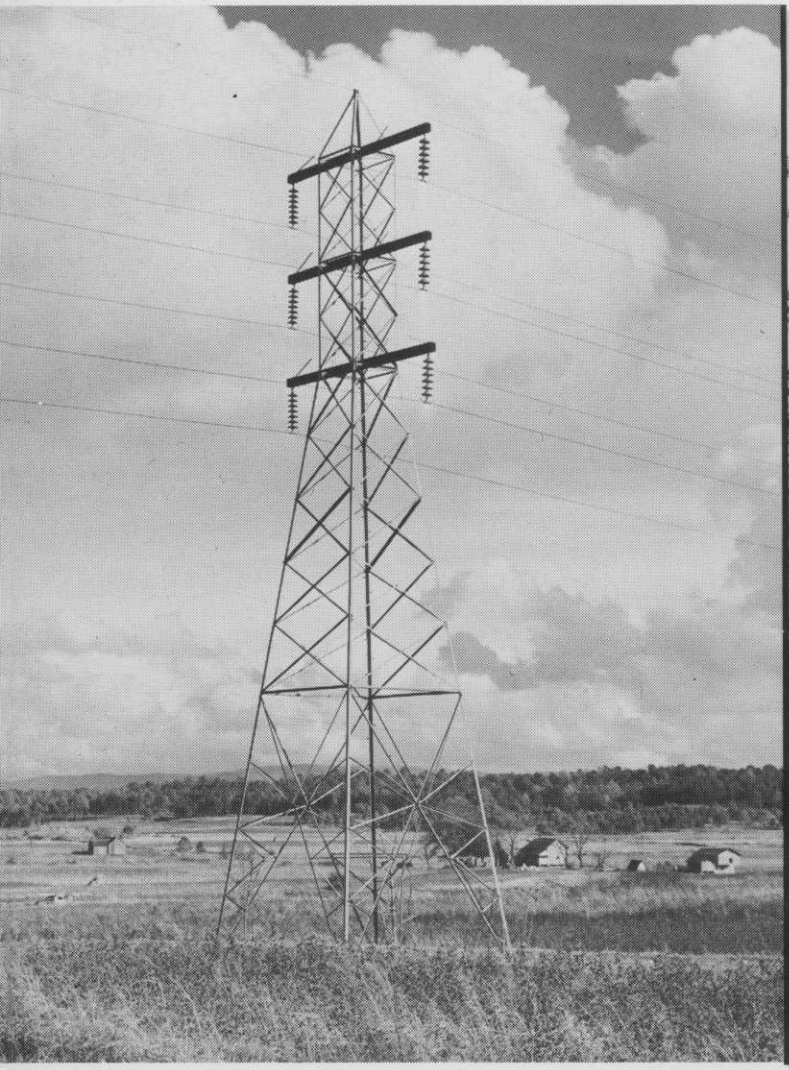
MAY, 1970

WEEDS TREES and TURF

UTILITY BEAUTIFICATION • RIGHT-OF-WAY BRUSH CONTROL

Is grass your heaven,



Think BANVEL®

More and more communities, companies, clubs and utilities are working BANVEL into their weed and brush control programs. Their evaluations of control methods show that BANVEL, either alone or in combination, produces wider, more thorough control for longer periods of time . . . and at lower cost.

BANVEL is *not* a soil sterilant. Its selective action against a broad spectrum of broadleaf weeds and brush encourages the growth of grass and establishment of sod. This helps avoid costly and unsightly erosional problems associated with unprotected soil surfaces.

This modern herbicide fits every common method of liquid application, including aerial, mist, and hydraulic. Its granular form is ideal for broadcast or spot applications, particularly where older weed brush and weed trees have become established.

BANVEL translocates through leaves, stems and roots to kill many of the most stubborn and economically significant weed and brush pests. Under certain conditions BANVEL works beautifully with other herbicides to widen control and to lower costs.

We are ready to work with you to determine exact rates and most effective and economical methods of application *for your specific conditions.*

Write or call collect, the regional office (listed below) most convenient to you. You will receive immediate cooperation.

weeds your...hell?

Partial list of broadleaf weeds, weed brush, weed trees controlled by BANVEL, BANVEL/combinations

Ash	Mouse-ear Chickweed	Mesquite
Aspen	Oak	Cottonwood
Basswood	Persimmon	Stinging nettle
Cedar	Pine	Smartweed
Cherry	Poplar	Dog fennels
Clover	Sassafras	Corn cockle
Common chickweed	Service berry	Cow cockle
Curly dock	Sheep (red) sorrel	Knawel
Dog fennel (mayweed)	Sourwood	Fiddleneck
Elm	Sumac	Canada thistle
Hickory	Sycamore	Field bindweed
Hornbeam	Thorn apple	Pepperweed
Knotweed	Thornberry	Tansy ragwort
Locust	Willow	Purslane
	Witch hazel	Sunflower
	Yaupon	Careless weed

Velsicol Regional Offices

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Velsicol ™ Banvel

Velsicol Chemical Corporation, 341 E. Ohio St.
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Biggest brood in 17 years!

SEVIN®
CARBARYL INSECTICIDE

stops periodical cicada—prevents damage to fruit trees, ornamentals and nursery stock

Starting in late May, fruit growers, nurserymen and home owners will be threatened by an enormous infestation of Brood 10 of the 17-year variety of the periodical cicada (or "17-year locust"). Areas in 21 states and the District of Columbia will be hit by Brood 10, while three southern states will be affected by a much smaller brood of a variety which recurs at 13-year intervals and hatches in late April. States to be affected in addition to those shown on the map include New York, New Jersey, Pennsylvania, Maryland, Delaware, Massachusetts and Vermont.

Cicadas damage or kill terminals and twigs (and sometimes entire plants) by cutting slits in the bark for egg-laying. Resulting wounds create natural hiding-places for scale insects, woolly aphids and other pests, as well as convenient entrances for plant diseases. Fast kill is necessary to prevent extensive egg-laying—making SEVIN the ideal insecticide for cicada control. Its combination of quick knockdown and rapid chemical breakdown provides sure control and safeguards against drift and residue problems.

SEVIN also controls a long list of worms, bugs, beetles and other insects in gardens, ornamentals and home grounds. This season, stock SEVIN . . . and help customers stop the Big Brood. Union Carbide Agricultural Products, 270 Park Avenue, New York, N.Y. 10017.

UNION CARBIDE

AGRICULTURAL PRODUCTS from the DISCOVERY COMPANY

SEVIN is the registered trademark of Union Carbide Corporation for carbaryl insecticide.

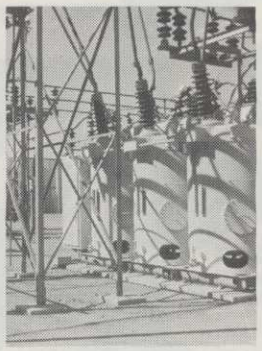
For More Details Circle (133) on Reply Card

Special for This Issue

Regular Features

The Cover

Realize it or not, the cover is a picture of an electrical power substation. At right is proof of what's inside the attractive wall screen. The wall comprises 168 pre-cast concrete panels, 20 feet high. The substation belongs to Arizona Public Service Co. The decorative wall is the latest example, says Walter T. Lucking, APS board chairman, "of our continuing effort to beautify our facilities wherever it is feasible to do so."



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WEEDS TREES and TURF®

Volume 9, No. 5 **May, 1970**

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Take the trouble

Diamond Shamrock gives you

The System

of weed and disease control.

With the 1-2-3 punch that knocks out weeds and diseases before they can give you trouble.

1. Dacthal kills crabgrass and other undesirable weeds and grasses before they come up.

2. Dacamine effectively eradicates growing broadleaf weeds.

3. Daconil 2787, the ONE fungicide, controls a broad spectrum of turf disease organisms. Try these three great ways to take trouble out of turf.

B-AG-A870

out of turf.

Dacthal® 1.

is the premium preemerge herbicide proven most effective through field testing and years of use. Controls crabgrass, Poa annua, and 14 other undesirable weeds and grasses. One application lasts all season. For Poa annua control follow label directions.

Dacamine® 2.

herbicide controls broadleaf weeds such as dandelion and plantain without hurting your grass. Kills deep—down to the root tips—for complete weed eradication. But only where you spray it— non-volatile Dacamine won't vaporize to injure desirable plants.

3. Daconil 2787®

—the ONE fungicide—handles a *broad spectrum* of disease organisms not just one or two. And it does it right through the time you need it most. Turf grasses have exceptional tolerance to Daconil 2787, even in hot, wet weather. So you can maintain lush, deeper green turf all season.

If you're looking for a way to have healthier, more beautiful turf, ask for our folder AG-207. From Agricultural Chemicals Division, Diamond Shamrock Corporation, Dept. H 2270, 300 Union Commerce Bldg., Cleveland, Ohio 44115.

Diamond Shamrock® Chemicals

THE system of weed and disease control.

For More Details Circle (104) on Reply Card

Upon Checking Your Pulse and Ours

ABOUT THE FIRST THING a doctor does to determine the well-being of his patient is to check his pulse and blood pressure. Two things are required: The patient must cooperate, and there must be a degree of personal or direct contact.

Sometimes Doc simply uses his fingers on your wrist. (You note his pretty nurse never does). Other times he uses that "rubber inner-tube"—and in my case if I'm not convinced of my frailty by the 10th wrap-around, I am the instant he puts on the squeeze with the air pump.

This magazine, in serving the tree and turf care and weed control industries, occasionally wants to determine the well-being of its "patient."

And we, also, believe that personal contact and direct contact by other means are indispensible first steps to knowing what the industry needs and wants. This is why, for example, representatives of WEEDS TREES and TURF try to attend as many association meetings, educational conferences, and field days as are physically possible.

Our "inner-tube" approach (and granted it would sometimes appear that we're trying to put the squeeze on you) is to send you questionnaires. We ask your cooperation, so that we may help prescribe what you need and want.

We use the statistics you provide to us anonymously and individually for two general reasons: (1) We report back to you, telling what your industry, collectively, is doing, where it appears to be headed, what its problems are; and (2) We use the statistics to inform manufacturers concerning the products and services you are using, and those you need or otherwise might be interested in.

The whole system works something like the merry-go-round on the playground. It turns fastest and easiest if all the riders have one foot pushing on the ground. And everybody enjoys the ride more.

So when you hear from us occasionally in the future, we hope you won't overlook these opportunities to serve others—and yourself.

OUR REACTION TO THE WORD on 2,4,5-T, causes our pulse to quicken and blood pressure to rise as though they were being checked by the doctor's pretty young nurse.

It is still unbelievable how quickly the current administration's cabinet officers reel in an effort to save their political hides. How soon, we wonder, will that reeling take them over the cliff of political suicide?

We challenge some young researcher who wants to make a name for himself to inject mice with any number of things we come in contact with daily—drugs, alcohol, fingernail polish, aspirin, table salt, paint, glue, nicotine, turpentine, and so on—in excessive dosages comparable to ones that have been the basis for restricting or banning environmental protection chemicals. Then publicize the effects on pregnant mice and pose the dilemma to the same appointed and elected officials.

We ask this research in the interest of putting perspective back into public health, and reason and responsibility back into politics.

During one of the Ohio pesticide regulation hearings recently, a concerned custom applicator asked if there had been evidence in the state of pesticide contamination. None that he was aware of, replied Director of Agriculture John M. Stackhouse. Has there been reports of widespread misuse of chemicals by custom applicators? asked another visitor. None, replied Stackhouse. Have any citizens reported sickness, injury, or death attributed to chemicals? asked still another. None that he knew of, replied Stackhouse.

Then why do we need to consider more pesticide regulations? asked the first questioner.

"Well you must come to realize," Stackhouse replied softly after a pause, "that we live in a strange time in which we have banned DDT, perhaps the most beneficial material to mankind the world has ever known, and are on the verge of legalizing marijuana and LSD."

Gene Ingalsbe

Try Tandex on your own impartial panel of weed control experts.

Tandex can give you a more economical ground maintenance program.

Tandex is a soil sterilant. And it's proven its weed-killing power for use around industrial plant sites, storage areas, lumberyards, tank farms and the like. Broadleaf weeds, grasses, even woody species die when Tandex is applied. And its power persists for a season or longer.

Spray wettable Tandex powder (WP 80) or use the granular form. The handy five-pound plastic container is especially convenient. Tandex can be combined with fortified oils and other herbicides for special control situations.

Write to Department A, Niagara Chemical Division, FMC Corporation, Middleport, N.Y. 14105.

Tandex®

fmc Industrial Chemicals, Niagara Chemical Division, Middleport, New York 14105

Follow Your Own Advice

My compliments on issuing such a fine vocational professional trade journal as "WEEDS TREES and TURF."

As an instructor in turfgrass management, I make use of the magazine as a technical guide. As a parks department landscape coordinator, I use the copy for in-service training, a buyer's guide, and a self-improvement check list.

I heard Dr. Sylwester's presentation at the weed conference in Anaheim, Calif., this spring, and also wondered why we do not repair own own house first. Your editorial is greatly appreciated. However, going page by page, the reports and advertisements do not follow your suggested lead in changing the way we talk.

Nor does the editor follow his own advice, i.e., page 7 advertises three different pesticides, all of which are crop protection chemicals; page 25—negative approach; also inside back cover, to point out three.

I am well aware that anyone can criticize, but by turning to look at what we do may enable us to do better. Keep up the good work.—**WALTER J. BARROWS, landscape coordinator, Ventura, Calif.**

Can See Big Picture

Congratulations on the general review of herbicides in the February WEEDS TREES and TURF (Herbicides for Beginners). This is just the sort of thing to bring the "big picture" together. It makes relevant terminology that we use all the time, but seldom view in proper perspective. It's a fine, comprehensive article.—**ROBERT W. SCHERY, director of the Lawn Institute, Marysville, Ohio.**

He Liked March

I have just finished your March edition and wanted to congratulate you on the fine articles and the entire makeup of this edition. It is a big job well done.—**JAMES L. FITZGIBBON, Lakeshore Equipment & Supply Co., Cleveland, Ohio.**

Successful Thatch Program

We have been testing for 18 months with a six-hole putting green by not doing any top dressing, and have been happy with the results. There is no thatch build-up and very little fungi to worry with. We have used the same method both winter and summer with great success.

Not only have we done away with the thatch hiding system of top dressing, but by eliminating the thatch we have not had to verticut. The solution is not a new one, but we have been able to prove the practicability of it. We simply follow up each mowing with a scavenger Parker-Vac. I know there will be a lot of experts say this is not the way, but it does work for us, and I thought I would pass it on to you.—**JAMES R. MCKIM, lawn counselor, St. Petersburg, Fla.**

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You are invited to use the Reader Service card provided to obtain further information on equipment, materials or supplies appearing in this issue. This card is preaddressed and postage paid.

Your inquiry will be forwarded to the manufacturers in whose products you are interested.

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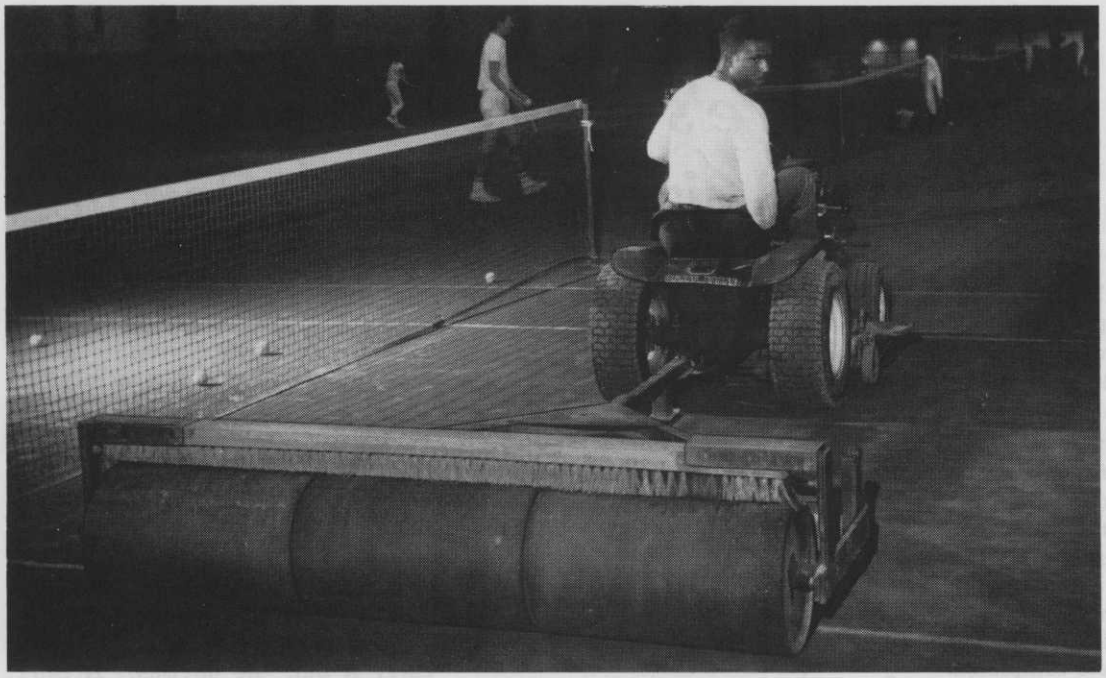
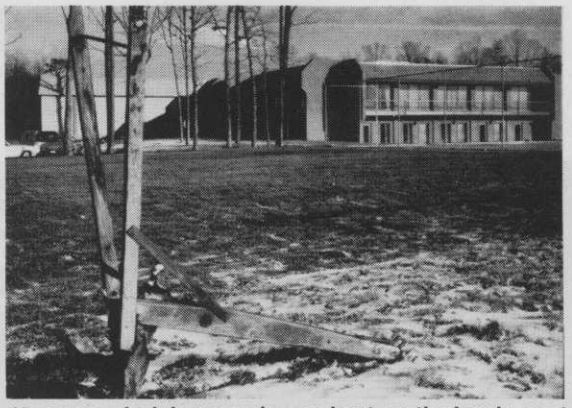


Sweeping and rolling 15 tennis courts in 15 minutes

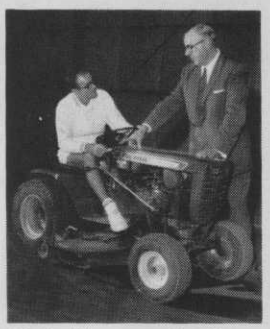
"The old way was too bloomin' slow," says Britisher Reginald Scott, manager of the Briarwood Swim and Racquet Club near Richmond, Virginia. It used to take his staff two hours to sweep and roll fifteen composition tennis courts. Not only did it cause too much court downtime, it also left his staff little time for the maintenance of an olympic-size indoor pool and 15 acres of club grounds. "Now it takes just fifteen minutes with a Wheel Horse." Ralph Flohre, Briarwood tennis pro, likes the fact that "those Turf Saver tires never dig up the surface." He adds: "It's understandable. You've got great speed control with that automatic drive; you get smooth take-offs and gentle braking." Scott compliments his Wheel Horse dealer: "Their service is smashing! One day last week they were out here almost as soon as we put down the phone—to change a flat tire!" When the million-dollar club reaches its full membership goal of 800, Scott plans to add 10 more outdoor and 2 more indoor courts, along with a second 50-meter pool. "You bet I'll need another Wheel Horse then—one for the work indoors and one for the outdoors." At present the club sports a 300-guest dining room, bar, several meeting rooms and a spa. "Our services and requirements are professional in every respect." For professional equipment to serve professional needs, write: Professional Services, Wheel-Horse Products, Inc., 515 W. Ireland Road, South Bend, Indiana 46614.

Wheel Horse®

Tractors/Mowers/Snow Throwers/Snowmobiles



15 acres of club grounds are kept meticulously neat all year with a Charger 12 and several attachments, including a snow thrower.



Club Manager Scott explains smooth action of automatic drive to Ralph Flohre, tennis pro.

"I can spend more time with my pupils and still have my courts in championship condition because of that Wheel Horse," Flohre says.

ANOTHER WHEEL HORSE PROFESSIONAL

For More Details Circle (128) on Reply Card

There's More Than Power In Arizona Public Service

EVERY PROFESSIONAL MAN in the business of preserving or beautifying our environment ought to be exposed to Jack McDonald—or other men like him.

While others just *talk* environmental improvement, McDonald talks *and gets action.* The difference? Approach and emphasis.

McDonald assumes that basic intelligence, a wealth of pertinent knowledge, and unchallengeable logic don't assure a given task will be undertaken, much less completed. He believes people must be *inspired* . . . and directed toward a goal whose outer fringes are visionary; whose intermediate objectives are attainable *right now.*

Jack McDonald is director of special services for Arizona Public Service Company. With management's blessing and encouragement, McDonald has done much to make APS truly a *public service* company, beyond providing electric power.

McDonald's own career with Arizona Power began as the visionary goal of a youngster who wanted to work for a utility company. That goal became real 38 years ago.

Community Improvement Program

His efforts in community improvement began to take shape about a decade ago and gradually worked into a formalized program. In 1964, his program was adopted by the Governor's Commission on Arizona Beauty, for application throughout the state. McDonald is a member of the commission's executive committee.

An afternoon with McDonald is breathtaking . . . from the pace of physically visiting or hearing descriptions of projects that APS and McDonald have embarked upon and completed.

"The successful program must be built around the people who will carry it out," he advised. "It can't be politically or government directed. It must involve people in all walks of life."

McDonald-inspired programs have caused merchants to scrub public

Jack McDonald, director of special services, relaxes in M. O. Best Park that Arizona Public Service gave to the City of Phoenix. The land formerly was the site of an APS substation.

streets in Miami; Eloy women to dress as witches to plant traffic islands with trees and shrubs; high school girls to march with decorative garbage cans down the streets of Glendale; school kids to conduct interscholastic trash meets in Glendale; and businessmen to join in a junk car parade in Flagstaff.

"Even I was surprised at the success of the trash pickup program. Sacks were given to school kids, and they were asked to fill them with trash on the way to and from school," said McDonald. "In just a few days, not a scrap of paper could be found."

A "Clean Olympics" program for Glendale sent high school track boys dashing through the streets with torches and wreaths in hand.

"They hung the wreaths on the doors of businesses," explained McDonald. "A gold wreath meant the business premise was clean and planted; a green one for clean only; a red one for terrible all over.

"The clean-up, fix-up idea developed because the question became obvious: If not cleaned up, why green up? Why have trees in the middle of garbage?"

Sling Shots and Babies

Planting trees, shrubs, flowers and grass is a way of life that's accepted by Arizona residents with enthusiasm and dedication. Projects often are delightfully ingenious. Yuma, for example, has a living memorial program in which mothers plant a tree at the birth of each child. And Tucson school boys have been given seed-impregnated mud balls for use in their sling shots as they romped around the countryside.

Numerous beautification awards have been won by Arizona cities, though millions of Americans know them only as the spots on the TV weather map where the temperature reaches 110 degrees in the summertime.

McDonald has nó idea how many trees he has planted in connection with his "Tree of Liberty" talks that he gives whenever called upon. Last year, an appearance request proved to be quite a surprise.

He arrived at the site in Phoenix to be confronted by a crowd of people and a high school band gathered at the base of a 30-foot Aleppo pine, shimmering inside a ring of spotlights. The people had gathered to

The utility supplies electric power to 12 of Arizona's 14 counties, to the state's four corners, California on the west, and Mexico on the south.

This mini-park is used by employees during lunch hour and breaks. It also is a "research plot," in that all the trees planted here are directly beneath electric lines, giving visible proof to area residents of which trees to plant.

pay tribute to McDonald at the site of his first Tree of Liberty talk given 15 years earlier.

"A soil specialist told me that tree wouldn't grow there," McDonald recalled. "But you know plants try very hard to grow, and I think trees respond to loving care."

Auctions and Junk Cars

McDonald told of V.I.P. auctions, now in their fifth year, that involve the sale of items donated by famous people. One auction raised $17,000.

"Princess Grace of Monaco sent a set of silver spoons; Mrs. Richard Nixon, an engraving of the White House; and Rusty Warren, some popular records," McDonald listed, as examples.

The junk car project raised enough money to purchase and plant 5,000 crab apple trees in Flagstaff.

Shaped ornamentals and grass test plots (those between the trees) are numerous around the headquarters facilities.

People want to improve their surroundings, McDonald believes. They just need to be told what they can do and how they can do it.

"Last fall, a group women, impressed with what other communities were doing, asked me what they might do in a city as large as Tucson. I suggested they start by removing the tumbleweeds. You know, within a week they had organized and had a campaign under way!"

APS Develops Parks

Though he speaks as many as 20 times a week, McDonald keeps numerous projects going for Arizona Public Service.

APS has been a leader in the business community in beautification. Some projects have been just for beauty's sake; others contribute materially toward reducing operational costs and towards avoidance of future costs.

In 1961, a lot at Second Street and Roosevelt was presented by APS to the City of Phoenix for use as a municipal "mini-park." It formerly had been the site of a substation. The event coincided with the 75th anniversary of APS service in Arizona.

The park is named after M. O.

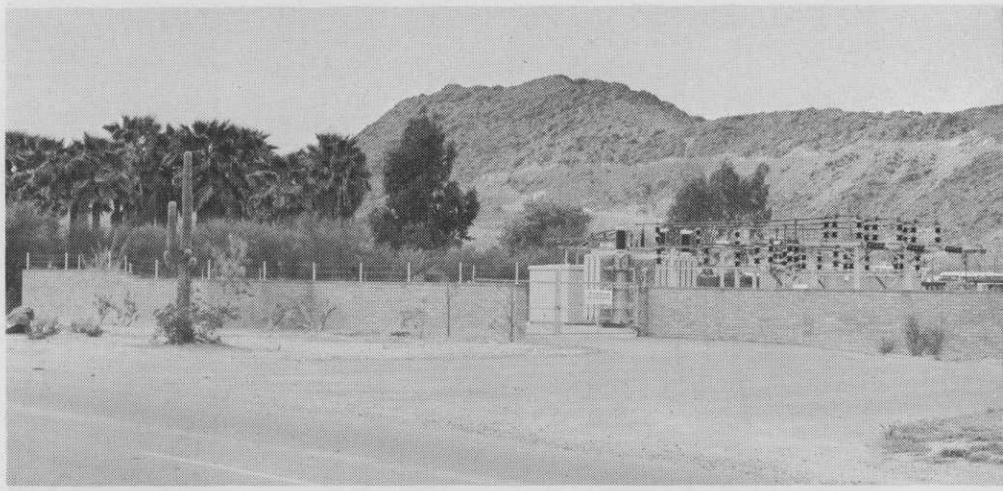
Best, chairman of the utility's board from 1945 until his death in 1955.

Residents acquired a four-block-long parkway in 1968 as the result of a joint venture of APS and the City of Phoenix.

Called the Sherman Street Parkway, the 70-foot-wide strip is owned by APS and is used for the utility's right-of-way to carry its 230,000-volt transmission lines to the Lincoln Street and West Phoenix substations.

The land was seeded and landscaped by APS, and will be maintained by the City. More than 120 trees and shrubs were planted.

The substation enclosure pictured on the cover is the most recent attempt to beautify APS facilities.



Even this substation in the country is landscaped.

Vegetation Research

Grounds around the headquarters of Arizona Public Service serve as a living laboratory of vegetation research.

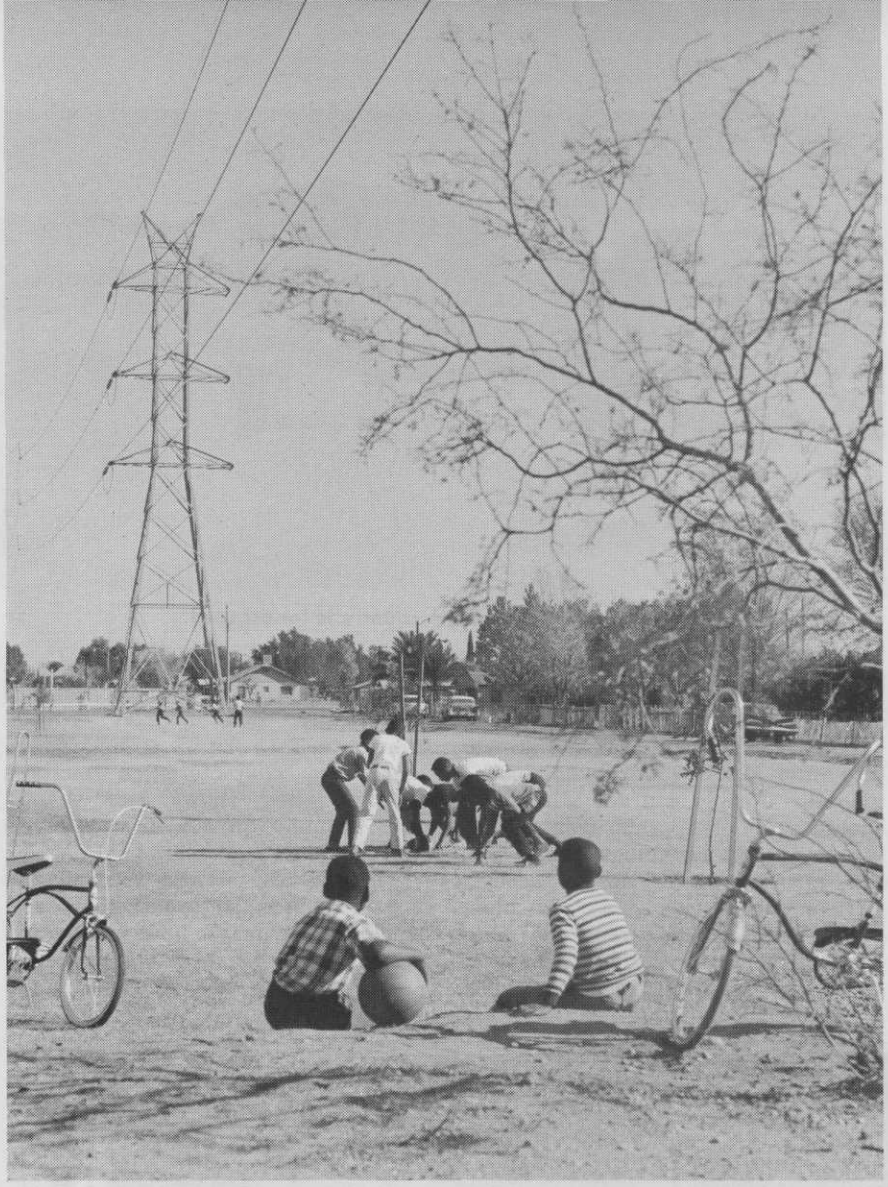
"We want to demonstrate to people why they should or should not plant certain trees beneath utility lines," McDonald explained. An APS "Mini-Park," roughly 20 feet wide and a block long has nearly a dozen varieties of trees planted directly beneath utility wires.

Pointing to a palm that had grown into the lines, McDonald commented: "People can see why they should not plant this tree under wires. Among suitable varieties are the mission olive, desert acacia, African sumac, carob, Mexican blue palm, mescal bean tree, and McDonald's favorite, the red lime.

To further assist residents with tree planting, APS has published a beautifully done booklet entitled "Arizona Tree Tips." It lists desirable tree characteristics, pictures the varieties, shows leaf shapes, and ultimate growth in relation to the height of power lines.

"People are invited to visit the APS tree park, said McDonald, "and you'd be surprised how many men come to just see how we prune."

APS makes use of its limited



Arizona Public Service converted this right-of-way into a four-block-long park. APS hired Western States Landscape Associates to design the parkway, seed it and plant trees and shrubbery.

"green space" in other ways. Between the sidewalk and street curb, an area no more than five feet wide, numerous grass plots and ornamentals are planted. There are dichondra plots, bermudagrass plots and bermudagrass plots overseeded with rye. Some ornamentals are shaped into cones and squares, others are pruned to retain their natural shapes.

"Our efforts are catching," McDonald contended. "Almost daily we see signs of businesses around us sprucing up."

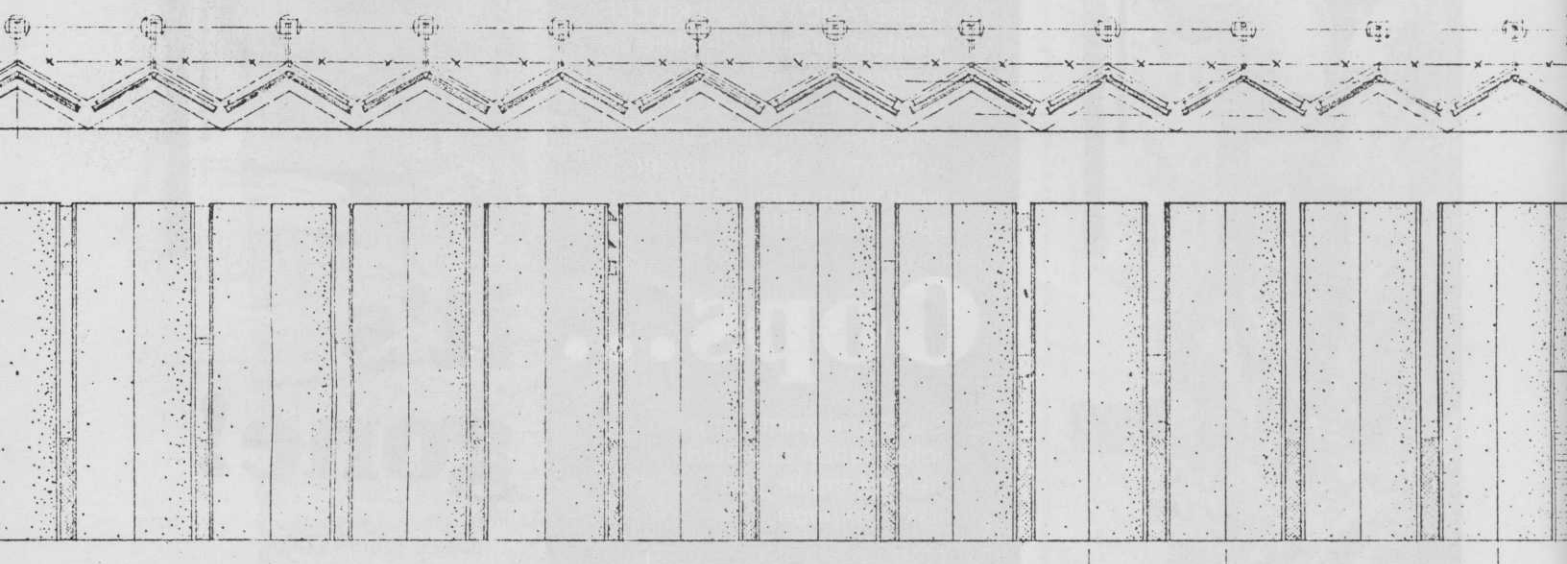
Ten-Year Plan

This fall, statewide beautification and community improvement efforts will be elevated to a higher plane toward that goal with the visionary lining. Gov. Jack Williams has called a three-day conference on Oct. 8-10 to outline an overall program of beautification encompassing the next 10 years.

There is every indication that it will be promoted with zeal and urgency, for Arizona must work quickly to prepare for Jack McDonald's unequivocal prediction that: "By the year 2000, Phoenix will be the largest city in the world."

McDonald, claims the world's oddsmaker, Lloyds of London, agrees. Whether or not the city reaches that seemingly visionary goal, whatever size it is as the 21st Century dawns, Phoenix will be beautiful.

Because Jack McDonald lives there.



Oliver H. Briggs, Jr., senior civil engineer for Arizona Public Service, designed the Indianola substation screen wall that's pictured on the cover. The section of blueprint shows the side and top view of the concrete panels. They're 20 feet high.

Underground Sprinklers High On Homeowner's 'Want' List

A survey conducted by U.S. Home and Development Corporation shows that underground sprinklers are high on the preference list of desirable features for new homeowners.

The cross-section of buyers of homes in the $22,000 to $26,000 range showed that the sophisticated home buyer of today is more concerned with equipment to provide convenience in the home than with items of pure luxury.

The survey explored in detail the features and equipment viewed with favor by the first and second home buyer. The building industry must know what equipment will motivate the potential buyer to purchase a new home and the existing homeowner to upgrade his present mode of living.

Each housewife was "given" $2,400 for buying optional extras for her home. The items were priced so that the participant knew exactly how much she was spending from the budget. The five items most frequently specified related to living convenience while luxury items ended far down among the choices.

As might be expected, central air conditioning headed the list with 51.7 of respondents asking for it. The surprise sleeper was the underground sprinkler system, number two on the homeowners' "most wanted" list (42.8% requested it). Other outdoor living equipment, like a dining deck off the kitchen (1.78%) and an outdoor brick barbecue (5.35%), did not get much response. Typical of the luxury items were a Therma-sol steam bath (3.57%) and wall-to-wall carpeting (14.2%).

According to Dr. James R. Watson, Jr., director of agronomy for Toro Manufacturing Corporation, producer of Moist O'Matic underground sprinkler systems, the homeowner is interested in sprinklers because more time is spent on hand watering than in any other lawn-care activity. There are already more than 500,000 home systems in operation today and the number is increasing rapidly, he said.

Automatic underground sprinkler systems have been around for 50 years. However, according to Dr. Watson, the cost has been reduced substantially within the past five years. "New sprinkler heads with wider coverage and the use of plastic pipe—more effective and longer-lasting than the earlier galvanized, brass or copper piping—have brought systems within reach of every homeowner," he said.

Although the systems still require a major investment, they do increase the value of property and are available for FHA financing. Most systems will run about 10-15 cents a square foot. Prices are determined by the system installed, the local cost of labor, the number of trees and shrubs, the shape of your property, and soil conditions.

June Special: Aquatic Weed Control

Norman V. Holmes, Inc.

Firm Specializes In Tree Care Only

By PHIL LANCE
Philadelphia, Pa.

THIS IS THE AGE of specialization and customers like to do business with specialists.

When it comes to tree work, there are several forms of specialization and one of them is tree maintenance. In suburban Philadelpha, Norman V. Holmes, Inc., Lafayette Hill, is one of the oldest firms in the Delaware Valley that specializes in tree maintenance.

Since 1920, Norman Holmes has been a landscaping contractor and tree surgeon. Through his specialization in maintenance tree work, he developed a reputation that minimized his need for solicitation and advertising to build his business.

In 1946, he was joined by his son, Frank, who practically grew up in the tree maintenance field. After his stint in the service, Frank came into the firm on a full-time basis.

In 1962, Frank became the President of Norman V. Holmes, Inc. Through his astute management and aggressiveness, he developed it into one of the leading tree maintenance organizations that serves a five-state area.

Universities Among Accounts

"Our main activities are concentrated within a 50-mile radius," explains Holmes. "However, our reputation for the type of tree maintenance work that we do has spread about so that we get calls from as far south as Washington, D. C.

"In the main, institutional and industrial accounts make up our largest volume of work. We do not overlook any account regardless of its size. We service from one to several hundred trees for a single account. The old bromide—no job is too large

Whether the job is a homeowner's one big tree or a university's campus full of trees, Norman V. Holmes, Inc., offers the same per-tree charge. When there is a single service, a minimum fee is charged.

or too small for us—has been the basis for our consistent growth.

"Numbered among our accounts are practically all of the leading universities in the area, such as Villanova, St. Josephs, Mercy College, and Georgetown University in Washington.

"When purchasing agents, maintenance foremen or greenskeepers relocate, they remember our services and call upon us. By the same token, they discuss our services at various association meetings and at group activities. What better way is there to be more generally publicized than through the recommendations of a satisfied user?"

Specialization Is the Emphasis

The Holmes Company does only maintenance work. It doesn't install, remove or relocate trees. This work is sub-contracted to others who specialize in this type of activity.

"Specialization is the backbone of our business, and we do not want to dilute it with any other type of activity," continues Holmes. "True, it is sometimes hard to turn down a profitable job, but we have to do it in order to maintain the image that we have developed. In itself, tree maintenance work is a specialty activity. This is where our field of endeavor lies. We have the experience, manpower, equipment and know-how which has enabled us to give expert services at the most reasonable prices. We have always charged the same price for the same type of service in the same area whether it is for one tree or a few hundred.

Stabilized Prices Pay Off

"Past experience has shown us that area residents are in contact, one with another, when it comes to tree maintenance, and the only way to maintain a healthy relationship is to stabilize prices. Let me cite an example.

"We maintained three trees on a nearby homesite. We maintain close to (100) on institutional grounds just a short distance away. The homeowner knows the maintenance man at the institution, and they have discussed tree maintenance between them. Naturally, the subject of cost has arisen, and our per-tree charges have been the same. Needless to say, we have maintained the goodwill of both customers and, through them, have been recommended to others."

Holmes does point out that he has a $15 or $20 minimum where a single service is needed. This is not what he usually charges for his other services. They vary according

to need and other factors. However, the minimum prevails where a single service is required.

Program Matches Budget

Whenever possible, the firm features the importance of a tree maintenance program. This may be carried over a three-or-four-year period, depending upon the amount allotted to the tree maintenance program. Many institutions and industrials allot a pre-determined sum to cover their grounds program. The Holmes Company tries to fit in the overall maintenance program within this specified allotment.

"When an institution cannot allot all the money that is needed to maintain its annual tree maintenance program, we program it over a three- or four-year program, at which time everything should be in proper order," says Holmes. "We do quite a bit of this with universities.

"The first year, we concentrate on the most important section where tree maintenance work is needed. During the second year, we take the second section and look after the first. During the third year, we cover the third section and check back on the first and second again. During the fourth year, we do the final section and check back on the first three.

"Thereafter, tree maintenance work is handled on a complete annual basis. The amount allotted for one year now covers the entire area. We have found this program to be an attractive one to industries, etc., who can only allot specifed amounts for tree maintenance work."

Though the tree care company emphasizes maintenance, new product areas are explored. Frank Holmes is examining Monsanto's Astro Turf, being offered to selected customers.

File System Says When

The firm services more than 600 accounts. Once entrusted to Norman V. Holmes, Inc., the account can depend upon reliable and continuous service.

A two-color card file insures timely service and maintenance as it is required. All pruning and feeding accounts are contained on file cards in one color and those coming under the sprays program on cards of another color.

Starting in March with a dormant spray, fungicide and feeding, these activities are carried out until the fall season. Route sheets are prepared daily for the crews handling maintenance work. These vary from seven crews to twelve crews, depending upon the period of the year. There are about three in each crew.

A fleet of 23 vehicles and trucks, including five spray rigs, chippers, a winch truck and another equipped with a utility boom serves the firm's accounts.

Holmes is a great believer in having all the necessary equipment and using the highest quality supplies and products. According to him, "the results remain long after the price has been paid." This means better results, greater economy and better relationships all around.

"You only get what you pay for today and by paying a little more, you get substantially more in return," explains Holmes. "Initially, price may be of some concern, but when long lasting results are observed, it shows that the price was more reasonable in the long run.

"We use our results as testimonials to our customers. We point out areas and trees that are under our maintenance service and let the prospects see what our workmanship is like for themselves, and they can also speak to the owners. When you can make presentations such as these, price becomes a secondary factor."

Turf Subsidiary Formed

In an effort to provide a one-stop service for turf needs, the firm has recently become a distributor for Monsanto Astro Turf. Its first association with this artificial turf was the University of Pennsylvania's Franklin Field. This was the first and largest area covered with this material, and it has been a testimonial for this firm.

Holmes has set up a subsidiary; Turf Services, Inc., to handle this product line. The purpose is to keep both activities independent so that the specialization image can be developed for both.

Asplundh is speeding up delivery dates on Aerial Lift Trucks

Asplundh has scheduled regular production on the Forestry or General Service bodies, both complete on GMC chassis. These 45′ lifts with a capacity of 350 pounds in all positions are fully insulated and have high pressure hydraulic systems to the baskets. Ready for fast delivery.

Can also be purchased with a rugged Asplundh Chipper, either 12″ or 16″ with adjustable telescoping exhaust chute and bonnet, new folding feed table.

ASPLUNDH

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DIVISION OF THE ASPLUNDH TREE EXPERT CO.
50 EAST HAMILTON STREET,
CHALFONT, PENNSYLVANIA 18914

Asplundh Chipper Co.
50 E. Hamilton Street
Chalfont, Pa. 18914

☐ Please send specification sheet
☐ Please contact me, I'm interested

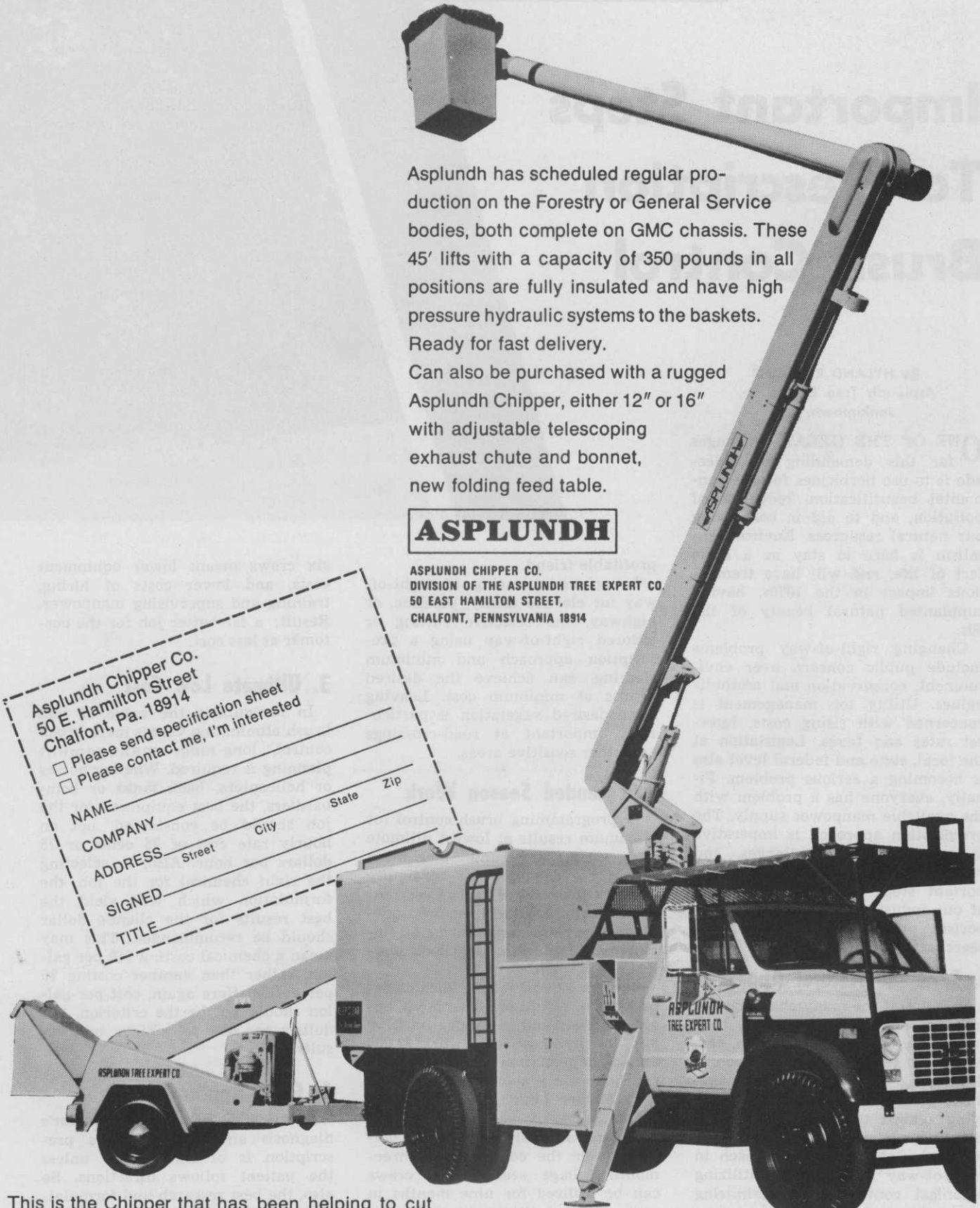
NAME_____

COMPANY_____

ADDRESS_____ Street City State Zip

SIGNED_____

TITLE_____



This is the Chipper that has been helping to cut down on Air Pollution for the past twenty-five years.

For More Details Circle (103) on Reply Card

7 Important Steps To Prescription Brush Control

By HYLAND R. JOHNS
Asplundh Tree Expert Co.
Jenkintown, Pa.

ONE OF THE GREAT challenges for this demanding new decade is to use herbicides for environmental beautification, reduction of pollution, and to aid in conserving our natural resources. Environmentalism is here to stay as a basic fact of life, and will have tremendous impact in the 1970s, having supplanted natural beauty of the 60s.

Changing right-of-way problems include public concern over environment, conservation and aesthetic values. Utility top management is concerned with rising costs, interest rates and taxes. Legislation at the local, state and federal level also is becoming a serious problem. Finally, everyone has a problem with the available manpower supply. The prescription approach is imperative in meeting these challenges, and within this framework, seven important steps are vital to success of our industry, whether we be arborists, nurserymen, educators, researchers or salesmen.

1. Take the Natural Approach

Because of the many challenges to industry and management, ie. high taxes, interest rates, legislation, etc., we should take nature's approach in developing a right-of-way management plan. We shouldn't be struggling against the environment, but should be partners in a joint venture using the natural approach in right-of-way management, utilizing botanical controls and minimizing use of chemicals. A stable plant community is a utility manager's most profitable friend.

In original clearing of right-of-way for electric utility, pipeline, or highway, the selective cutting or tailored right-of-way using a prescription approach and minimum clearing, can achieve the desired results at minimum cost. Leaving some desired vegetation is particularly important at road-crossings and other sensitive areas.

2. Extended Season Work

In programming brush control for maximum results at lowest ultimate cost, manpower and machinery should be scheduled for continuity of work year-round, whenever possible. Today, trained men need adequate pay rates and security of employment, otherwise they look elsewhere for work.

Equipment cost factors such as depreciation, return on investment, operating costs and insurance must be kept low by long-season work. $2,000 annual depreciation amounts to $10 per hour for a short season, but is only $2 per hour for a six-month season.

So, instead of six crews being employed for the conventional three-month foliage season, two crews can be utilized for nine months in most parts of the country. Having two crews on the job instead of six crews means lower equipment costs, and lower costs of hiring, training and supervising manpower. Result: a far better job for the customer at less cost.

3. Ultimate Low Cost

In recognizing the value of real brush elimination versus mere brush control, long-range management planning is required. Whether horses or helicopters, back tanks or bombardiers, the best equipment for the job should be considered, not an hourly rate cost of 75 cents or 75 dollars per hour. Also, in selecting the right chemical for the job, the formulation which will yield the best results for the client's dollar should be recommended. This may mean a chemical costing $10 per gallon, rather than another costing $5 per gallon. Here again, cost-per-gallon should not be the criterion, but dollars-per-acre to achieve best results.

4. Good Application

In the final analysis, the doctor's diagnosis and the druggist's prescription is of little value unless the patient follows directions. So also, the best research and formulating know-how are lost if herbicides are not properly mixed and applied.

If you can't see the diagonal access road to this utility high line, then one of Asplundh's principles of right-of-way maintenance has been achieved. Selective chemical treatment can encourage low-growing plants beneath lines while preventing growth of trees that would attain obstructive heights. A vegetation "wall" is thus achieved, as is shown below.

The spray crew must follow directions and be sure of proper application to avoid disappointment or worse—having to come back and do the work over free-of-charge. And remember, you can achieve complete brown-out with only 100 gallons per acre of mixed foliage spray, when a real root-kill may require 300 gallons per acre.

5. New Methods

New chemicals and new methods (or improvements on old methods) have aided the development of chemical brush control in recent years. Our modification of existing mist-blowers to reduce spray drift and put chemical sprays on target, have increased root kill substantially.

In addition to stem-foliage applications with thickeners, we have modified mist-blowers for basal and dormant-stem applications. The air-blast is particularly helpful in blowing away leaf litter and other debris so that chemical mixtures can be targeted. Tordon formulas, additives to 2,4-D and 2,4,5-T, and the Unimog have all added.

6. Multiple-Use Prescription

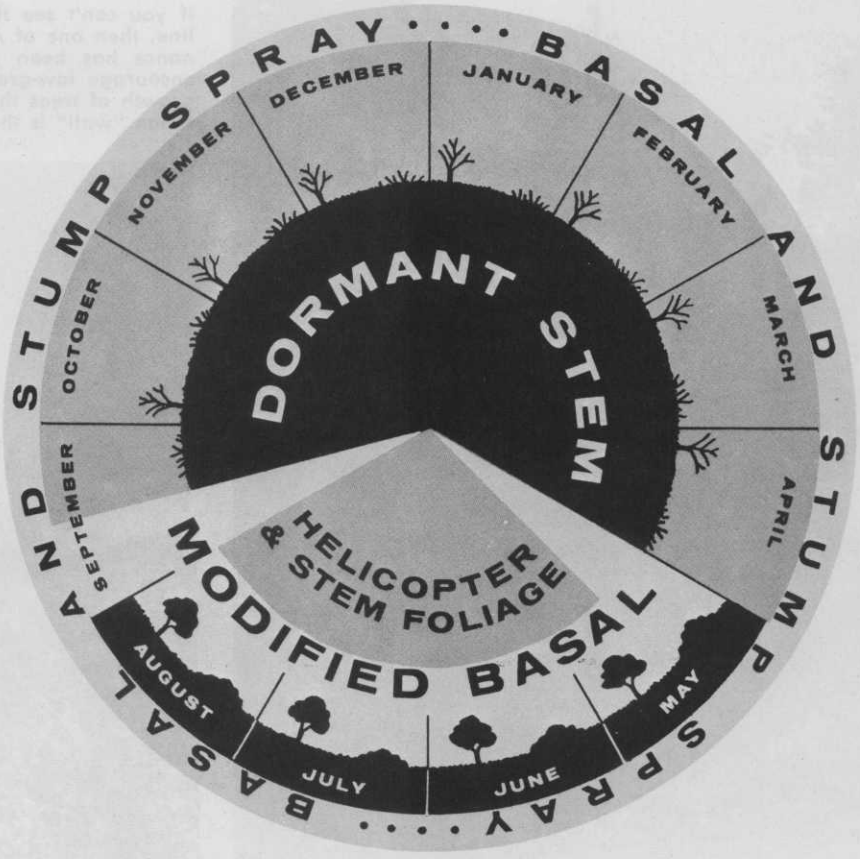
Programming pays off; nowhere in this country does a problem exist

in right-of-way vegetation maintenance that cannot be solved with today's changing technology. For example, traditional stump sprays have been replaced by pre-cut basal or delayed spray applications for improved efficiency.

In remote areas, overhanging branches on pipelines or transmission lines can be safely side-trimmed by carefully-controlled, drift-free applications.

Old problems such as ash, scrub-oak or root-sprouting species can be readily eliminated by prescription programming. Special problems of fence rows, tower bases, or sensitive areas near ornamentals or hazardous crops can be treated safely today.

The concept of multiple-use has been used by foresters for decades to provide additional land and vegetation resources. For example, rights-of-way can be used for nurseries, pasture and other forms of agriculture as well as recreation, watersheds, wildlife and other uses. The 17-year experiment conducted at Pennsylvania State University has demonstrated that properly managed right-of-way with brush controlled by selective herbicides supports more wildlife food and cover than the surrounding forest land. This demonstration has been given only two chemical treatments in 17 years!



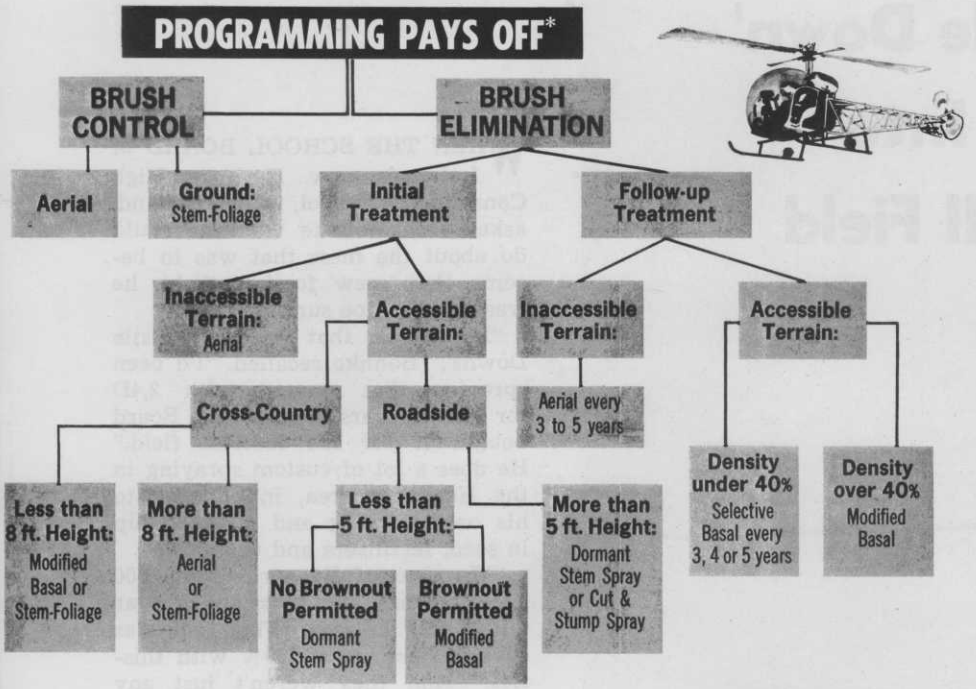
This is when Asplundh does it . . .

7. Transmission Techniques for Distribution Rights-of-Way

Too long the problem of roadside or distribution brush has been minimized or overlooked. In the United States, electric utilities spend ten times as much money for distribution vegetation control as they do for transmission vegetation control. True, existing techniques and application methods must be modified and carefully supervised. However, results from carefully prescribed programs over the past 15 years have shown tremendous economies as well as improved roadside vegetation conditions. Selective vegetation removal and selective sprays can aid reliability of electric and telephone service while improving roadside aesthetics, **and** save money for utilities in the bargain.

These seven fundamental steps are vital in promoting herbicides as gen-

In addition to helicopter spraying from the air, Asplundh uses vehicular equipment from the road and off the road . . .



. . . This is how Asplundh does it.

uine conservation tools. If these seven concepts are carefully planned and applied to specific jobs, environmental problems are reduced and long-range economies made a reality.

But remember, one well-published mistake can jeopardize a whole state or region. "When all else fails—read the label" is still a needed admonition.

. . . and backpack units.

Container Tree-Planting May Increase Quality

A new method of growing trees in containers may produce hardier, faster-growing specimens at lower cost, according to a Michigan State University forestry expert.

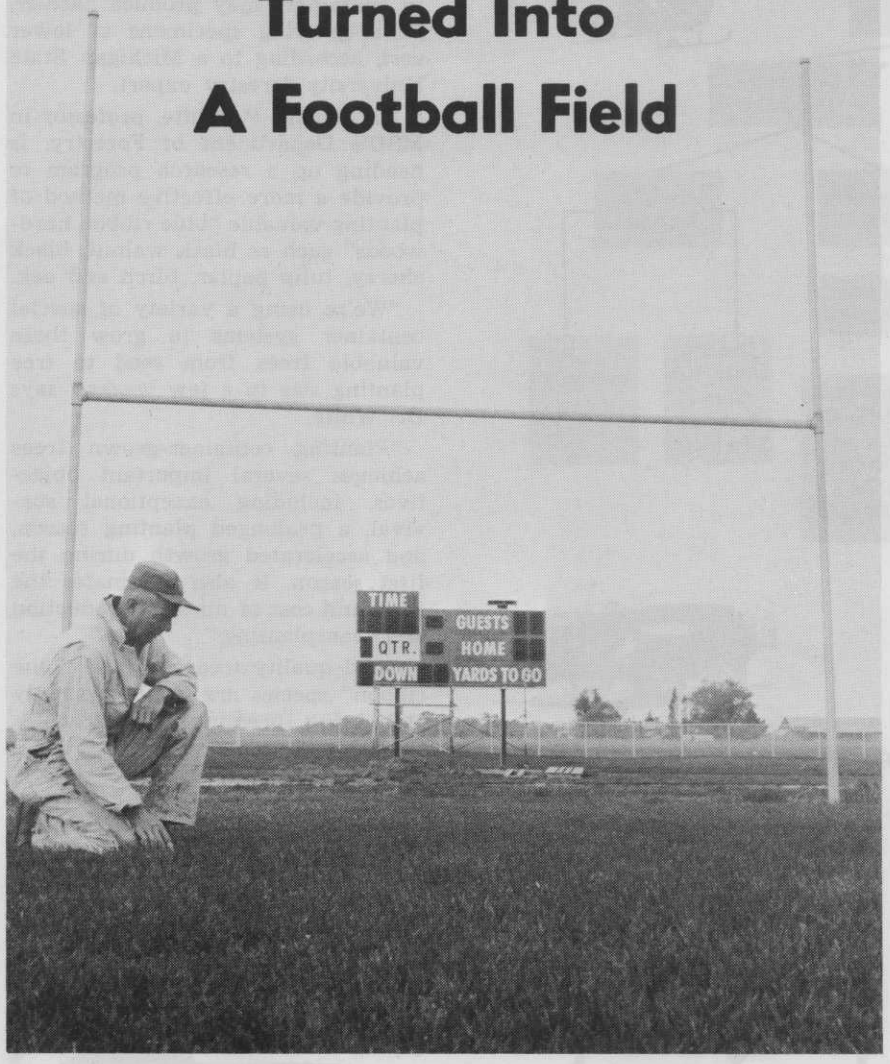
Dr. Donald P. White, professor in MSU's Department of Forestry, is heading up a research program to provide a more effective method of planting valuable "blue ribbon hardwoods" such as black walnut, black cherry, tulip poplar, birch and oak.

"We're using a variety of special container systems to grow these valuable trees from seed to tree planting size in a few weeks," says Dr. White.

"Planting container-grown trees achieves several important objectives, including exceptional survival, a prolonged planting season, and accelerated growth during the first season. It also eliminates the need and cost of nursery production and transplanting."

Good quality trees of these "blue ribbon" species are in short supply and bring premium prices, notes Dr. White.

How 'Thistle Down' Turned Into A Football Field



WHEN THE SCHOOL BOARD of Indiana's new Heritage High Consolidated School, near Hoagland, asked Don Bohnke what he could do about the mess that was to become their new football field, he wasn't really too sure.

"I called that area 'Thistle Downs'," Bohnke recalled. "I'd been spraying that ground with 2,4D for three years before the Board bought it for the football field." He does a lot of custom spraying in the Hoagland area, in addition to his own farming and a dealership in seed, fertilizers and chemicals.

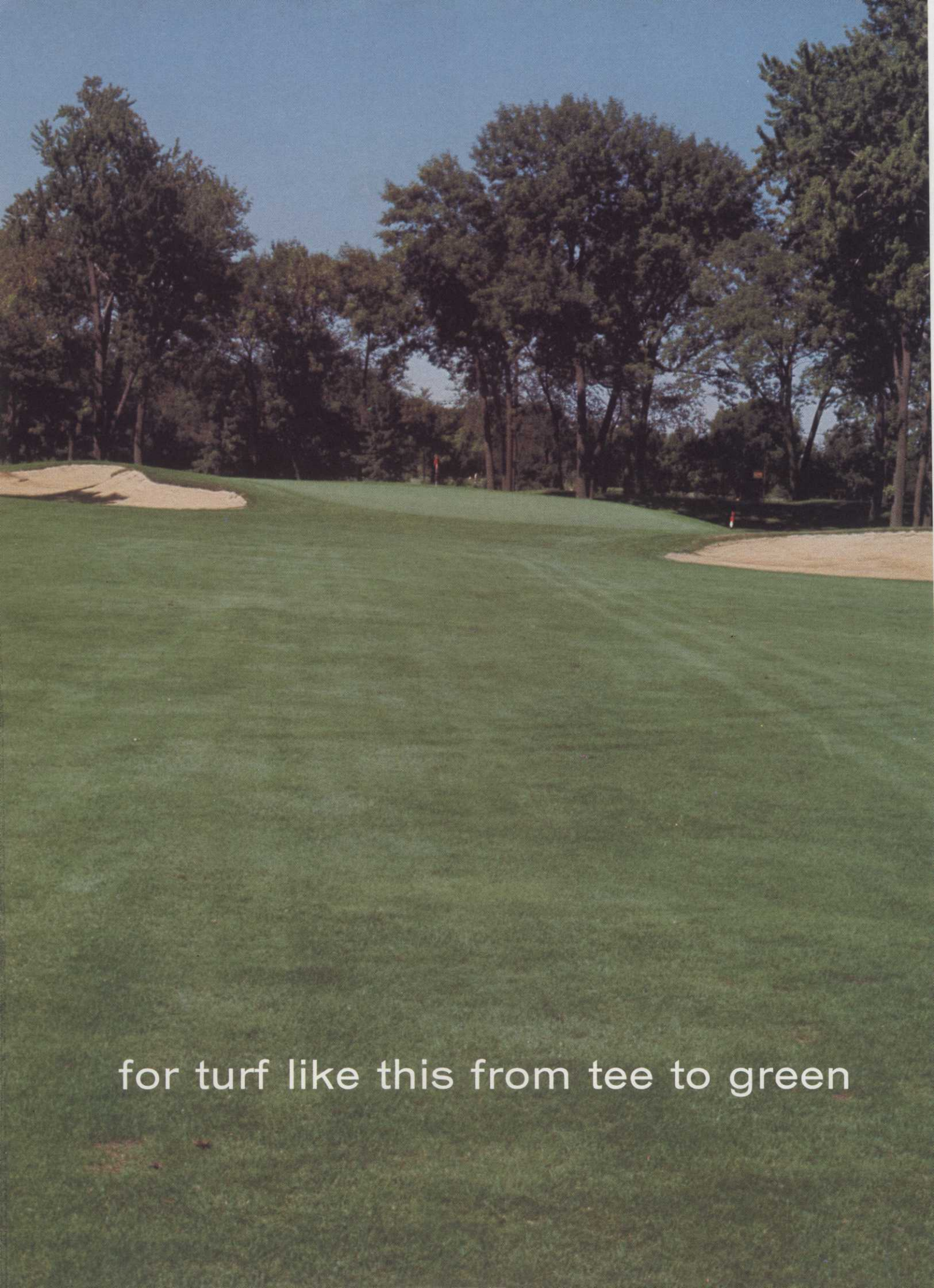
"We successfully spray some 500 acres of corn and grassland a year with 2,4D," he says. "That field was covered just about 100% with thistles." And they weren't just any particular variety. "We had Canadas, sowthistles, bullthistles, and just about every thistle you can name in that field, both before and after it was seeded to grass in the early spring of 1969. I'd say, though, that the majority were Canadian and sowthistles."

The situation looked pretty desperate in late June when the School Board asked Bohnke to try something else, since the 2,4D itself just wasn't doing the job. The field was promised to be ready to play on in the fall of 1969, and the newly planted turf was so badly infested you could barely find the grass. In fact, it looked as if the players could end up smarting as much from thistle stickers as from bruises, if something wasn't done to solve the problem fast.

"We've had good experience with a different type of phenoxy herbicide, Dacamine, where we've had bad broadleaf infestation in corn," Bohnke told the Board. "I can't promise it'll do the job on as bad a mess as this, but it looks like it has more weedkilling power than standard 2,4D amines, even though it works a little slower than many 2,4D's. That might sound like a drawback, but when it comes to thistles it's a big 'plus'. Instead of

(Continued on Page 31)

"This is what the entire 'Thistle Downs' used to look like (left)," reports custom sprayman Don Bohnke, as he looks over a small patch outside the Heritage High School field that didn't get treated with Dacamine herbicide. "Now, you'd need a magnifying glass to find a thistle seedling in the thick, healthy turf."


for turf like this from tee to green

follow the

TUCO Acti-dione®

fairway spray program

The same antibiotic fungicide proven for years on golf greens *at hundreds* of courses now provides a program for economical treatment of fairways.

NOTE: The cover photo, the untreated fairway at left and the closeups below were all taken the same day in August, 1968, at courses less than 40 miles apart. All are unretouched. Below left is bluegrass; right is bent grass.

why a fairway disease control program?

1. Golf course superintendents set increasingly demanding standards for themselves to provide superbly conditioned courses regardless of weather and other obstacles.
2. Demand by golfers for high-quality turf at all times. They want the good lie for fairway woods and iron shots.
3. Growing numbers of golfers increase this pressure, and increased traffic is too much of a challenge for anything less than healthy turf.

why Acti-dione® for a fairway spray program?

The use of Acti-dione Ferrated or Acti-dione RZ has demonstrated effective, economical control of many turf diseases when combined with good management practices.

Acti-dione Ferrated is a formulation of the antibiotic Acti-dione and Ferrous Sulfate designed for the control of specific turfgrass diseases. Acti-dione RZ is a broad spectrum turf fungicide formulation containing the antibiotic Acti-dione in combination with PCNB. Both products are used in a preventive and eradicative treatment program for:

Kentucky Bluegrass-leafspot, going-out, and melting out
Merior Bluegrass—rust, fading-out and powdery mildew
Bentgrass—dollarspot, melting-out and fading out.

how to use Acti-dione® in a fairway spray program

Acti-dione may be applied as a spray with a conventional boom sprayer or with a broadcast boom jet spray nozzle. The Acti-dione spray should be allowed to dry in the grass—do not water in.

Your fungicide program should begin in the spring as soon as possible after the first mowing. Succeeding applications should be made as often as necessary throughout the growing season. Usually an interval of 21-30 days between applications will maintain satisfactory control. The recommended rate of Acti-dione Ferrated for fairway disease control is one package per acre; the recommended rate of Acti-dione RZ is 1.5 pound per acre.

Prepare a fresh solution each day spraying is done; use at least 30 to 40 gallons of water per acre. For severe disease infestations, increase dosage rate of Acti-dione Ferrated to two packages per acre. If you are using Acti-dione RZ, one package of Acti-dione Ferrated per acre may be added as a tank mixture to increase effectiveness.

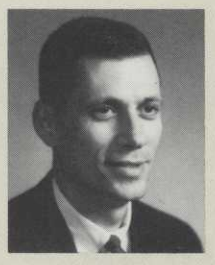
When mixing Acti-dione for fairway spraying:

1. Fill the spray tank ½ full with clean water
2. Start agitator and add the recommended amount of Acti-dione for the number of acres you plan to spray
3. Add remaining water while agitator is running

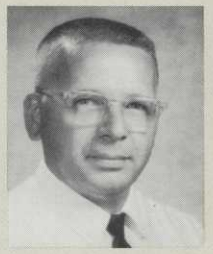
For sprayer calibration, request our Acti-dione sprayer calibration guide.

When it comes to turf problems—

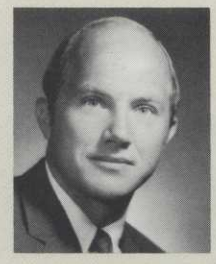
THESE MEN UNDERSTAND AND CAN HELP!



STANLEY CAPLAN has a B.S. in agriculture from Delaware Valley College of Science and Agriculture in Doylestown, Pennsylvania. Stan has had several years of experience as a manager and buyer of nursery and garden supplies for a large company in California prior to joining TUCO in 1965.



HENRY LYON graduated from Cornell University with a major in ornamental horticulture. He has a broad agricultural background which includes wholesale sales and garden store management. Henry has been with TUCO since 1964.

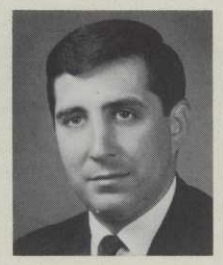


ROBERT SCOBEE was raised on a golf course (his father is a superintendent). Bob graduated from Purdue University with a degree in agronomy. Former secretary of the Indiana Golf Course Superintendents Association, Bob is a member of the Golf Course Superintendents Association of America. Bob has been with TUCO since 1965.

TUCO realizes maintaining healthy, top quality fairways, tees and greens is far from easy. That's why this outstanding team is available to help you with your turf growing problems. Just a call will put one of these highly trained and experienced men to work for you. TUCO has the products and the personnel to do the job.

CARMEN BOONE is a native of Arkansas and studied at Arkansas A & M College. He has a broad agricultural background and has had experience in the agricultural equipment field. Carmen joined TUCO in 1968.

CARL MARTIN is a graduate of Texas A & M University with a degree in entomology. Carl is exceptionally well versed in the field of Entomology. He is a member of the Entomological Society of America and has been with TUCO since 1964.



ROBERT LIPPMAN is an honor graduate of Pennsylvania State University's turf management course. While attending college, Bob was awarded a scholarship and certificate of merit from the Golf Course Superintendents Association of America and has had actual field experience as a golf course superintendent. He is a member of the Metropolitan Golf Course Superintendents Association and the Hudson Valley Golf Course Superintendents Association in New York state. Bob joined TUCO in 1967.

TUCO

DIVISION OF THE UPJOHN COMPAMY, KALAMAZOO, MICHIGAN 49001

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Thistle Down . . .

(Continued from Page 26)

just burning off the tops and leaving the healthy root systems to sprout again later, it gets all the way down into the roots and kills from the bottom up."

The Board was impressed, but also had heard about another post-emergence herbicide they wanted Bohnke to try—dicamba.

"We figured the Dacamine probably would do it by itself," Bohnke says, "but they asked us to try the dicamba, also, so we mixed the two on some parts of the field—at a rate of about a quart and a half of Dacamine and a half-pint of dicamba. A large part of the field was sprayed with Dacamine at about a quart to the acre, though, and it did every bit as good a job as the combination.

"Even though I knew Dacamine works slowly, the first time we sprayed this field, boy was I sick!" Bohnke exclaims. "I came back in here two weeks after we had gone over the field and the thistles were coming up thicker than hair on a dog!

"I figured we'd come back again in three weeks and spray again," Bohnke goes on. "When we got back, I couldn't believe my eyes—they were all just about gone! We sprayed it with another quart to the acre, anyway, just to make sure. That shot really got them down, and by the time we went in the third and last time I don't think we had a 10% thistle crop in here anymore. The grass was in beautiful shape, filling in where the thistles were dying out."

The weather at the time of the control job was far from ideal for weed control, although it was perfect for growing thistles. "We might have gotten them with a little less material and fewer applications if we hadn't had so much wet, cool weather," Bohnke admits.

The first application was made during the second week of July. The second shot of Dacamine went on three weeks later, and the last one was applied just before the football season started in September.

The School Board certainly had no complaints about the results. You've got to go over the field with a magnifying glass to find a thistle seedling anywhere. "If we see a new one peek up anywhere now," Bohnke says, "we give the boys a little Dacamine in a hand sprayer and let them give it a shot. With that kind of continuous control, we don't expect to have any thistle problems in 'Thistle Downs' any more."

After two games, six-month-old turf is in excellent shape, even after a heavy chemical weed control program to rid it of a serious thistle problem. Bohnke, left, and Diamond Chemicals representative Steve Derrick look over the luxuriant grass.

New Golf Course Product Boosts Microbial Activity

American Bio-Turf, a bio-chemical solution which aids the biological control of microbial environment through stimulation of microbial activity, has been introduced as an aid to golf course maintenance by Farm Builders, a division of American Bio-Culture, Inc.

Jack Grover, president of Farm Builders, announced that the opening of the American Bio-Turf division brings to the golf course superintendent the experience gained through more than ten years of research and development, pioneering the practical application of soil microbiology to everyday agriculture.

American Bio-Turf's stimulation of the soil microbes results in better water retention and penetration. Microbial activity also makes more efficient use of fertilizers applied to and turf.

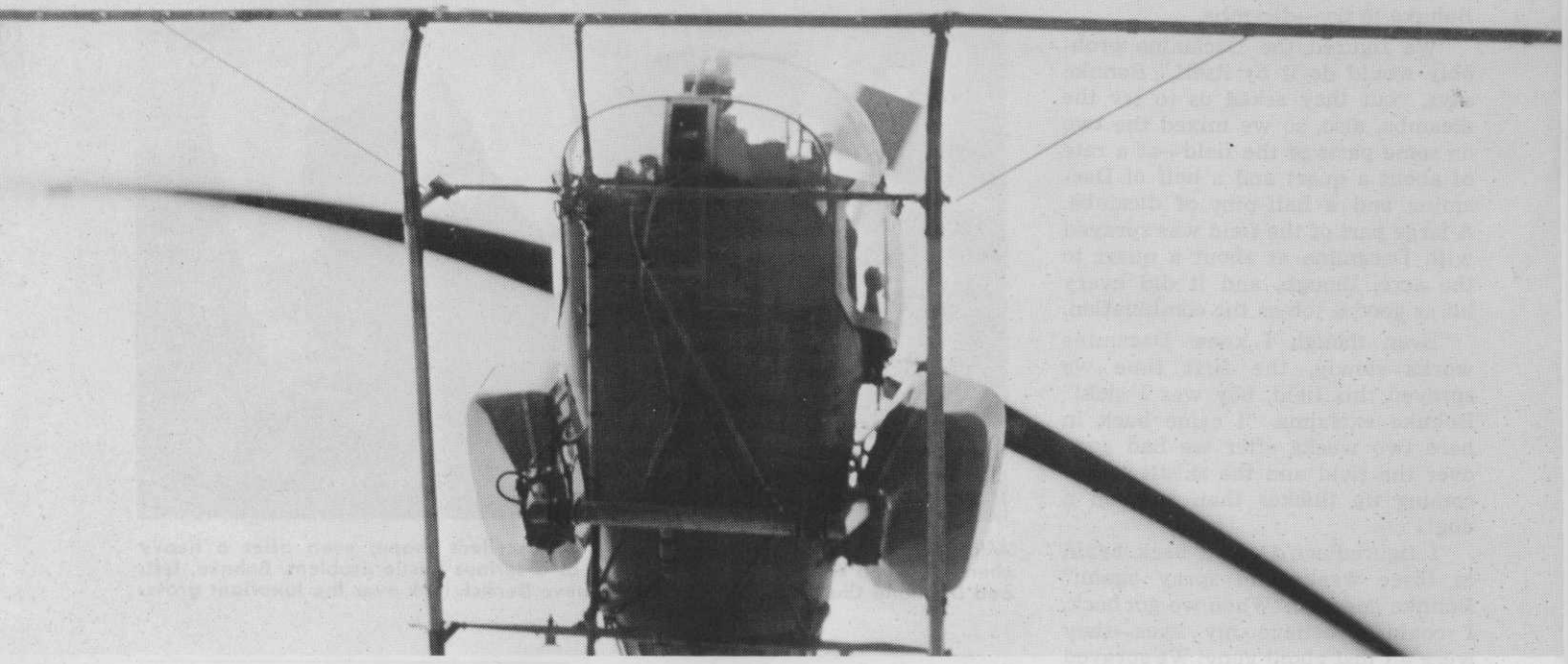
The aerifying action of the microbes in the soil also minimizes the need for mechanical aerification of turn areas, thereby creating another budget savings for the golf course superintendent. For more details, circle (723) on the reply card.

◀ For More Details on Preceding Pages Circle (101) on Reply Card

For More Details Circle (130) on Reply Card

HELP FROM ABOVE

For the Golf Course Superintendent



A helicopter with a 25-ft. boom flying 30 mph sprayed the Indianapolis Motor Speedway Golf Course.

Special to WEEDS TREES and TURF
TUCO Division, Upjohn Co.
Kalamazoo, Mich.

INCREASING play on golf courses means increasing headaches for golf course superintendents. Maintaining high standards of turf quality and course playability within the limitations of a budget isn't easy, as all of us know.

Faced with a limited amount of money, a limited labor force and a limited amount of time for maintenance, cutting corners on turf disease control can become a temptation. However, short-changing your disease-control program is bad economics.

When you invest upward of $50,000 a year in fertilizer, weed control, water and management practices—such as verticutting, aerifying, mowing and the labor they involve—your investment deserves the protection of a complete disease control program.

Many superintendents have discovered that fairway disease control programs actually pay their own way . . . by keeping golfers happier and by eliminating the problems and costs which arise when fairway turf is lost.

The same basic principles and practices used to control disease on the greens apply to tees and fairways, although the degree of control required on fairways is not as critical as that required on greens. Disease control on the entire course should be integrated . . . and an integral part of your overall management program.

Helicopter Use Study

One promising new tool for economical fairway disease control is the helicopter. The same maneuverability and speed that make it an effective military weapon also make it an effective weapon in the fight against turf disease.

Many golf course superintendents have had the opportunity to observe applications of fungicide to fairways by helicopter in recent years. However, they have been skeptical about the precision of such applications, asking themselves: "Is it good enough to get the job done?"

That question has now been answered in the affirmative. Results of a three-year study conducted by TUCO, Division of The Upjohn Company, show that helicopter applications of fungicides can be made successfully at selected specific dosages. The studies have demonstrated that spray pattern distribution and droplet size are quite satisfactory for adequate coverage, and that the fungicide actually deposited falls within the required levels for the desired biological effect.

TUCO became interested in helicopter applications as part of its continuing research into fungicides for control of fairway turf diseases. Two years of biological studies were successful and most encouraging, but left this question unanswered: "Is it possible for a helicopter to spread an active amount of ingredient on the fairway when applying only five gallons to the acre?"

Indianapolis Golf Course Test

To find out, a test was conducted last year at the Indianapolis Motor Speedway Golf Course. Dr. Kent M. Beckman, TUCO's manager of fungicide research and one of the men

In level flight, the helicopter lays the spray down smoothly. Notice how the spray actually curls up and back, then settles in a relatively even distribution pattern, as shown on the three-dimensional model. Layers of the model represent gradations in application density. Light areas represent gradations above the calculated application rate, dark areas gradations below.

In non-level flight with a gentle cross wind, the characteristic tip whirl causes the spray to pile up at the periphery of the swath. The resulting unevenness in application density is shown by the three-dimensional model. Even under these conditions, the deposit of fungicide is sufficient for biological control.

involved in the test, explains it as follows:

"We laid out four test blocks along a fairway, each block 50 feet wide and 100 feet long. Inside the blocks we placed sheets of Whitman No. 1 filter paper, held in position on the turf with nails. The function of the filter paper was to intercept the spray as it was applied by the helicopter, so that we could find out the amount of material that actually would have been deposited on a specific area of turf.

"There were 10 such sheets strategically placed within each of the four blocks for each of two chemicals tested. This gave us 40 individual sampling sites per chemical, or a total of 80 samples.

"Both TUCO chemicals tested—Acti-dione RZ and Acti-dione Ferrated—are already in use by golf courses across the country.

"The helicopter began its run at the far end of the fairway and crossed over all four of the sampling blocks. During the test, a cross wind was coming in at about 90° to the fairway and the flight path of the helicopter, but the pilot was able to stay low over the turf.

"The boom spread of the helicopter was 25 feet, and the pilot normally flew at an altitude that would allow coverage of a 50-foot swath on each pass. The width of the swath, of course, may be altered somewhat by changing the altitude at which the helicopter is flown.

"At the tips of the boom, the spray pattern swirled like the tail feathers on a Mallard duck. This action actually helped provide a throbbing-like motion on the turf, resulting in improved and complete coverage with the chemical.

"Following the spraying, each filter paper sample was placed in an individual plastic bag to prevent cross-contamination. The bags were taken to the TUCO plant health research laboratory at Kalamazoo, Michigan. In the lab, each sample was extracted individually and the extract assayed."

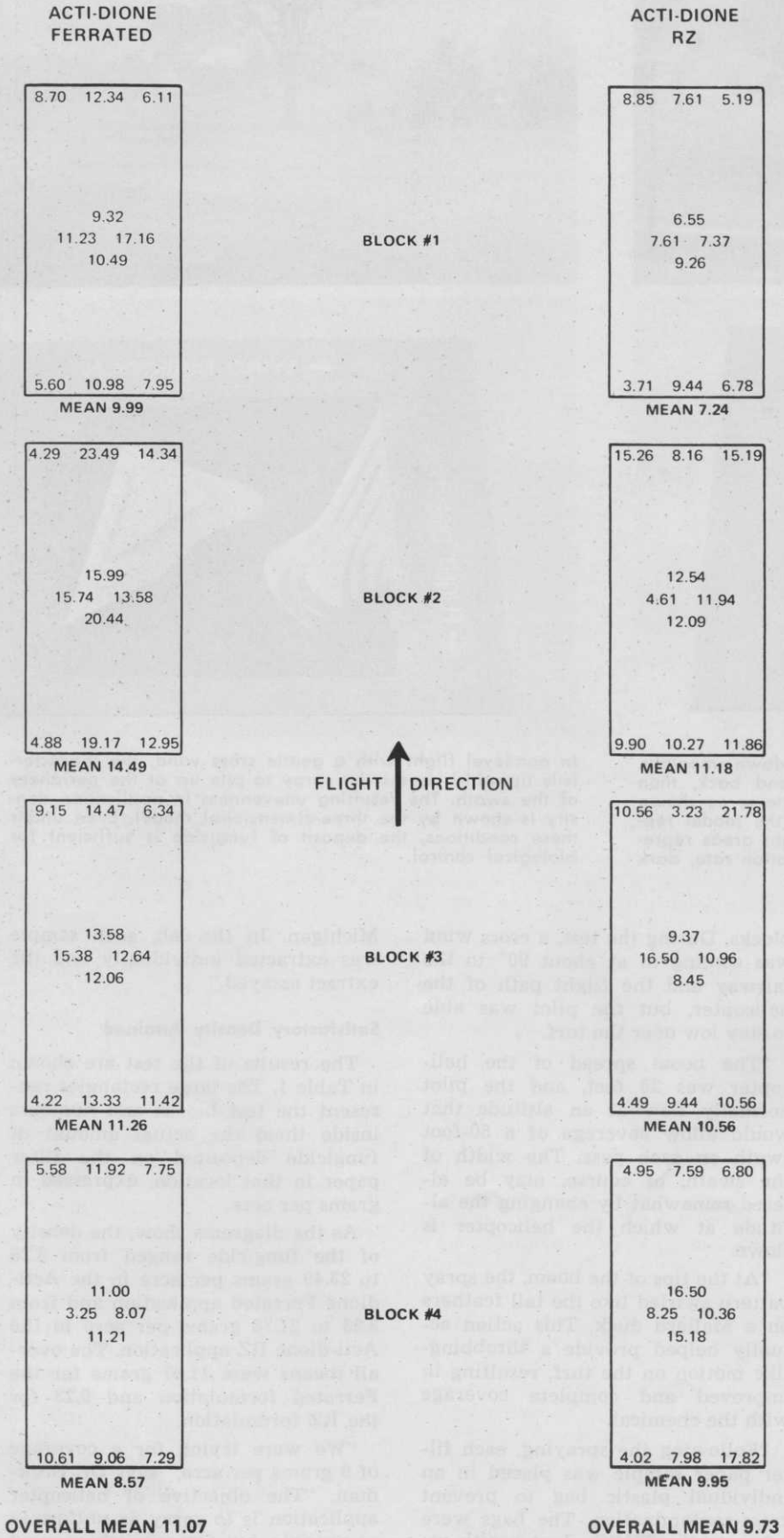
Satisfactory Density Attained

The results of the test are shown in Table 1. The large rectangles represent the test blocks and numbers inside them the actual amount of fungicide deposited on the filter paper in that location, expressed in grams per acre.

As the diagrams show, the density of the fungicide ranged from 3.25 to 23.49 grams per acre in the Acti-dione Ferrated application and from 3.23 to 21.78 grams per acre in the Acti-dione RZ application. The overall means were 11.07 grams for the Ferrated formulation and 9.73 for the RZ formulation.

"We were trying for a coverage of 9 grams per acre," says Dr. Beckman. "The objective of helicopter application is to spray as uniformly as possible, but factors such as wind velocity and direction, the flight

TABLE 1. Fungicide Coverage



attitude and altitude of the helicopter in relation to the turf, and the functioning of the spray system itself can cause some variation.

"All things considered, our studies indicate that the helicopter can deliver a satisfactory density of fungicide, and that when variations occur, they are usually in the positive direction. By that I mean that an excess of fungicide is deposited on the turf. In the case of Acti-dione products, that is not a cause for worry. However, fungicides with a narrower phytotoxic tolerance level could be detrimental to the turf and cause plant injury."

Helicopter spraying appears to have several things in its favor. One is that it covers the turf fast—with accuracy. Speed is important because, with today's heavy play on most courses from dawn to dusk, it's important to have the work crews off the fairways as soon as possible.

Speed also means fewer man hours per job, which releases crews for other tasks and reduces the overall cost per job. Since labor costs make up 70 to 75% of most superintendents' budgets, this is an important consideration.

Helicopter Cost Analysis

What does it cost to use a helicopter for fairway spraying? Nobody's sure yet. More precise figures will be available after additional evaluations by TUCO this year. However, comparisons between ground spraying and helicopter spraying in citrus groves (see table below) show a definite cost advantage for the chopper. The economics on the turf should be equally favorable or even more so.

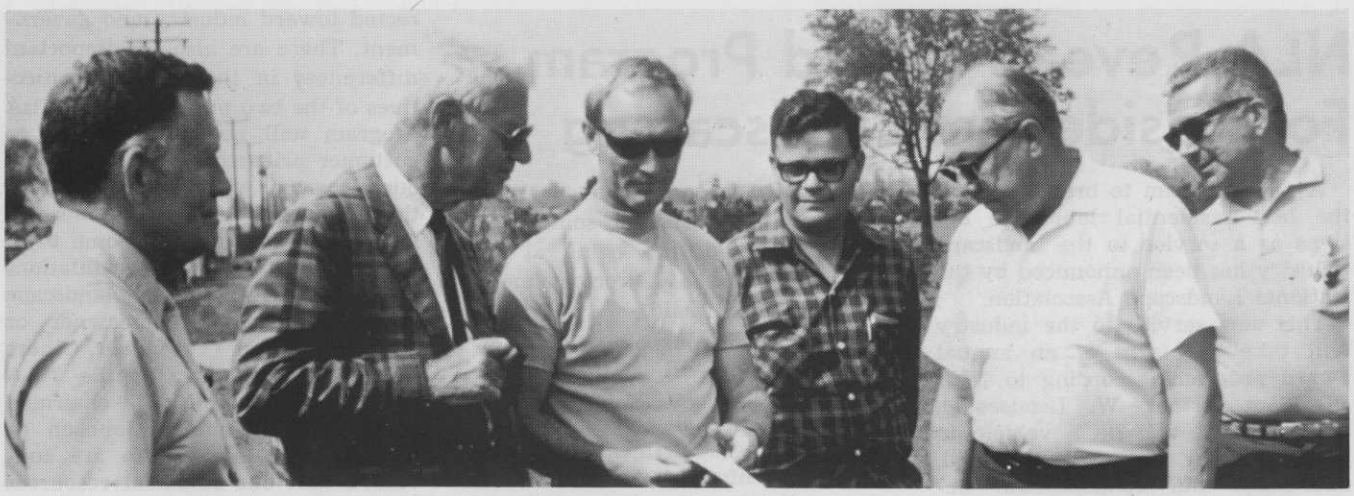
Annual per acre comparative costs of helicopters vs. ground spray in citrus industry are shown in Table 2.

One of the nice things about helicopter spraying is that you can generally put down right next to the water supply where you plan to work without damaging the turf. The skis distribute the weight of the chopper over a large area of turf, so the compaction is less than that from a golf cart.

Dr. Beckman has this advice about mixing spray solutions: "It's always a good practice to pre-mix any wettable powder formulation before putting the material into the spray tank. Pre-mixing keeps the material from balling up and settling to the bottom of the tank."

Wind Factor

As in any spraying operation, the wind needs to be considered when



Observers viewing a check tape showing spray distribution are, from the left: Joseph Kelly, Riley Lawn and Golf Equipment; Walter Hiser, Woodstock Club; George Lynn, Woodstock Club; James Joines, Mesingomesia Country Club; Marvin Scobbee, Highland Golf and Country Club; and Willard Thomas, Indianapolis Motor Speedway Golf Course.

The picture below shows the spray pattern obtained with helicopter application of Acti-dione Ferrated fungicide. The top panel is from the center of the spray swath. The bottom panel, from the edge of the spray swath, shows how the pattern thins out at the extreme periphery.

applying fungicide with a helicopter. A cross wind can carry the spray off target, and when the wind approaches 10 miles per hour it can affect the throbbing action of helicopter spraying when the pilot banks for a turn.

It is difficult to estimate wind velocity by visual observation, since, except for low altitudes, a surface wind is almost certain to be different from the wind at flight altitudes above the tree tops. However, for helicopter work, Table 3 should be of help:

Dr. Beckman's observations indicate that the use of a helicopter for applying fungicides to fairways can reduce labor costs without reducing the effectiveness of your disease-control program. It makes good business sense to consider this new tool in your overall management program for maintaining fine turf throughout the playing season.

Weed Science Career Pamphlet is Available

An eight-page pamphlet, entitled "Careers in Weed Science," is available from Dr. W. F. Slife, Weed Science Society of America Business Manager, Department of Agronomy, University of Illinois, Urbana, Ill. 61801.

A single copy will be sent free to anyone requesting it. Teachers, counselors, and industry representatives may request — on their letterheads — up to three free copies.

Quantity prices are: Six copies for $1; 25 copies for $3.50; 50 copies for $5.50, and 100 copies for $10.

Make checks payable to Weed Science Society of America.

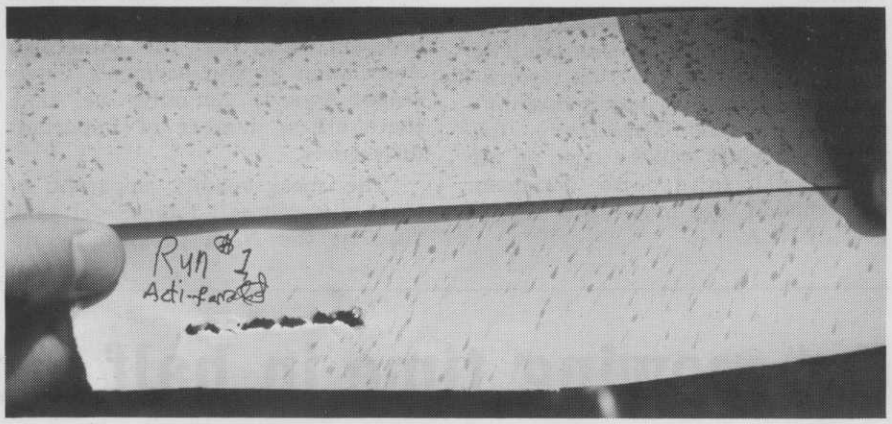


Table 2. Annual per-acre comparative application costs of helicopter vs. ground spray in citrus industry

Season	Helicopter	Ground Spray
1960-61	$ 26.03	$ 44.46
61-62	23.31	57.24
62-63	23.84	49.15
63-64	28.11	56.36
64-65	45.92	75.68
65-66	38.23	70.68
66-67	32.50	70.68
Total	**$217.94**	**$426.42**

Table 3. Helicopter Fairway Wind Scale

Wind Velocity	Terms Used in U.S. Weather Forecast	Land Signs
Less than 1 mph	Light	Calm; smoke rises vertically
1-3 mph	Light	Direction of wind shown by smoke drift, but not by wind vane
4-7 mph	Light	Wind felt on face; leaves rustle; ordinary vane moved by wind
8-12 mph	Gentle	Leaves and small twigs in constant motion; wind extends light flag
13-18 mph	Moderate	Dust and loose paper raised; small branches are moved.

NLA Reveals Award Program For Residential Landscaping

A new program to bring together the best residential landscape designs as a service to the landscape industry has been announced by the National Landscape Association.

This new service to the industry will take the form of an annual award program, according to NLA President Arthur W. Landseadel. The program will be a vehicle to bring together the best residential, apartment and condominium designs of the year for distribution to NLA members and other landscape professionals who participate in the program. Awards will be presented at the annual NLA Convention.

As the national association representing the landscaping industry, the NLA intends to give the award-winning designs as much distribution as possible. Therefore, the award program will be open to all professional landscape designers even though they may not be members of NLA.

This new program has been on the drawing boards for some time, and was voted into being at the January Board of Directors meeting, Landseadel said.

"The obvious purpose of this new NLA program will be to stimulate creativity of landscape designers, as well as to keep all of us abreast of what is being done in this field, and to give us information and new designs, allowing the designer to be aware of new developments and trends in residential designing," said the NLA President.

According to Landseadel this new award program does not compete with any existing national award program such as the American Association of Nurserymen's Landscape Award. Actually, he said, there are a number of important differences.

"The most readily apparent of these differences," Landseadel said, "is that the AAN program is directed toward industry and government. There are also the important differences in the publicity objectives of the two programs. The NLA program will not be consumer or customer oriented. The publicity in our program will be restricted to the industry trade publications, releases to the recipients' home town press and letters of congratulations from the NLA to the landscape designer's clients (homeowner or property owner). Further, there will be no attempt in the NLA program to establish a chairman such as Mrs. Lyndon Johnson or Mrs. Richard Nixon. We are convinced that our financial resources for this program should be used to make available to the landscape industry the best in contemporary designs rather than giving widespread consumer publicity to the value of good designing and landscaping."

Landseadel concluded by saying that details of the new NLA Residential Design Award Program will be soon announced and entry information sent to the industry. Judging will be in the fall and awards will be presented at the reorganized NLA Convention, he said.

industry people on the move

FMC Corporation's Niagara Chemical Division has appointed two product managers to handle commercial development of a number of its proprietary pesticides at its Middleport, N.Y., headquarters. Howard Shmerler will be responsible for market development of Furadan insecticide for corn, rice and other products. Dr. Fred Kuss assumes responsibility for Tandex soil sterilant, Polyram fungicide, and ethion insecticide.

* * *

Edward M. Schoeck has been promoted to manager of the turf and garden department of U.S. Steel's Agri-Chemicals Division. He will be responsible for marketing and product planning for fertilizers and pesticides of the company's brand names of Vertagreen and Vertagard.

* * *

Tom Dlugos has been appointed agricultural chemical sales representative at Velsicol Chemical Corporation for northern Indiana.

* * *

Vernon J. Worrel of St. Paul has been appointed a vice-president of Ryan Equipment Co. Worrell, formerly chief engineer, will continue to manage the company's engineering functions as well as assuming responsibility for the company's manufacturing operations.

* * *

John C. Tapas has been elected vice-president of research and development for Velsicol Chemical Corp.

* * *

Connecticut Tree Protective Association has elected these officers: President, Thomas Williams; vice-president, Martin J. Kelly, Jr.; secretary, Oscar P. Stone; treasurer, Bernard Wright; editor, Philip L. Rusden; and directors, Martin Learned, Kenneth Grimm, Baylis Earle and John Stashenko.

* * *

Toro Manufacturing Corporation has announced the election of three vice-presidents. Roy T. Baril is vice-president and controller; Vernon A. Johnson, vice-president, secretary and general counsel; and Robert Quinlan, vice-president and corporate development.

* * *

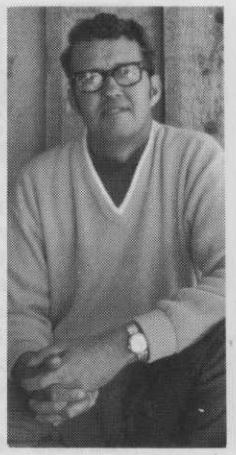
Landscape Contractors Association of Metropolitan Washington has elected these officers: President, Morris C. Zuckerman of Arbor Landscapers; president-elect, Lew Block of J. H. Burton & Sons; vice-president, Robert Elder of Thomas E. Carroll & Sons; secretary, Harry Charles of Stoneybrook Landscape Co.; treasurer, Peter Driscoll of Arbor Landscapers; and directors, Ray Gustin II of Gaithersburg, Md., John Stock of Rockville, Md., William J. Mathews of Lorton, Va., Lewis Bassman of Rockville, James Haines of Hyattsville, Md., Charles Bowers of Silver Spring, Md., Rodney H. Witman of Towson, Md., John C. Lowry of Phoenix, Md., and Roger Carroll of Silver Spring.

* * *

Nels E. Sylvander has been appointed an operating group vice-president of Pennwalt Corporation in charge of the company's W&T chemicals and equipment unit. Sylvander joined Pennwalt with the merger last year of Wallace & Tiernan.

* * *

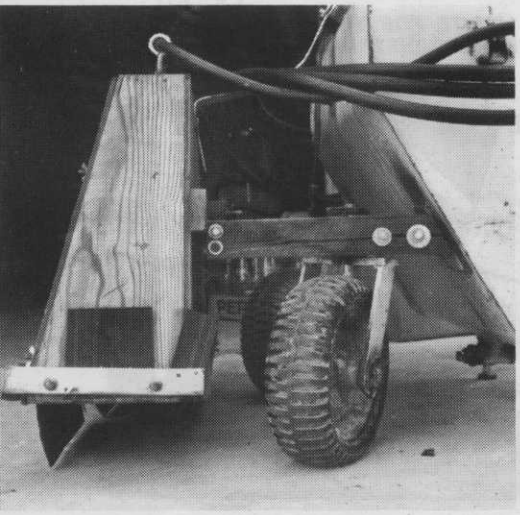
William G. Macksam, associate professor of horticulture at Colorado State University, has been named Colorado Golf Executive of the Year.



It Saves $2,000 a Year, He Says

Bill Colburn's Weed Machine

By BILL GENTRY
Orlando, Fla.



The top picture shows how Colburn's homemade weed rig is attached to a 20-gallon tank. In the rear view, note the Y-shaped filter attachment and the U-shaped controls that are placed on the handle from a Gravely tractor. The inside view shows the twin nozzles. Note the trigger nozzle lying in front. It's used with a 30-ft. extension. The hood is held in place with five wing nuts and is easily removed.

BILL COLBURN, president Cypress Creek Nursery, Inc., keeps his nursery aisles and roadways free of weeds for less than $50 an acre and saves an estimated $2,000 a year on labor costs by using a machine he designed.

One application of a mixture of simazine and paraquat will last three to four months and the operator can treat aisles in one acre in four hours.

The rig is a Gravely tractor with 20-gallon tank and a wooden hood built over a 30-inch boom with two nozzles which is attached to the front of the tank. Controls are on the handle of the tractor.

The hood is triangular-shaped and has metal bumpers on the bottom that curve inward and that help the rig to slide by nursery cans. The bumper is kept next to the cans as the machine goes down the aisles.

The two nozzles under the hood are adjustable up or down to increase or decrease the width of the spray. If just one nozzle is used it will cover a 15-inch-plus swath.

This saves spray if the operator wants to cover an area right next to cans without spraying the middle.

There are two control valves. One goes to the boom and the other goes to a handgun with a 30-foot hose with a trigger nozzle. This is handy to spray around trees in the nursery and places where the tractor can't go, such as in holes left by large palms that were sold.

The triangular-shaped hood was designed to fit the nozzles and to go under overhanging plant branches. It's easy to reach the nozzles by removing several wing nuts that hold the cover in place. Nozzles are Tee Jet 8003.

"We put on two more filters in addition to the one on the spray tank to filter materials before they reach the nozzles. We put a "Y" filter past the pump and another filter in each nozzle," Colburn said.

He explained this was important because the low volume spraying made it difficult to tell if the nozzles were stopped up or not.

"It also saves a lot of nozzle cleaning," he added. "The operator used to carry a wrench because he had to clean nozzles so often."

Colburn says the spray will not drift, and he took rubber skirts off the hood when he found they were unnecessary. "We spray in 10-15 mph winds and I've never seen a bit of damage."

The bottom of the hood is three inches off the ground. Although it's adjustable, Colburn keeps it at three inches as this is the best height in his nursery.

Generally it takes an hour to put out the 20-gallon tank over a quarter acre of aisles. The machine is run in low gear unless a heavy patch of weeds is encountered then it's run in low volume. This doubles the volume of weed killer.

"If we had weeds that were easy to kill, we'd run it in high," Colburn said. Spurge is one of the main weeds in the nursery, located on a former citrus grove.

A control valve on the handle allows the operator to cut the nozzles off when the machine is turning around. This saves valuable spray.

The nurseryman said he experi-

Weed-free aisles last three to four months at Cypress Creek Nursery, reports Colburn. Note the controls near the left hand. Metal bumpers at the bottom of the rig permit spraying to the edge of the cans.

mented with 8-10 chemicals for about a year and with various proportions before arriving at his present mixture, which he said turned out to be one of the least expensive.

He uses 16 ounces of paraquat, 16 ounces of simazine wettable powder and two ounces of X-77 spreader sticker, mixed in the 20-gallon tank. This mixture costs $48 an acre.

Colburn specifically stayed away from types of weed killers that would sterilize the soil and cause harm to roots protruding from the bottom of cans.

The machine is also used in roadways and in grassy patches of land being cleared for nursery plantings. Colburn estimates parts and wood used to build the rig cost $50-60.

Almost all the nursery stock is canned materials set on four mil black poly plastic which holds down the weed population. Potting soil is steamed.

William Colburn is president of the Florida Turf Grass Association, a former golf course superintendent at Bay Hill Country Club, a former assistant county agent and is a registered landscape architect.

Certified Nurseryman Program Under Way in California

More than 100 candidates have taken the examination to qualify as "California Certified Nurseryman," according to Norman A. Springer, chairman of the Nurserymen's Certification Board.

"Of those who passed the test, about half have completed the additional requirements and have been certified," Springer said. The board administers the program sponsored by the California Association of Nurserymen.

Three years of planning went into CAN's certification program. It was launched this January.

To qualify for certification, candidates must have had at least one year's work experience in a CAN-member retail nursery. There is a $25 testing fee, and certification must be renewed every three years. A $15 renewal fee is involved.

A Nurserymen's Training Manual was published, and serves as the study text for an examination. Copies of the manual are available through the CAN office, Suite 303, 1005 8th St., Sacramento 95814. Cost to CAN members is $5; $7.50 to non-members.

The next scheduled certification examination is set for the morning of June 9, prior to the opening of the Nurserymen's Refresher Course at Cal Poly, San Luis Obispo. Advance registration for the examination is required, and the $25 testing fee must accompany the application.

The three-hour exam has a written portion based on the manual; a portion on use of plants in the landscape; and an identification test on 100 plants.

EDITOR'S NOTE: The searing public issue in the Northwest of field burning hangs over the seed-production and sod-growing industries like a guillotine, ready to cleave off a major share of the profits of many growers or completely kill the business of countless others. The roar of air pollution from the cities causes rumbles constantly in the State House. The question is whether the outcry will get results before researchers get answers. Research for economically feasible alternatives is frantic. Following is a condensation of field burning research from Oregon State University, as reported in the winter edition of the University's "Oregon's Agricultural Progress."

FIELD BURNING

GRASS SEED INDUSTRY TEETERS ON ISSUE OF

FIELD BURNING, a Linn County grass seed grower remarked recently, "is by far our industry's most essential cultural practice. Without it, grass seed production in the Willamette Valley simply wouldn't be feasible."

There is much evidence in support of this view. For field burning effectively controls blind-seed, ergot, grass seed nematode, and numerous other crippling diseases. It also checks weeds, rodents, and certain insects, contributes greatly to yield maintenance, and economically disposes of post-harvest straw and stubble.

Unfortunately, these are not the only effects of the practice. Under certain conditions, smoke from burning fields causes considerable visibility loss and occasionally serious traffic tie-ups. Field burning also injects into the atmosphere gaseous pollutants and contaminant particles that often soil and otherwise damage personal property. And it may affect human health. As a result, use of the practice has become one of Oregon's more significant public issues.

First Used in 1940s

Back in the mid-1940s, when field burning was first used on Willamette Valley perennial grass seed fields, less than 50,000 acres were involved. The practice proved sufficiently beneficial, however, that by 1968, it was being used on an estimated 315,000 acres: 140,000 acres of perennial grass seed crops, 90,000 acres of annual ryegrass, and 85,000 acres of small grains. And the volume of straw and stubble residues being burned was estimated to exceed 700,000 tons.

The field burning season generally lasts about two months, beginning around Aug. 1 and continuing through Sept. 30. Normally, this is a period of fine weather in the Willamette Valley. But it also is a period during which the airmass above the valley becomes increasingly stagnant and poorly ventilated. As summer progresses, therefore, the capacity of this airmass to accept, dilute, and disperse all of the emissions produced by burning is increasingly likely to be overpowered. When it is overpowered, of course, the result is greatly intensified levels of local air pollution.

In recognition of this increasingly serious problem, OSU scientists are conducting intensive research in many areas related to field burning. This effort, reports R. M. Alexander, assistant director of the Agricultural Experiment Station, is aimed both at finding ways to alleviate the harmful effects of field burning and at finding alternatives leading to reduced use or elimination of the practice. Among the significant general findings to date:

- The excellent field sanitation which burning provides is of prime importance for most perennial grass seed crops. As yet, no satisfactory alternative way has been found to control the major diseases of perennials.
- Burning of some perennial grass seed crops on an every-other-year basis may be possible without drastic yield reductions. In addition, two relatively smoke-free residue disposal devices now being developed — a propane flamer and a mobile incinerator — may prove capable of replacing at least a portion of the open burning in perennials. Both

devices involve higher production costs, however, and one — the propane flamer — most likely involves increased incidence of disease.

Helps Reduce Costs

● Burning of annual crops—annual ryegrass and cereal grains—is an advantageous practice primarily because it helps reduce production costs. Disease control is not as necessary a consideration as it is with perennials. These annual crops account for an estimated 55% of the acreage and two-thirds of the residue tonnage now being burned. A few varieties of annual ryegrass are vulnerable to diseases presently controlled through field burning. Too, a satisfactory alternative way has not yet been found to control weeds in annual ryegrass.

● Straw removal by some means is vital for both perennial and annual crops. With perennials, removal appears essential for successful production of all species. With annuals, the most feasible alternatives to removal by burning are soil incorporation and mechanical removal. Large residue tonnages and the heavy, wet-type soils commonly used to produce annual ryegrass make satisfactory incorporation very difficult to achieve with this crop. Mechanical removal, of course, requires that uses be found for straw residues, since they otherwise would become a solid-waste pollutant.

● Straw residues can be used to make various industrial products, such as plastics and pulp for paper, although there are technical and economic hurdles involved. A recently developed microbial process could facilitate many utilization possibilities. The most promising and immediately available use for straw residues, however, appears to be a livestock feed.

● It may be possible to grow crops that do not require burning on at least a portion of the lands now devoted to grass seed production, though a very considerable investment, as well as developments of markets, would be required.

Engineer R. W. Boubel, crop physiologist D. O. Chilcote, and E. M. Bates, U.S. Weather Bureau agricultural meteorologist stationed at OSU, are evaluating the many meteorological and agronomic variables involved in field burning. It is hoped these variables can be combined into a series of mathematical models which, when computerized, will enable more rapid and precise prediction than now possible of when, where, and how much growers should burn on a given day. Also engaged in this effort are atmospheric scientists E. W. Hewson, L. E. Olsson, and W. P. Lowry.

Mobile Incinerator

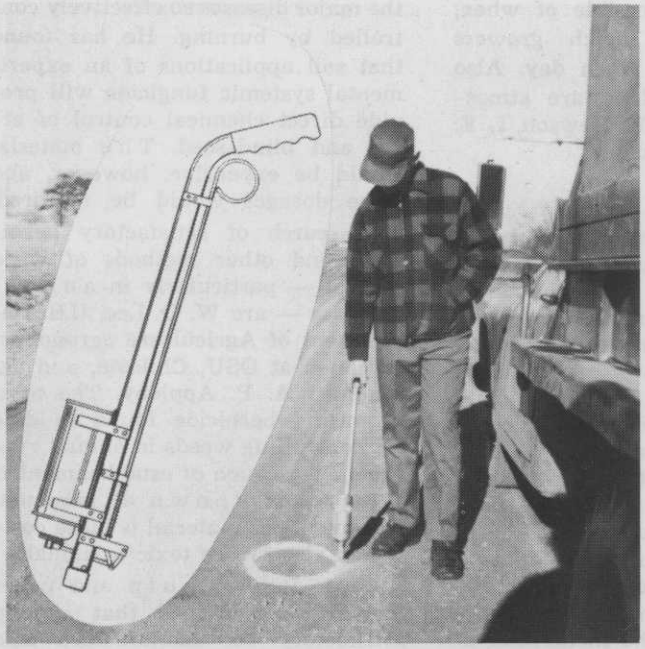
A mobile incinerator, now being developed by agricultural engineers R. W. Bonlie and G. E. Page, appears a promising alternative to open burning and also may posses some advantages over propane flaming. For with this unit, which Chilcote and the engineers will test this coming summer, the flame can be kept under control. Better combustion and, thus, reduced smoke and particulate output should be achieved. Good field sanitation also should be accomplished, since residues are burned right on the ground. Projected capacity of the incinerator is from two to five acres per hour. Such a unit, though, probably would be quite costly — perhaps from $15,000 to $25,000.

J. R. Hardison, U.S. Department of Agriculture plant pathologist stationed at OSU, is testing a wide variety of chemicals in hopes of finding some materials that will check the major diseases so effectively controlled by burning. He has found that soil applications of an experimental systemic fungicide will provide direct chemical control of ergot and blind-seed. The material would be expensive, however, and large dosages would be required.

In search of satisfactory herbicides and other methods of weed control — particularly in annual ryegrass — are W. O. Lee, U.S. Department of Agriculture agronomist stationed at OSU, Chilcote, and agronomist A. P. Appleby. The most promising herbicide found to date for controlling weeds in annual ryegrass at the time of establishment is a compound known as paraquat. However, this material is quite costly and also can be toxic to humans.

W. J. Bublitz, pulp and paper chemist, has learned that a pulp satisfactory for manufacture into certain grades of paper can be produced from annual ryegrass straw. Yield on a dry basis is about one-half ton of pulp per ton of straw — the same yield as obtained from wood. The paper is superior to that made from Douglas-fir pulp in folding, tensile, and bursting strength. More-

(Continued on Page 46)

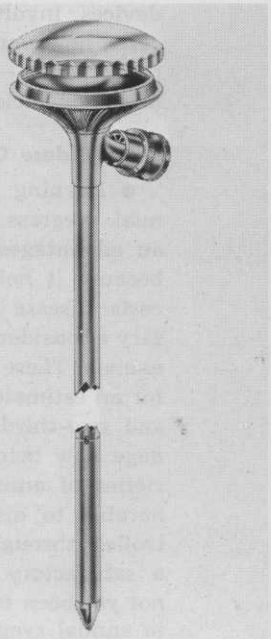


EASY MARKER, Fox Valley Marking Supplies, Bartlett, Ill.

Layout of shrubs and trees is quick and efficient. Easy Marker makes its highly visible mark on grass, soil, pavement and gravel. Lay out hedge lines effortlessly with Easy Marker's unique single-handed operation. Exact shrub and tree placement is a definite plus. Write instructions for the excavation of each hole, giving diameter and depth to be dug. For more details, circle (701) on the reply card.

PRUNING AND WOUND HEALER, Lethelin Products, Mt. Vernon, N.Y.

Lethelin Treatment No. 2 is an aerosol spray to replace hard-to-brush-on tar. It holds tree sap loss to a minimum to induce fast, sound healing. Can be used after treating borer-infected tree with Lethelin Borerkil by sealing in insecticidal vapors. For more details, circle (702) on reply card.



JET FEED ROOT FEEDER, Universal Metals Products, Inc., Coopersville, Mich.

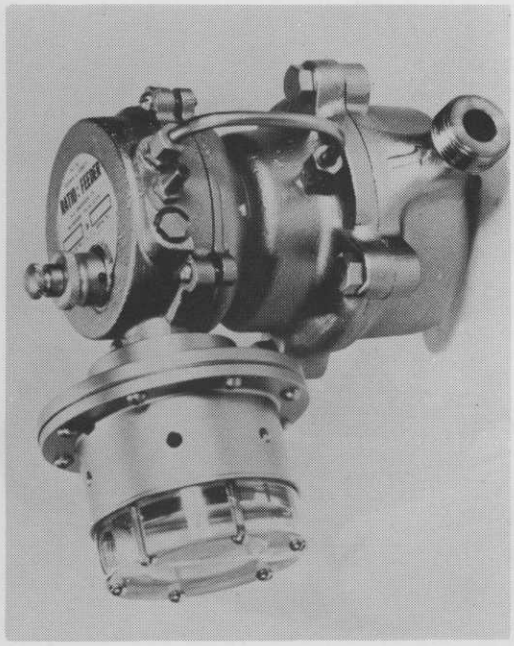
Equipped with a jet point, the rod is easily inserted into the ground with water pressure. Effective for watering trees, flowers and shrubs. Jet Feed fertilizer tablets available, both for acid-loving plants and for alkaline soil areas. For more details, circle (703) on the reply card.

CONWED TURF ESTABLISHMENT BLANKET, Conwed Corporation, St. Paul, Minn.

Erosion is checked during turf germination and establishment even on steep slopes and in loose soil. The bonded fiber mulch blanket with a rectangular plastic mesh netting laminated to one side. It's designed to be unrolled and stapled over prepared, seeded soil surfaces susceptible to erosion. This condition often precludes application of loose mulches. When saturated by rainfall, the bonded fibers are freed to form a thick mulch covering held in place by the strong rectangular plastic netting. Protects seeds from rapid moisture loss and temperature fluctuations. Available in 5x200-ft. (111 sq. yds.) rolls weighing about 15 pounds. For more details, circle (707) on the reply card.

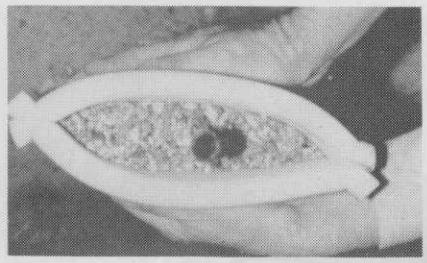
MULTI-PURPOSE EPOXY, Tescom Corporation, Minneapolis, Minn.

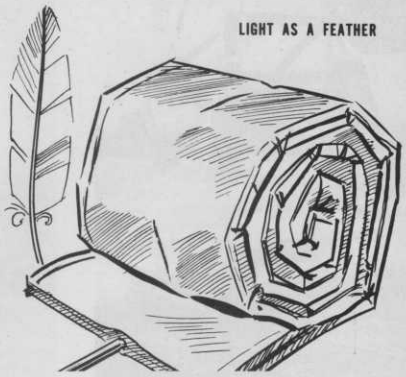
MINIT-CURE, is a multi-purpose epoxy that has a complete curing time of less than 60 seconds. Suitable for jobs requiring fast curing time at around 75-degrees. It can be used to bond metals, woods, plastics, rubber and glass. MINIT-CURE has a tensile strength of 2900 psi. For more details, circle (708) on the reply card.



FERTILIZER FEEDER FOR WATER LINES, H. E. Anderson Co., Muskogee, Okla.

Model DD Ratio: Feeder for automatic fertilizer injection into feed water lines has these advantages: completely water-operated; functions over wide range of water flows; operation begins on very low water flows, exactly proportions fertilizers to varying water flows regardless of water pressure (within equipment limits 10-125 psi); For more details, circle (704) on the reply card.



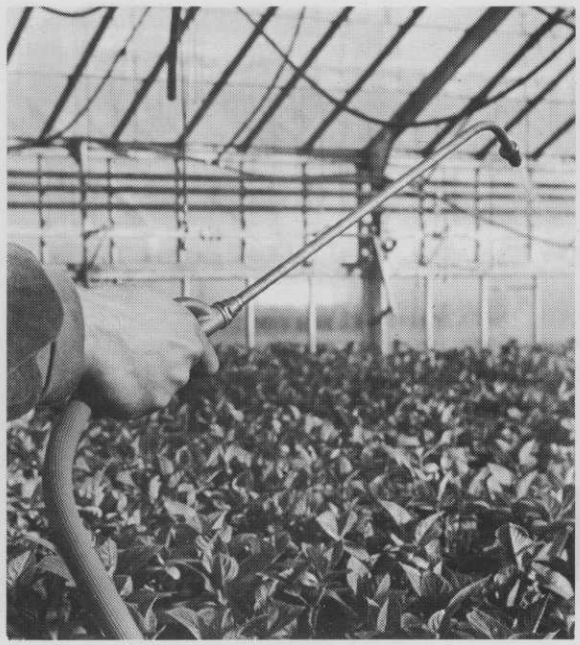


AQUADRAIN SYSTEM, Hydrophilic Industries, Ltd., Puyallup, Wash.

Aquadrain has been used by railroads and highways under fills as high as 40 ft. Suitable for golf course drainage or seepage problems. Aquadrain is a perforated plastic pipe surrounded by a filter material encased in a lightweight pervious filter envelope. For more details, circle (705) on the reply card.

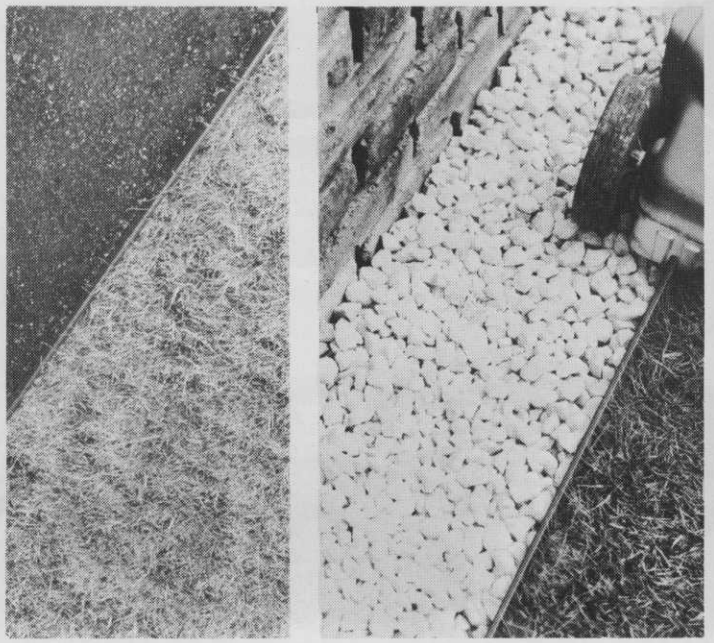
GOLF COURSE TOP DRESSING, Oil-Dri Corporation of America, Chicago.

Made of virgin montmorillonite, particle size — 1/20" to 1/50". Ph is 6.25. It's sterile, inorganic, non-toxic, and non-caustic. Reduces compaction. Increases drainage. For more details, circle (706) on the reply card.



PROTECT HANDS FROM SKIN IRRITANTS, Ayerst Laboratories, New York City.

Rashes and other allergic reactions are sometimes caused by skin contact with insecticides and herbicides. Barrier cream, KERODEX is used to prevent skin contact. Two types are available. KERODEX No. 71 protects against insecticides in aqueous solution (also helps protect against poison ivy, oak or sumac). KERODEX No. 51 is for dry oil work, such as oil sprays, pesticide powders, etc. For more details, circle (709) on the reply card.



STEEL LANDSCAPE EDGING, Joseph T. Ryerson & Son, Inc., Chicago.

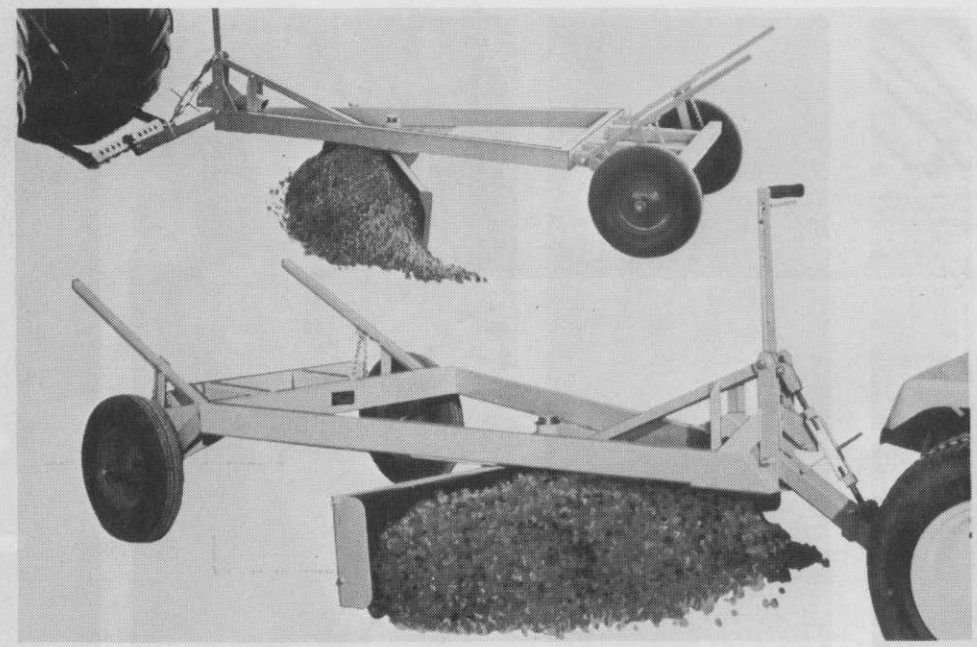
Ryerson steel landscape edging is made from crackproof, rotproof steel plate and finished with a thick coat of paint. It's designed to reduce grounds maintenance costs around driveways, athletic running tracks, parking areas, pathways, flower beds, and landscape bordering. Lawnmowers roll right over it. Comes in three weights—¼" thick by 5" deep; 3/16" by 4" deep; ⅛" by 4" deep. The ¼ and 3/16 inch units are available in 16-foot interlocking sections; ⅛" unit in 20-foot interlocking sections. For more details, circle (710) on the reply card.

MULTI-SPRAYER, Fargo Foundry Steel and Mfg. Co., Fargo, N.D.

Unit is designed for complete weed control. It mixes and applies invert emulsions for drift control, also applies conventional sprays. A jet-pipe disperser speeds up thickening of invert emulsions. Uses 500-gallon tank; features 16¾-foot boom with 10 nozzles. Can be regulated from operator's seat on trailer or from pick-up truck. Rear boom provides 50 feet of coverage, 25 on each side. For more details, circle (711) on the reply card.

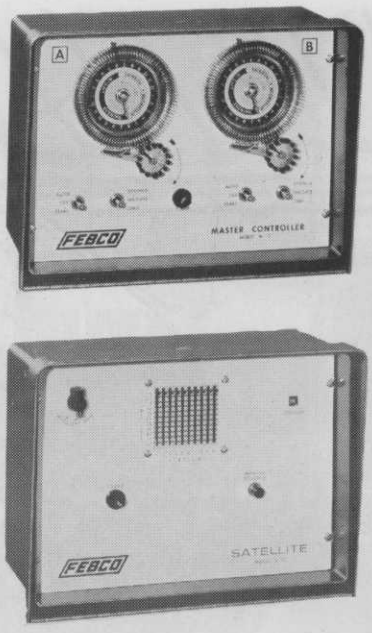
GREENSMASTER THREE, Toro Manufacturing Corp., Minneapolis, Minn.

This new triplex riding mower gives golf greens a ribbon cut faster, cleaner, more efficiently than other mowers. Cuts 58-inch swath. Capable of cutting the average 18-hole golf course in three to four hours. Mows at speeds of 1½ to 3½ mph; and in transport, 3½ to 8 mph. Turns 50-60% tighter than competitive units, says Toro, and has height-of-cut change from ⅛-inch to 15/16-inch. In tightest turn, unit leaves uncut circle of 30 inches in diameter. For more details, circle (712) on the reply card.



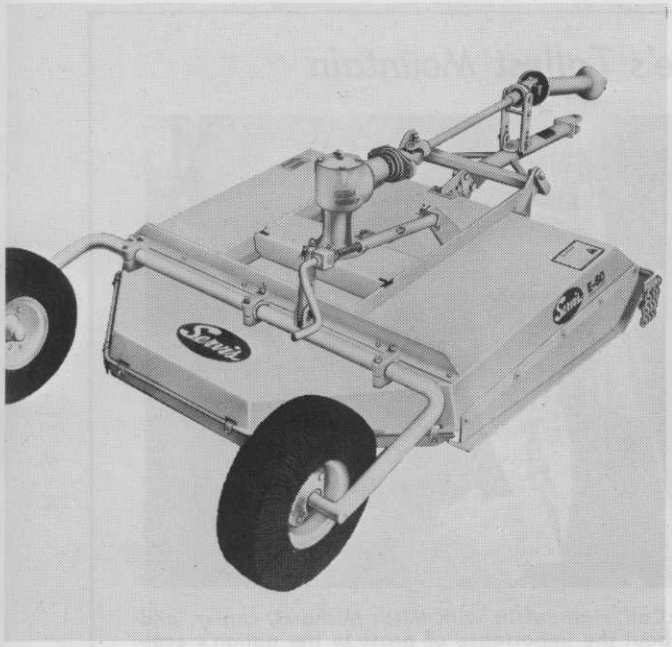
MINI LAND LEVELER, Full Vision, Inc., Newton, Kan.

The unit is designed for compact tractors. With minor adjustments, the blade converts from leveler to grader. For leveling, the Mini Land Leveler blade is set straight with end plates attached. Adjustable in ¼" increments, the blade removes dirt from high areas and carries it to lower areas. Patented independent wheel suspensions and frame construction carry the blade at a constant depth for full floating action rather than dragging it across the contour of the ground. For grading, pivot-point and pin-lock construction let you adjust the blade angle to 30 and 45 degrees. For more details, circle (715) on the reply card.



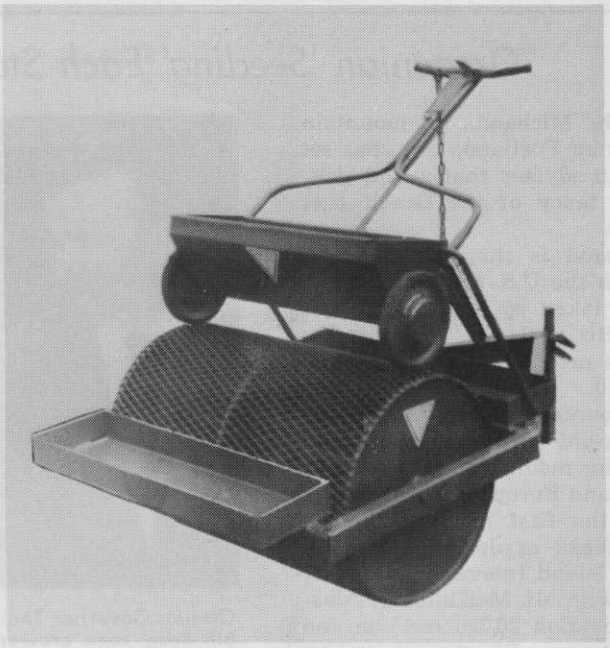
MASTER CONTROL WATERING SYSTEM, Febco, Inc., Sun Valley, Calif.

M-2 Master Controller capable of operating 25 satellite controllers. Each Satellite Controller operates 10 stations. System ideal for large area turf irrigation. Master controller automatically or manually starts schedules at any 15-minute interval on 14-day program. Equipped with rain switch override. For more details, circle (716) on the reply card.



TRAILING AXLE INDUSTRIAL MOWER, Servis Equipment Co., Dallas, Tex.

The trailing axle model has been added to the Servis line of E-60 rotary clippers. The E-60 line of five-foot mowers also includes lift-type and center axle, pull-type models. The trailing axle type is ideal for mowing close to obstructions. Dual wheels trail within the 60-inch cutting swath. Designed for work behind single axle wheel-type tractors with draw bar ratings from 20 hp to 40 hp. Optional features include front chain guards, drive line safety shield, and puncture proof sectional tires. For details, circle (713) on the reply card.



LAND SEEDER, Philsco Products Co., Larned, Kan.

The Philsco Land Seeder is for contractors, nurserymen and homeowners. Designed for all garden-type and three-point hitch tractors. Features large diameter roller for more even seeding and better clod-breaking with less clogging. Diamond-shaped grid on the roller surface pulverizes and packs as it lays a pattern of impressions in the soil for the seed to enter. The impressions help decrease erosion on the seed bed. For more details, circle (714) on the reply card.

TRAILER TYPE HYDRO-MULCHER, Bowie Industries, Bowie, Tex.

This action view at a forest service nursery shows the new Bowie Victor Model 500-gallon, trailer-type Hydro-Mulcher with large flotation tires and baffle for controlled mulching of 54" beds. This model mixes and applies wood-cellulose fiber with seeds or sprigs and fertilizers all at one time. Application with baffle gives closer control and uniformity. Drawbar hitch permits tractor mobility. Also available in 1,000-gallon model, with or without baffle and set of nozzles. Bowie Hydro-Mulchers speed germination and growth and protect new turf against erosion, birds, and moisture loss. For more details, circle (717) on the reply card.

SAW CHAIN MAINTENANCE MANUAL, Sabre Saw Chain, Inc., Lewiston, N.Y.

Manual is available free of charge. It describes and illustrates correct methods of filing, lubricating, adjusting tension and repairing saw chain, as well as the care of guide bars and sprockets. A four-page chair check chart illustrates types of unnecessary wear and damage to saw chain and how they can be avoided. For details, circle (718) on the reply card.

Oregonian 'Seeding' Each State's Tallest Mountain

Mitch Michaud, a mountain man from Portland, Ore., has set upon an odyssey that would tickle the fancy of the Greek poet Homer.

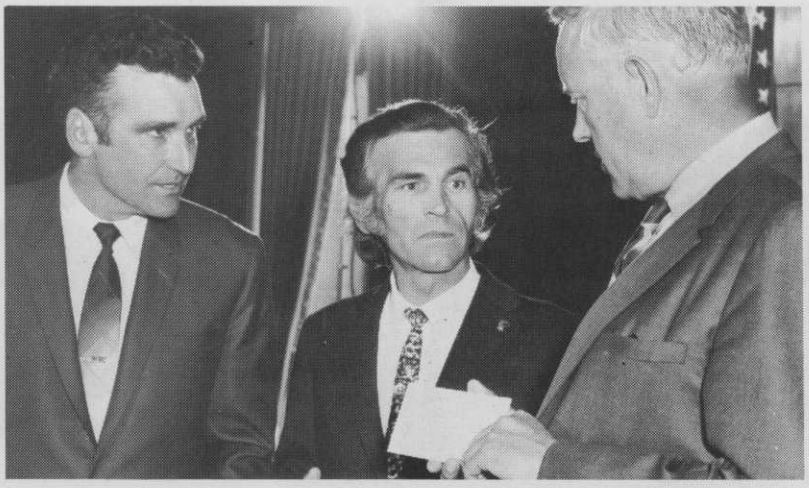
Michaud is shaping a voyage through the U.S. on a trail never before taken by man in a single year. His goal . . . to climb the highest peak in every state during 1970.

A mountain guide by trade, the 40-year-old Michaud has climbed the taller mountains of the United States and Europe and now hopes to be the first man to conquer such peaks as Jerimoth Hill in Rhode Island (elevation 812 feet) along with Mt. McKinley in Alaska (elevation 20,320 feet) in one calendar year. Why?

Michaud explains the high mountains are the last of the pioneer areas where a challenge still exists for man to use his best judgment and knowledge of nature to succeed. It is exhilarating to reach the summit of the high peaks, he explained, where fresh air, bright sunshine and a clean environment abounds.

To assure the maintenance of the mountain ecology, Michaud plans to plant a handful of Oregon grown grass seed along the mountainside. It's a small gesture, Michaud admits, but it is emblematic of the value of grass in our environment. He will also pass out small packets of Oregon grass seed to wellwishers along the route. The packages explain the story of Oregon grass seed by pointedly stating Oregon is the Grass Seed Capital of the World with more than 405 square miles of grass seed production.

Michaud has already acquired the nickname, "Johnny Grass Seed," since the Oregon Seed Council provided him with several thousand packages of seed to distribute along his route.



Oregon Governor Tom McCall, right, visits with Mitch Michaud, center, and Bill Rose, seed grower, about the importance of grass to the nation's ecology. Michaud will distribute the grass seed across the nation during his endeavor to climb the highest peak in each state during 1970.

Armed with a letter from Oregon's Governor Tom McCall, who has named Michaud official goodwill ambassador for the state, the mountain climber will make personal calls on the governor of each state, where he will offer them suitable varieties of Oregon's famous grass seed for use in any of their state parks.

Some of the "peaks" he will climb aren't really mountains at all. The highest point in Florida is a 345-foot hump in the highway. In Ohio, the 1,550-foot summit is located on a spot housing a radar station and Michaud must have security clearance for the climb. Scaling the highest point in Illinois will cost Michaud one dollar since the site is located on a farmer's land who charges hikers to enter his property. Michaud was to begin his trek Apr. 6, scaling Moana Kea in Hawaii for the longest climb on his itinerary. The 13,796-foot mountain begins at the ocean's edge. His remaining announced schedule follows:

May 10	Idaho, Mt. Borah 12,662
May 16	California, Mt. Whitney 14,495
May 23	Washington, Mt. Rainier 14,410
June 1	Alaska, Mt. McKinley 20,320
July 4	New Mexico, Wheeler Park 13,160
July 11	Colorado, Mt. Elbert 14,431
July 25	Wyoming, Garnet Peak 13,785
Aug. 1	Montana, Granite Peak 12,799
Aug. 8	New Jersey, High Point 1,803
Aug. 12	Connecticut, Mt. Frissell 2,380
Aug. 15	Massachusetts, Mt. Greylock 3,491
Aug. 17	Rhode Island, Jerimoth Hill 812
Aug. 22	Maine, Mt. Katahdin 5,268
Aug. 26	New Hampshire, Mt. Washington 6,288
Aug. 30	Vermont, Mt. Mansfield 4,393
Sept. 2	New York, Mt. Marcy 5,344

Field Burning . . .

(Continued from Page 41)

over, straw residues are best adapted to the soda pulping process which is virtually odorless. The paper is quite low in tear strength, however.

Agricultural chemist V. H. Freed and other workers at the OSU Environmental Health Sciences Center have found that various industrial raw materials can be extracted from straw residues. Among them are lignin, pentosans, waxes, and in particular, cellulose, which can be used to make a wide range of acetate plastics. Straw also can be used to make such products as a high density construction board and an organic soil amendment.

A new process developed by microbiologist D. A. Klein and his associates could solve many of the problems involved in both utilization and disposal of straw residues. For it makes possible rapid and controlled microbial breakdown of straw, as well as other lignin-containing materials. The process, called photofermentation, essentially consists of exposing the straw first to intense light energy, then to selected types of fungi or bacteria.

Perhaps the most promising potential use of straw residues found to date is as a feed for livestock. In feeding tests conducted by animal scientist A. T. Ralston with replacement heifer calves, ryegrass pellets supplemented with molasses, urea, and barley have produced average daily gains of 1.74 pounds at a cost of 13.3 cents per pound. And pellets containing equal amounts of wheat chaff and alfalfa also have produced average daily gains of 1.74 pounds on steer calves.

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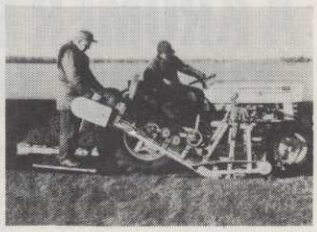

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THATCH *What a Maryland Agronomist Recommends*

For several hundred years, thatch has been used successfully to offer shelter for man and animals. If thatch can protect life from the elements such as rain or snow, heat or cold, it must be considered an insulator or sealant. Therefore, suggests A. J. Powell, University of Maryland agronomist, is there any doubt that the accumulation of thatch on turf may also protect the soil from these elements?

When used as human shelter, thatch is generally composed of reeds, rushes, or grasses (especially straws) that are combed or oriented so the long blades lie parallel for a very close fit.

Many lawn maintenance operations tend to give the same effect, said Powell, to the tightly intermingled layer of partially decomposed or undecomposed leaves, stems and roots which accumulate beneath the actively growing grass.

Mowing continuously in the same directional pattern, heavy irrigation and fertilization, use of vigorous species, failure to remove clippings, and delayed mowing are practices that most often causes rapid build-up of the organic layer at the soil surface.

In effect, Powell said, thatch decreases the aggressiveness of turfgrasses by restricting the movement of water, air and fertilizers into the soil. Irrigation water and light or rapid rainfall can be completely repelled by this organic layer.

If thatch prevents water from reaching the soil surface, Powell explained, rooting depths will be shallow and a drought-susceptible condition will exist.

Also sheltered by the thatch are many turfgrass disease organisms and insects. Control is then made very difficult because of the high pest incidence and inability to get the pesticide to the organism causing the problem.

Thatch is much easier to prevent than eradicate. Thatch seldom becomes a problem in less than four years after lawn establishment; and with low or medium maintenance, thatch may never accumulate.

To approach the thatch problem, Powell recommended, decide which type of program is needed: (a) preventive control to avoid excessive build-up or (b) curative control for an existing thatch problem. Generally if the thatch layer is over ½ inch thick, the curative control is necessary.

From the preventive maintenance approach, Powell advised moderate fertilization, periodic mechanical thatching and clipping removal should be considered. Also the soil pH should be maintained between 6.5 and 7.0 to help create an environment that is favorable for microorganisms which help decompose the organic material.

For curative control, remove as much thatch as possible and as often as possible without perma-

meeting dates

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Dates for this column need to reach the editor's desk by the first of the month preceding the date of publication.

Annual Southern California Turfgrass Institute, main theater at California State Polytechnic College, Pomona, May 19-20.

Ohio Forestry Association Paul Bunyan Show at the Ohio State Fairgrounds at Columbus, May 22-24.

Outdoor Living Review, Ohio State University, Don Scott Airport Grounds, June 5 and 6.

22nd Annual Nurserymen's Refresher Course, sponsoerd by the California Association of Nurserymen at Cal Poly, San Luis Obispo, June 9-11.

Purdue-Michigan State Weed Day at Agronomy Farm, Lafayette, Ind., June 18.

Penn State Field Day, formally dedicating the Joseph Valentine Turfgrass Research Center, June 24 and 25.

Ohio Chapter, International Shade Tree Conference, at the USDA Shade Tree and Ornamental Plants Laboratory at Delaware, Ohio, July 8.

Hyacinth Control Society at the Sheraton Motor Inn, Huntsville, Ala., July 12-15.

American Sod Producers Association 4th annual conference and field day, Ramada Dorchester Inn, Dolton, Ill., and the H & E Sod Farm, Momence. Ill., July 28-30.

nently damaging the desirable grasses. It should be removed only during periods of rapid growth, e.g. for bluegrass and fescues—spring or early fall; for bermudas or zoysias—late spring or summer. When thatching is not too severe, the desirable grasses will immediately cover over the scarred areas and prevent weed invasion.

Although hand-raking is often tried and may help prevent thatch formation, Powell said, it seldom is vigorous enough to remove the 80 bushels or so of thatch that may exist on a lawn. Machines for mechanically removing thatch basically consist of a reel having blades, knives, or tines which revolve in a plane that is vertical to the ground. They vary in size, power, depth of penetration and width between blades on tines. Thus, the amount of thatch removed and the damage to desirable grasses are variable.

Toro Expanding Again

Toro Manufacturing Corporation, Bloomington, Minn., is expanding its headquarters office space by two-thirds. Groundbreaking began in February and completion is expected by early July. The expansion is the second in less than a year. Work on the Toro plant in Windom, Minn., has just been completed, virtually doubling manufacturing and office facilities there.

Cattle Thrive on Hyacinth and Hydrilla in Florida Test

"Everyone laughed at the idea of harvesting waterweeds, grinding them up, and using them for cattle feed," says a University of Florida animal scientist. "But after a year of feeding tests, even the cattle seem to think it's a good idea."

Unusual though it may be, this method of getting rid of waterweeds is one of the more promising solutions to a problem that now involves almost every state, federal, and local agency in Florida.

By finding just one high volume use, such as cattle feed, for the hard-to-control vegetation, the cost of mechanical harvesting would become economically practical, explains Dr. James Hentges with the university's Institute of Food and Agricultural Sciences.

Only the most troublesome waterweeds—the hyacinth and the hydrilla, or "Florida elodea"—have been fed to cattle so far. Other pesky but nutritious aquatic weeds may eventually end up in animal feed, also. Another phase of the study will determine if the weeds can be fed to poultry and hogs, he said.

Hungry cattle had been known to eat aquatic weeds right out of the water when land forages are not available. But tests indicate they'll gobble up the vegetation faster if it's processed and mixed with other dietary ingredients such as molasses and cereal grains.

Of the two aquatic forages offered to the cattle, those containing ground up, dehydrated hydrilla were much more popular. They ate less processed water hyacinths because the fibrous material in these plants is bulky. It moved through their digestive systems more slowly, thereby limiting their intake capacity or appetite.

Acceptance of both aquatic forages was measured in terms of the amount consumed and weight gained. A nutritionally balanced feed composed of 75% hydrilla was consumed at rates comparable to feeds containing the same ratio of land forage. On the other hand, feeds containing more than 25% water hyacinths were not consumed fast enough to produce the desired weight gains.

Some waterweeds were more nutritious than others, and this was attributed to the low fertility or nutrient content of the Orland and Lakeland fresh water sites from which the weeds were harvested. The project's animal nutritionist, Dr. Ray Shirley, believes higher weight gains can be achieved as the quality and processing of aquatic forages is improved.

Before cattle can actually begin nibbling away on the waterweed problem, some economical way of dewatering the aquatic vegetation must be found. For every ton of dry matter, some 20 tons of hyacinths must be processed. Deciding which process will do the job economically without removing vital nutrients at the same time is being studied by Dr. Larry Bagnall, assistant agricultural engineer for IFAS.

Ultimate success of the animal feeding project will also depend on the development of an inexpensive way to harvest both the floating and submerged waterweeds, he said.

Ansul Introduces Phyban HC For Railroad, Industrial Weeds

A new high concentrate weed control agent for the control of vegetation along railroad rights-of-way and industrial sites is being introduced by The Ansul Company, Marinette, Wis.

Phyban H. C., designed for general post-emergent weed control, is a combination of MSMA (monosodium acid methanearsonate) and a surfactant. It is effective on both broadleaf weeds and grasses.

In additon to controlling weeds along rights-of-way, Phyban H. C. is recommended for use along highways, utility and pipe lines, sidewalks, driveways and parkways, storage areas, and around power plants and buildings. The product has been tested and found effective in controlling such weeds as puncture vine, wild mustard, wild oats, chickweed, sandbur, ragweed, pigweed, barnyardgrass, giant foxtail and yellow foxtail. It also effects top-kill on perennials such as Johnsongrass, Dallisgrass and nutsedge.

The product is designed for application through regular spraying-equipment. For more details, circle (721) on the reply card.

Liquid Fertilizers Booklet

Know all you want to about water soluble fertilizers? If not, Boyle-Midway, manufacturer of Heller-gro offers a free booklet that takes up many of the questions asked by growers, arborists and nurserymen. The booklet covers mixing, dilution, compatibility with insecticides and fungicides, turf-feeding, tree propagation and nourishment, foliar techniques, and use in the greenhouse. For more information, circle (722) on the reply card.

Record Sales by Davey Tree For Sixth Straight Year

Record levels in sales and net income for the sixth consecutive year were reported by Davey Tree Company in its 1969 annual report.

Sales of tree care, landscape planting and line clearing services increased 16% to $20,800,000, compared with 1968 sales of $17,806,000. Davey's wholly-owned Canadian subsidiary experienced sales of $667,000, a 6% increase over 1968. The companies showed a corresponding gain in profits.

Davey Tree Surgery Company, a wholly owned California subsidiary formed in June, 1969, showed good results for its first seven months of operation. Comparisons with prior periods are not available. Addition of the California subsidiary now provides Davey services from coast to coast, as well as Canada.

Davey president Alexander M. Smith reported that the company continued its capital expansion largely in equipment, and properties in the order of $1.5 million. Largest property acquisitions were California properties for future expansion of Davey Tree Surgery operations, and a new operations and service center in Charlotte, N.C.

Officers were re-elected at the annual meeting. Shareholders paid tribute to Paul G. Hershey for his years of service as an employee and president of the company upon his retirement as a director. John H. Carson, Jr., was elected a director.

Eugene W. Haupt was elected a new director of Davey Tree Surgery.

Roll out the barrel for this grass-catching mower, manufactured by Roto-Hoe Company, Newbury, Ohio. This Turf-Star Model Islander with Easy-Way Grass Catcher has a dual discharge safety deck that discharges one-half the clippings on the uncut side of the lawn, the other half into the barrel. Unit can be set to pick up all the grass or leaves. For more details, circle (719) on the reply card.

insect report

TURF INSECTS

RED HARVESTER ANT

(Pogonomyrmex barbatus)

OKLAHOMA: Active in several areas of Payne County.

A CYDNID BUG

(Sehirus cinctus)

CALIFORNIA: Adults heavy in grass areas at Crescent City, Del Norte County.

INSECTS OF ORNAMENTALS

AZALEA LACE BUG

(Stephanitis pyrioides)

FLORIDA: Nymphs and adults moderate on 90% of 8,000 azalea plants in nursery at Plant City, Hillsborough County.

SOFT SCALES

(Ceroplastes spp.)

ALABAMA: *C. floridensis* (Florida wax scale) crawlers emerging and heavy throughout 60-acre magnolia planting in Conecuh County. Controls in progress. VIRGINIA: *Ceroplastes* sp. heavy on individual plants of holy and euonymus at several locations at Franklin, Southhampton County.

WEEVILS

(Brachyrhinus spp.)

OREGON: Late instars of *B. ovatus* (strawberry root weevil) ranged up to 15 per plant on roots of arborvitae in field nursery at Gresham. *B. rugosostriatus* larvae ranged up to 10 per plant on yew in several Multnomah County field nurseries.

TREE INSECTS

ELM LEAF BEETLE

(Pyrrhalta luteola)

SOUTH DAKOTA: Larvae collected at Yankton. This is a new state record.

AN ERIOPHYID MITE

(Trisetacus alborum)

CALIFORNIA: Collected on sugar pine at Cobb, Lake County. Feeding induces lateral growths with multiple buds bearing primary needles. Not previously reported on sugar pine.

NANTUCKET PINE TIP MOTH

(Rhyacionia frustrana)

OKLAHOMA: Small larvae present in about 10 percent of terminals of young pine trees in McCurtain, Le Flore, and Bryan counties.

A SCOLYTID

(Poecilips rhizophorae)

FLORIDA: Adults collected from newly germinated mangrove seeds at Longboat Key, Manatee County. This is a rare species; no previous report of damage.

Dow Cites 2,4,5-T Impurity As Cause of Birth Defects

EDITOR'S NOTE: As the magazine went to press, the federal departments of agriculture, interior and health jointly announced the immediate suspension of certain uses of 2,4,5-T. The suspension affects the registration of liquid formulations of 2,4,5-T for use around the home and for registered uses on lakes, ponds and ditchbanks.

These actions do n o t eliminate registered uses of 2,4,5-T for control of weeds and brush on range and pasture, forests, rights-of-way, and other non-agricultural lands.

Users are cautioned that 2,4,5-T should not be used near homes or recreational areas.

The action was based on reports that nearly pure, 2,4,5-T caused birth defects when injected at high doses into pregnant mice, but not in rats. No data on humans are available.

In closely related action, Ohio Gov. James Rhodes halted use of 2,4,5-T, 2,4-D and silvex by the state highway department along highways until further tests of the chemicals could be made.

Both 2,4-D and 2,4,5-T had been used for some 20 years.

Scientists of The Dow Chemical Company have presented detailed evidence showing that a contaminant rather than the compound 2,4,5-T was probably the cause of birth abnormalities reported in test animals in a recent study.

2,4,5-T has been under fire since October of last year when it was announced that a study conducted by Bionetics Laboratories, Inc., under contract to the National Cancer Institute, indicated higher than normal rates of birth defects in test animals treated with massive doses of 2,4,5-T. Examination of data from the Bionetics test suggested to scientists at Dow that rather than 2,4,5-T, the real culprit might have been a toxic contaminant that has from time to time been a problem in the manufacture of the material.

The Bionetics sample material was analyzed and found to contain about 27 parts per million of the contaminant, 2,3,7,8-tetrachlorodibenzo-p-dioxin. Production standards for the herbicide as produced by Dow require that 2,4,5-T contain less than one part per million of the dioxin. Dow established this specification in 1965 to assure safety in the production of the material.

In papers presented recently at the meeting of the Society of Toxicology in Atlanta, V. K. Rowe and Dr. J. L. Emerson cited detailed studies just completed that indicate no fetal abnormalities are produced by the herbicide when the Dow standard for dioxin content is met. The animal studies involved the feeding of rats with 2,4,5-T containing less than one PPM of the dioxin contaminant at levels comparable to those used in the earlier studies.

Results indicated very clearly that the herbicide containing less than one part per million of the dioxin had no effect on either mothers or fetuses.

In addition, another group of test animals was given the dioxin alone at levels comparable to those in the impure sample used in the Bionetics work. Results in the test with the pure dioxin indicated a high level of maternal and fetal toxicity of the material. Abnormalities observed in these test were similar to those reported by Bionetics Laboratories.

classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: "Position Wanted" 10¢ per word, minimum $3.00. All other classifications 20¢ per word, minimum $4.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment. Boldface rule box: $25.00 per column inch.

USED EQUIPMENT

FOR SALE—John Bean Model R-7 sprayer with Briggs and Stratton motor. This unit is in almost new condition with few operating hours. Complete with 250 gallon tank. Entire assembly is trailer mounted. Address all inquiries to Arrowhead Electric Cooperative, P.O. Box 38, Lutsen, Minnesota 55612.

CHIPPERS — Power wagon 55 Asplundh, $950.00; 59 Asplundh, $1,450.00; 63 Dodge 1 ton 4-wheel-drive $1,950.00. Ideal for vermeer tree spade. Edwards Tree Service, 176 Curtis Dr., Avon Lake, Ohio 44012. Phone 933-6750.

SPRAYERS, chippers, log splitters and other equipment at large savings. Let us know your needs. Equipment Sales Company, 4744 Sunrise Highway, Massapequa Park, N. Y. 11762.

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SOD QUALITY Merion Seed for discriminating growers. Also Fylking, Delta Park, Newport and Prato bluegrasses as well as fine fescues. We will custom mix to your specifications. Michigan State Seed Company, Grand Ledge, Michigan 48837.

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FOR SALE

AUSTRALIAN BUSINESS — Agricultural Chemicals — Custom Applicators. This firm specializes in

trimmings

ONE BY ONE, the nation's historical trees are falling to Dutch Elm disease. The latest report is from Portland, Me., telling of the demise of the ancient elm that graced the backyard of the home of young Henry Wadsworth Longfellow. The elm was supposedly planted by the poet's grandfather, General Peleg Wadsworth, shortly after the three-story brick house was built in 1786.

* * *

JIM BUNNING of baseball fame claims artificial turf is going to shorten the careers of players. Bunning was quoted by Associated Press as having complained to Commissioner Bowie Kuhn through the Baseball Players Association. The AP article also quoted Don Segar, trainer of the Phillies, as reporting that players suffered sore calves of their legs and in the achilles' tendon area after playing in the Houston Astrodome.

* * *

ARBOR DAY in California commemorated the 200th anniversary of the founding of the state's first settlement and mission, San Diego. To observe the event, the California Association of Nurserymen staged tree-planting ceremonies at each of the 21 California missions.

MODESTO HIGH SCHOOL, Modesto, Calif., needed a used greenhouse for its ornamental horticulture program. Dr. Roy A. Ottoboni, assistant principal of Grace M. Davis High School, contacted the California Association of Nurserymen. A notice went out via newsletter. A nursery at Cupertine responded, offering a 16x60-ft. greenhouse that needed to be moved. So school personnel disassembled the greenhouse and moved it to Modesto during the Christmas holidays.

* * *

THE ST. LOUIS ARCH has shown up in the backbone of area nurserymen. They're seething at park officials of the Jefferson National Expansion Memorial for choosing trees unsuited to the St. Louis environment. Lew Dinsmore of Dinsmore Tree Service said that the tulip trees, 50% of the total proposed, are subject to sunscald, drought and storm breakage. Ben Houlihan, president of the Western Association of Nurserymen, added that the trees would drop leaves all summer, creating a groundskeeping problem. John Masek, president of the St. Louis Metropolitan Shade Tree Council, said that although he sees little chance for a change, he would be surprised if more than five association members would submit bids. "Most don't want to touch a tree project with a 30-50% mortality rate," he said.

Agricultural and Industrial Weed Control. It is firmly established in three eastern States and there is potential for expansion to the remaining States and New Zealand. Opportunities in allied fields are excellent. An ideal proposition for a chemical or pest control company seeking a comprehensive introduction to the Australian Market. Any reasonable proposition will be confidentially considered by the Founder-Manager who is anxious to ensure the future of this unique organization before retiring. Address all inquiries to: "Chemicals," P.O. Box 767 G, G.P.O. Melbourne, 3001, Vic., Australia.

125 ACRES all work land, house, barn, etc. and 17 acres of sod, $50,000.00, on contract. 7 gang Rosemann mowers, Ryan sod cutter with automatic cutoff and roll Ryder attachment, $1400. 40 horsepower turbine pump and controls. Phone Fall River, Wisconsin 414 484-3941.

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EXPERIENCED and aggressive sales agents wanted in the fastest growing industry to sell a complete line of lawn sprinkler equipment. Pop-up heads and nozzles, solenoid valves, rotary pop-up heads, impulse sprinklers, controllers, brass fittings and shrub adapters. Prefer reps who can sell to plumbing and hardware distributors and wholesalers. Territories open. Turf Irrigation Corp., 73 Mall Drive, Commack, New York 11725.

"A portable electric power tool to give your lawn that clean-shaven look."

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WANT TO BUY BUSINESSES — engaged in landscape construction, grassing, nursery, landscape maintenance, tree service, horticultural spraying, and related fields. Major New York Stock Exchange Company wishes to acquire successful businesses with top flight management. Reply to: Mr. E. Berthe, President, Cut N' Care, Inc., 2615 De Leon Street, Tampa, Florida 33609. A subsidiary of Consolidated Foods Corporation, Oxford Building Services Division.

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