WEEDS TREES and TURF

FEBRUARY, 1968

Sod Production Issue

Sod Harvesting Costs

Quality Seed

Project Trees

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

when your season rolls around...

be ready to roll with a NUnes sod harvester

NU nes Slab Sod Harvester . . .

lifts, cuts, and conveys slabbed sod to loading platform. Handlers can load directly on to pallet as tractor moves.

PATENT APPLIED FOR

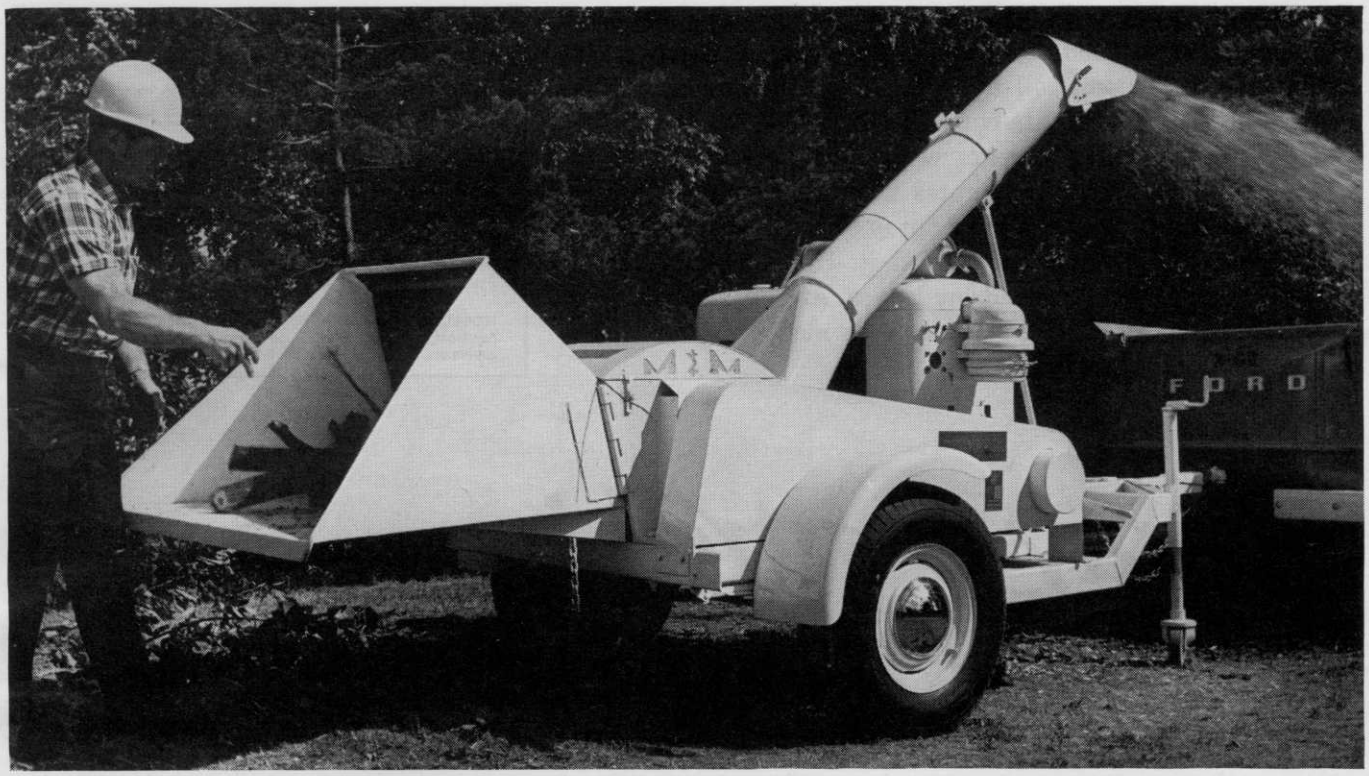
- With a NUnes Sod Harvester and three men you can lift, cut, roll and palletize up to 1200 square yards of sod per hour.
- The harvester, developed at Cal-Turf Farms in California, is designed to handle any length of rolled or slabbed sod.
- Field grading of sod is done by the tractor operator, who has clear visibility at all times.
- Hydraulic controls permit quick and easy adjustment for all conditions.
- The sod harvester travels alongside, never on the turf, during harvesting and can pick up and roll sod at any time your tractor can operate in your field.
- Sod can be cut with any type of sod cutter. The long ribbons can then be lifted and cut to any desired length from 24" to 90", size depending on thickness of sod.
- Loaded pallets can be spotted for later field removal and be clear of the next harvest run. If direct truck loading is desired, a conveyor extension is available.
- The basic power train is a Ford LLG-2110 wheel tractor. The sod harvester can travel at speeds up to 17 MPH for quick transportation between plots.
- The efficiency of this all-mechanical operation has been proven on Cal-Turf Farms in Patterson, California, and it can solve the problem of quick and economical harvesting of sod for all turf farmers.

For more information please contact:

THE JOHN NUNES MECHANICAL HARVESTING CO.

2006 Loquot Avenue, Patterson, California 95363, Phone (209) 892-6311

NU nes SOD HARVESTER



The Mitts & Merrill Brush Chipper . . . most efficient way to reduce branches, limbs, brush

These exclusive features:

- Staggered knife pattern . . . means more cuts per revolution, smoother cutting action, smaller chips of uniform size (reusable as mulch)
- Swing-away chute . . . permits quick and easy access to cutting chamber
- Reversible knives . . . give you twice the service between sharpenings; also self-adjusting with positive lock pin to prevent throw-out
- Heavy duty construction . . . coil spring, torsion type suspension; all tubular steel trailer frame
- Torque converter . . . available on all models

The Mitts & Merrill Brush Chipper makes the job of tree removal faster, easier and safer. Every feature . . . from the easy-to-load feed chute to the adjustable discharge chute . . . is ruggedly built and simply engineered for peak operating efficiency and minimum maintenance. Choose the chipper that's first-choice of municipalities, public works, highway departments, tree and nursery men. For complete information and list of specifications, contact the dealer nearest you or write us direct.

more and more from

mitts & merrill

There's a Mitts & Merrill Brush Chipper dealer near you — ready to serve.

ARKANSAS, Little Rock
Moody Equipment & Supply Company

CALIFORNIA, Los Angeles
SABCO

CALIFORNIA, Sacramento
Action Equipment Company

COLORADO, Commerce City
Macdonald Equipment Company

CONNECTICUT, Stamford
Muench Company, Inc.

ILLINOIS, Rosemont
Illinois FWD Truck & Equipment Company

ILLINOIS, Springfield
Drake-Scruggs Equipment, Inc.

KENTUCKY, Danville
Central Supply & Equipment Company, Inc.

LOUISIANA, Baton Rouge
General Equipment, Inc.

MASSACHUSETTS, Needham Heights
E. J. Bleiler Equipment Co., Inc.

MICHIGAN, Detroit
Contractors Machinery Company

MICHIGAN, Franklin
Cannon Engineering and Equipment Co.

MINNESOTA, Minneapolis
Road Machinery and Supplies of Minneapolis, Inc.

NEBRASKA, Omaha
Omaha Body & Equipment Company

NEW JERSEY, Lodi
Dianem Company

NEW YORK, Albany
R. B. Wing & Son Corporation

NEW YORK, Syracuse
State Equipment Company, Inc.

NORTH CAROLINA, Charlotte
Baker Equipment Engineering Company

OHIO, Columbus
Toombs Truck & Equipment, Co.

OREGON, Portland
Cal-Ore Machinery Co.

TENNESSEE, Memphis
Utilities Equipment Company, Inc.

UTAH, Salt Lake City
Truck Equipment Sales Company

VERMONT, Barre
Reynolds & Son, Inc.

VIRGINIA, Richmond
Baker Equipment Engineering Company

WASHINGTON, Seattle
Sahlberg Equipment, Inc.

WISCONSIN, Brookfield
Utility Equipment Company

CANADA, Cooksville, Ontario
A. E. Joslin Machinery & Equipment Limited

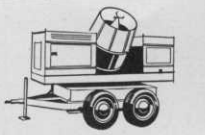
Winnipeg, Manitoba
Howard F. Powell (1963) Limited

Montreal, Quebec
Aird Equipment Limited

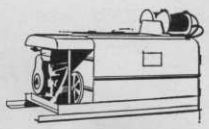
or contact Mitts & Merrill, Inc., 109 McCoskry St. Dept. WT-63, Saginaw, Michigan 48601

or East Coast Office, Mitts & Merrill, Inc. Tallman Center Building, Tallman, New York 10987

This Rotomist® sprayer has the greatest "rate-of-work" capacity ever developed for shade tree work. It is a design that provides a *controlled air pattern*, all the way to the top of the tallest trees. This means adequate coverage, as well as more efficient use of your chemicals. It means versatility, because the Rotomist pivots 110° vertically, rotates through 360° horizontally. Which means you can put your spray material—either dilute or concentrate—anywhere you want it. Up in trees. Over an embankment. Down, to windrow leaves. And, of course, John Bean makes many Rotomist models to match your requirements. They all mean business.

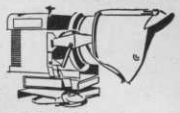


ROTOMIST available in a wide range of capacities.



ROYALIER SKIDMOUNTED delivers 20 gpm at 400 psi

MODEL 1010 TURFKEEPER has flotation tires for golf course use.



ROTOCAST broadcast air sprayer effectively handles all weed-killing programs.

Spray control is straight-through air

fmc CORPORATION

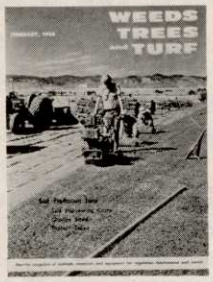
POWER SPRAYING EQUIPMENT

JOHN BEAN

DIVISION

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

The Cover



Green Valley Turf Co., Littleton, Colo., is situated in a beautiful setting with the Rocky Mountains in the background. See their story in WTT's Sod Industry Section.

—— WTT Mailbox ——

Our Thanks

Congratulations on an excellent 1968 "Suppliers Guide" issue! We especially appreciate your listing *all* the Diamond Shamrock proprietary products under their correct category headings. By listing all the products in your Suppliers Guide section, you do the reader a distinct service by giving him all the information and allowing him to make his own decisions as to which product he wishes to use . . .

Arthur J. Radwin
Account Executive
Howard Swink Public Relations
Marion, Ohio

And More Thanks

I have been receiving WEEDS TREES AND TURF magazine for the past several years. Personally I have found it very helpful and informative. I read every page usually including the commercials and classified ads.

The magazine is used as a teaching aid and frequent assignments are made to articles pertinent to the subject being taught. I even refer to the general advertising, and the ads for positions and employes are useful in my lessons on opportunities for employment. The students enjoy the magazine which is placed on our reference shelves with pertinent articles marked.

I have classes in turfgrass production and management, ornamental trees and units on weed control in nurseries, turf, trees, and wherever applicable.

The format of your magazine is good and the articles and other material interestingly presented. Keep up the good work . . . and keep the magazine coming my way.

Louis LeValley
Plant Science Instructor
Fresno State College, California

WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

February 1968
Volume 7, No. 2

Features:

Departments:

WEEDS TREES AND TURF is published monthly by The Harvest Publishing Company. Executive, editorial: 1900 Euclid Ave., Cleveland, Ohio 44115.

Single Copy Price: 50 cents for current issue; all back issues 75 cents each. Foreign $1.00.

Subscription Rates: U.S. and possessions, 1 year $7.00; 2 years $12.00. All other foreign subscriptions 1 year $10.00. **Change of Address:** Three weeks advance notice is necessary for change of address. Both old and new address must be given. Post Office will not forward copies. Controlled circulation postage paid at Fostoria, Ohio 44830 application pending.

After the Meeting, What?

Now the letdown. The meeting is over and you are home. Problems of the business you relegated to the back of your mind for a few days are more pressing than ever. Now what?

Maybe it's at this point that you have the chance to capitalize on the true worth of the meeting. If it was like many conventions, annual meetings, or workshops of today, it offered much in the way of methods, technology, business principles, and the chance to compare notes with others in the same business as your own. This being the case, it was likely a valuable session for you.

But now that you are back at the ranch, do your plans include getting full value by sorting out any new information in your own mind, deciding what might apply to your own operation, and then sharing this with your employes, or at least with key employes?

We believe this after-meeting session with your people can be the most productive result of a meeting. It offers you the chance to discuss methods, ideas, new ways to increase business, etc., on your home grounds with those who best know your operation and who best know your clientele. You can localize the regional or the national viewpoint.

Doing this takes some planning. You need to look ahead to the after-meeting session during the course of the "big" meeting. Take-home materials are usually abundant. Pick them up for illustrations to use with your own employes. Take a few notes. Anticipate questions your staff will have. Discuss these informally with other delegates at the meeting. Your employes, as you yourself, may be able to benefit from this second-hand information.

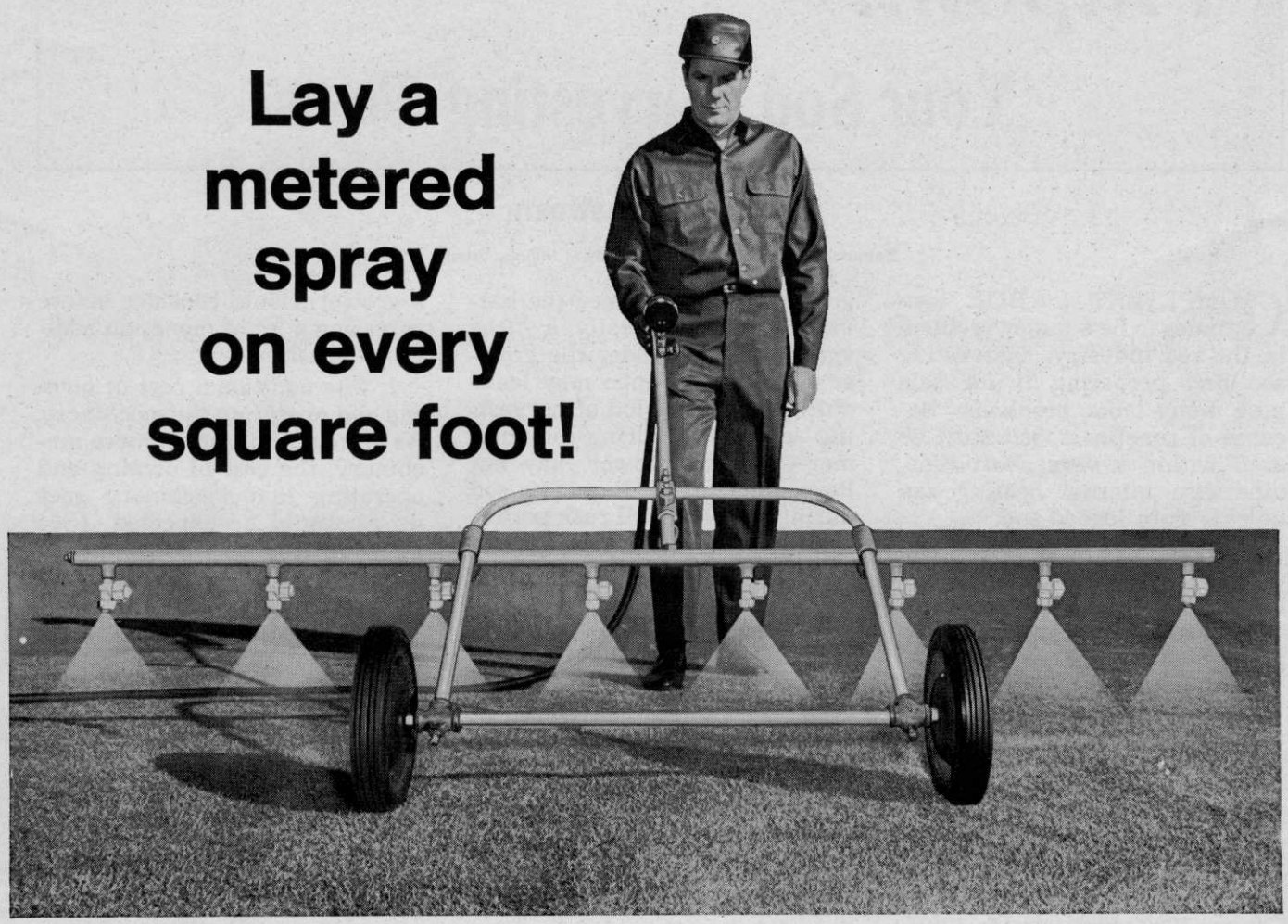
Talk to the equipment and chemical suppliers. They attend meetings expressly for this purpose. Suppliers and company representatives welcome the chance to discuss problems you may have experienced, about new uses of their products, or simply how to get the maximum percentage of use from a product.

Once you are home, you'll find your own crew will be interested in this information. And if and when you buy that new equipment or try that new chemical, because they have been involved, your employes may be just as interested as you in seeing that it works properly.

If you haven't tried an after-the-meeting session with your own employes, you may be passing up the chance to fully capitalize on meeting information.

WEEDS TREES AND TURF is the national monthly magazine of urban/industrial vegetation maintenance, including turf management, weed and brush control, and tree care. Readers include "contract applicators," arborists, nurserymen, sod growers, and supervisory personnel with highway departments, railways, utilities, golf courses, and similar areas where vegetation must be enhanced or controlled.

Lay a metered spray on every square foot!



...with accurate, fast, new Mallinckrodt Spray-Hawk™ Mobile Turf Sprayer.

Put an end to "hit-or-miss" spraying with the new Spray-Hawk— "hottest thing on wheels." Spray-Hawk treats every inch of turf to exact, *calibrated* dosage of herbicides and pesticides. No missing or dangerous overlapping. No zig-zag patterns. No guesswork.

Spray-Hawk avoids troubles other sprayers create. Leaves no tracks. Does a perfect job even on hilly terrain.

Operation is simple. Just check your operator's natural walking speed on the Spray-Hawk Operating Data Chart, and adjust the spray tank pressure to deliver the precise, recommended dosage. The Spray-Hawk *tells* you when you're spraying right!

Take a look at that low-riding boom, too. You can spray at low pressures recommended by turf authorities—as low as 30 p.s.i. Eliminate problems of misting, blowing and waste. And the inexpensive Spray-Hawk connects to your standard pressure equipment.

So don't let spotty spraying spoil your turf. Call your Mallinckrodt distributor today and take a walk with "the Hawk."

Mallinckrodt®

Turf Chemicals

Mallinckrodt Chemical Works • St. Louis • New York • Los Angeles

Pinpoint
Your Sod Harvesting Costs

By JAMES Q. AYLSWORTH

Department of Horticulture, University of Illinois, Urbana

COMPETENT LABOR continues to be a major problem in the sod industry. Harvesting sod and preparing it for sale pose many labor problems. Because of timeliness, sod must be used within a very short time, otherwise internal heating can quickly ruin loaded sod.

Maintaining a labor force large enough to harvest sod quickly means that during inactive periods a larger work force has to be paid for doing little or no work. This, of course, increases the cost without increasing the productivity. Some sod growers have tried to solve this by keeping a work force for only harvesting sod and paying them on a piecework basis. The harvesting crew would commonly be paid 3¢ per yard of sod harvested, or $30 per 1000 yards of sod. Since the harvesting crew would split the $30, the fewer men needed to do the work, the more each would be paid. This tends to make the harvesting crew more efficient. Thus, constant supervision is unnecessary because the harvesting crew is essentially self-regulating.

Although this method has some advantages, it also poses an even greater problem. Since the harvesting crew is really a "free agent" and not under the grower's employ, the men may leave during a slow period of harvesting—especially during the summer—and the grower may not have anyone to harvest sod during the early fall rush period. Consequently, the sod grower may lose some very profitable early sales.

To solve the labor problem during harvesting, many growers are considering the use of mechanical harvesters. Due to the new developments by machinery manufacturers, the extent of mechanization is now limited only by the amount of money the grower has available to invest.

New Machinery And Use of Pallets Considered

Many growers are considering expanding to additional machinery and palletized loading. Some are even considering going to a mechanized sod harvesting operation that lifts, rolls, and elevates the sod to the pallets. All of these changes are designed to reduce the amount of hand labor needed to harvest sod.

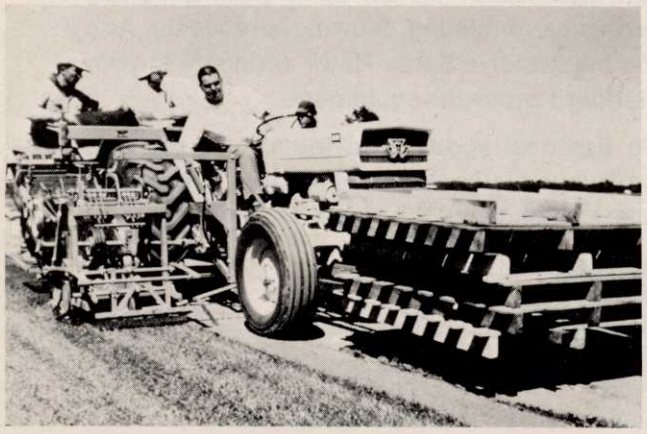
There are several factors that a grower should consider before investing a lot of money in additional machinery:

1. The additional cost of owning and operating the machinery. As a grower invests in more machinery, the cost of owning and operating that machinery goes up as would be expected. (See Chart I) But as the amount of machinery is increased, the labor cost goes down. (See Chart I) This is due to the greater labor efficiency by using machinery. (See Chart II)

2. The weight of sod being handled. Indeed, the weight of the sod may be the decisive factor in deciding to use additional machinery. For example, we found that on muck or organic type soil, the weight per yard of sod was 31.3 pounds. But for mineral type soils, the weight per yard was 49.0 pounds. This additional weight of sod may materially slow down the workers, especially toward the end of the day. If you are getting good efficiency in the morning but not in the afternoon, this may be a factor.

3. The availability of good labor in your area of the country. If adequate labor is available in your area at this time, you may be ahead to expand your business and postpone purchase of more machinery. This is a money management problem. Although machinery may save some expense, you might be ahead even more by obtaining more land, expanding irrigation facilities, purchasing fertilizer, and so on. A partial budget will help answer this problem for you. If labor is short, however, harvesting machinery which uses less workers will be advantageous.

4. How efficiently are you pres-



Self-propelled sod harvester cuts, rolls, elevates sod to be loaded onto pallets. Extra pallets are carried on front of Ryan harvester.

Fork lift to load pallets was one method used in Illinois tests. Unit pictured here is on Rapp Farms, Inc., Farmingdale, N. J.

Hand rolling of cut sod is still an expedient method for many producers, particularly if they have the labor supply.

Hand loading of sod with sod elevator was part of test. Pictured is similar operation at Halmich Sod Nurseries, Brown City, Mich.

ently using the labor that you do have? Although efficiency, as measured by yards of sod harvested per man hour, may increase with additional machinery, (See Chart II) there may be ways to get more efficiency from your present operation. Analyze your operation for wasted motion. See if some steps can be saved. Sometimes a little pre-planning before the beginning of the working day may speed up the entire day's operation and make it more efficient. Cutting from one field all day instead of moving to several fields the same day may reduce the non-productive time as much as 10%. Non-productive time in agricultural occupations is extremely high compared to industry.

5. *How fast do you have to harvest sod to meet demands?* The amount of sod that is needed per day varies considerably. Since sod harvesting equipment has a limited output, the initial cash expense of purchasing enough harvesting equipment for the peak periods will tie up a lot of money. For example, a sod harvester may have a sod harvesting capacity of 5000 yards in an 8 hour day. If you need 10,000 yards in this time period, you will need to have two machines of this capacity or have two crews and run the same machine for 16 hours per day. Additional men on a harvesting crew that uses maximum mechanization may not always increase production and, in fact, may decrease productivity per man-hour—especially when inexperienced men are added to the harvesting crew.

Know Your Harvesting Costs

Before a grower decides how much to invest in additional machinery, he should know what his present harvesting costs are. We have found that when there is little mechanization that is, using only a sod cutter—and the rolling and loading is done by hand, the labor cost is 2.6¢ per yard of sod.

If a sod grower decides to use a sod cutter, sod roller, fork-lift truck, and palletized loading, with the only hand work being to place the sod on the pallets, then the labor cost is reduced to 2.06¢ per yard of sod.

These last two methods of harvesting sod are quite common in Illinois. Some growers are considering the use of still more machinery and less hand labor in harvesting sod. Several machinery companies are manufacturing harvesting equipment that will cut, lift, roll, and palletize the sod in one operation with as few as three or four men. A self-propelled sod harvester of this type was tested and we found the labor cost to be 1.5¢ per yard of sod for one yard rolls of sod.

As the amount of machinery

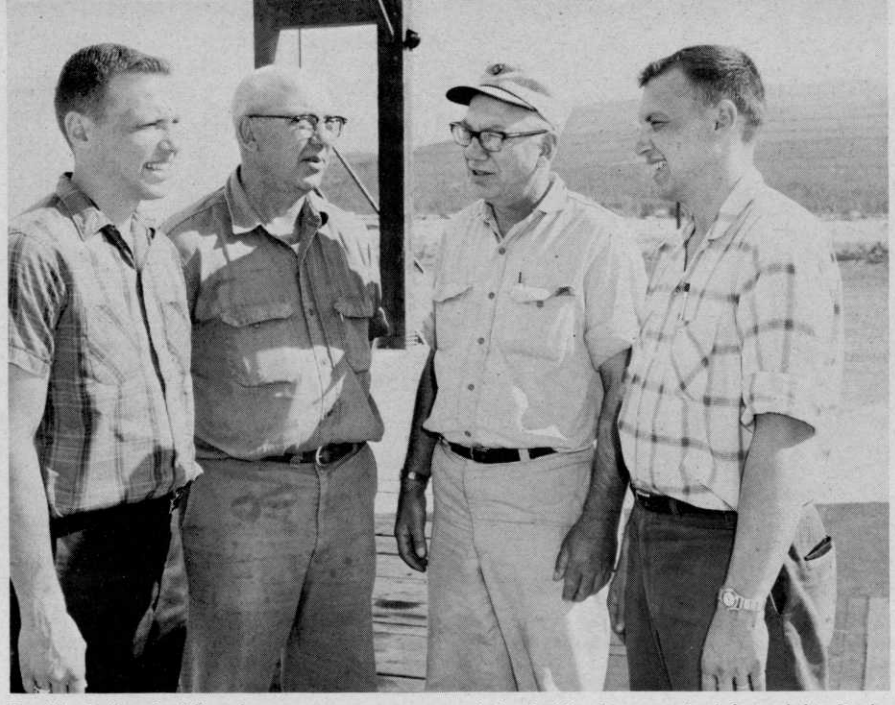
(Continued on page 41)

Table I. Harvesting Costs Per Yard of Sod.

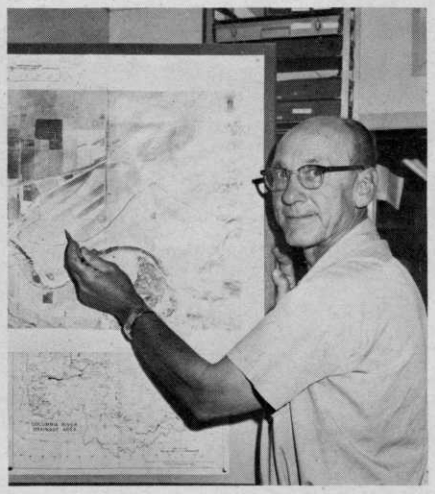
Type of operation	Labor cost	Machine cost	Total
1. Mechanical sod cutter; all other work done by hand labor.	2.6¢	0.15¢	2.75¢
2. Mechanical sod cutter, sod roller, fork-lift, pallets.	2.06¢	0.45¢	2.51¢
3. Self-propelled sod harvester to cut, roll, lift, palletize sod, using a fork-lift truck to move pallets to end of field for loading.	1.50¢	1.0¢	2.50¢

Table II. Efficiency of Various Harvesting Operations.

Type of operation	Yards of sod per man hour
1. Sod cutter; all other work done by hand.	70.2
2. Sod cutter, sod roller, fork-lift, palletized sod.	83.6
3. Sod harvester as tested and explained above.	133.3



Beside Arden Jacklin, the management team of the Jacklin Company is, left to right: Doyle, sales representative; Lyle, ranch management; Owen, ranch management; and Don, ranch management and research. Doyle and Don are twin brothers, and Duane, their younger brother, is getting his Masters at Purdue University.



Arden Jacklin, president of Jacklin Seed Co., Inc., points out boundaries of seed producing area in Spokane Valley. The area includes land both in Washington and Idaho with Spokane, Washington and Coeur d'Alene, Idaho being the rough limits of the area.

Quality Seed for Specified Needs Is Backbone of the Turf Industry

Jacklin Seed Co., Inc. has developed seed production business by supplying sod producers and turfmen with specific varieties

QUALITY seed which produces pure strains of a specific grass is the backbone of the turf industry. Investment in a golf green today is figured by thousands of dollars. Once it was in the hundreds. Foreign seed in the original seeding not only costs in terms of dollar replacement but in premium time.

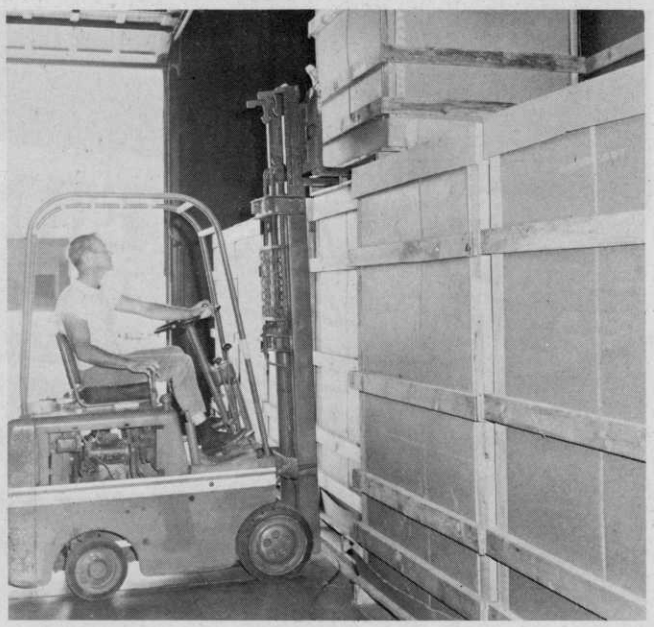
Pure seed is also important to the sod producer, as it is to every professional turfman who is charged with either new seedings or sod installation. Neither can gamble; new growth must be exactly what specifications demand.

Today, these needs are being met by professional seed producers. Jacklin Seed Co., Inc., Dishman, Washington, a major grower and processor, has developed an across-the-board business whereby Jacklin, through distributors, can guarantee varietal strain purity. A visit to their Spokane Valley operation reveals the broad range of technology needed today to produce and process seed of the quality needed to satisfy market demands.

Jacklin Seed is a family corporation, operated by 5 Jacklins. Arden, Lyle and Owen Jacklin are brothers. Don and Doyle Jacklin are the twin sons of Arden, who heads the company's

Specially designed truck is used to handle bulk seed from combine to bagging. Truck bed will hydraulically unload seed cartons which are then picked up and moved by forklift.

Milling foreman Dean Farnham checks seed ready for storage or bagging. Company has 20,000 square feet of drying area embedded with electric heat cables, plus an additional cold slab area, available for seed storage.



Industrial Park building leased by Jacklin Seed Company, permits storage of 5,500 cartons, each containing roughly 1,300 pounds of grass seed. In addition, bulk storage areas for loose seed are also available.

national and international seed sales. Lyle and Owen, assisted by Don, are in charge of ranch management. Don also handles the research and testing program for the company. Doyle is a seed sales representative and works with the company's public relations program. Their saleable seed comes from 3,072 acres which they farm in Washington and Idaho, and from seed grown specifically for the corporation by more than 80 growers on 18,000 acres in the area. The normal 2 million pounds of Merion bluegrass seed processed yearly by the company accounts for approximately 45% of the total U.S. production.

The Jacklin operation centers on four key programs. One is a grower production program. Another important phase of the operation is development, which concerns variety development, plant breeding, and chemical and fertilizer testing. A third is materials handling, which is responsible for efficient handling of the large volume of the company, and the final program is cost accounting. This latter is extremely important, since growers are paid on the basis of production, quality, and finally, the company's sales.

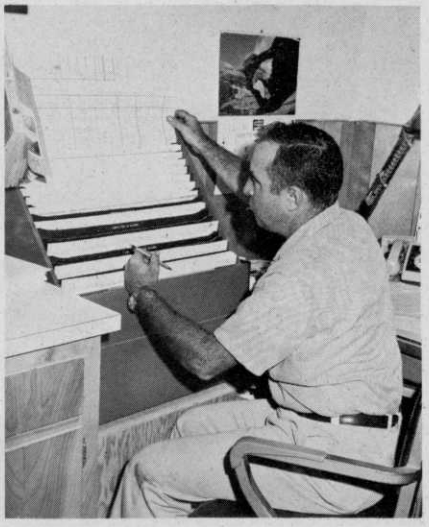
Grower Production Programs Help Maintain Quality

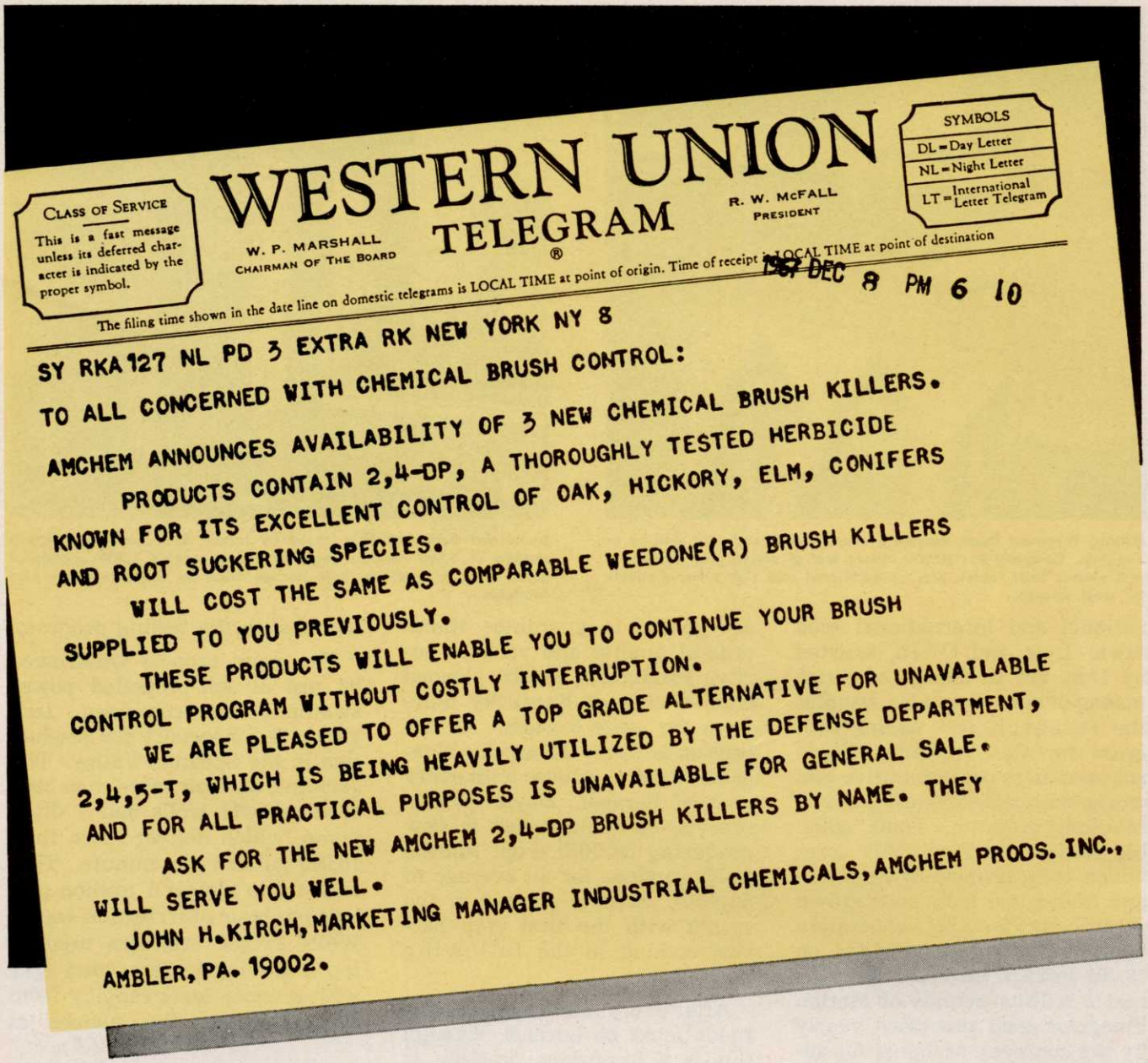
Grower production programs are geared to guarantee standards of quality and varietal purity. Production can be gleaned from a crop of Kentucky bluegrass for some 8 years. An exception is Geary Kentucky bluegrass which improves with every year of harvest. Doyle Jacklin reports one field which is now producing its 18th crop. Merion fields produce for an average of 6 years. Seed is planted in the spring with the first crop harvest coming in the following year.

After every harvest, producing fields must be burned. Though this is a hazardous practice, it is an absolute management necessity. Burning has a number of advantages. Most important is the physiological shock to the plant, which causes it to produce more seedheads. Without maximum production of seedheads in this area, growers could not stay in business. Burning also kills weed seed, disease organisms, insects, mice and other rodents, plus removing the excess surface material from the previous crop. Jacklin Seed Company is now testing a number of chemical substitutes in an attempt to produce the same shock effect as derived from burning. Over 150 different chemicals and amounts ranging from pesticides and herbicides to fertilizers and hormones are included in the testing program.

The grass crop is windrowed by use of self-propelled power swathers, then combined. Irrigation is a necessity for production in the Spokane Valley. The Jacklins, on their more than 3000 acres, use 11 wells and 1 ditch pump, which deliver more than 16,000 gallons per minute. That adds up to almost 1 million gallons per hour of irrigation water. Wells in the area are used to tap a moving underground lake with a water level ranging from 50 feet below the surface at

Milling superintendent Ted Dionne, keeps careful records and inventories of each lot of seed which enters warehouse or plant. A complete lab sheet, containing characteristics, is maintained on each.





CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

W. P. MARSHALL
CHAIRMAN OF THE BOARD

R. W. McFALL
PRESIDENT

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination

1967 DEC 8 PM 6 10

SY RKA127 NL PD 3 EXTRA RK NEW YORK NY 8

TO ALL CONCERNED WITH CHEMICAL BRUSH CONTROL:

AMCHEM ANNOUNCES AVAILABILITY OF 3 NEW CHEMICAL BRUSH KILLERS. PRODUCTS CONTAIN 2,4-DP, A THOROUGHLY TESTED HERBICIDE KNOWN FOR ITS EXCELLENT CONTROL OF OAK, HICKORY, ELM, CONIFERS AND ROOT SUCKERING SPECIES.

WILL COST THE SAME AS COMPARABLE WEEDONE(R) BRUSH KILLERS SUPPLIED TO YOU PREVIOUSLY.

THESE PRODUCTS WILL ENABLE YOU TO CONTINUE YOUR BRUSH CONTROL PROGRAM WITHOUT COSTLY INTERRUPTION.

WE ARE PLEASED TO OFFER A TOP GRADE ALTERNATIVE FOR UNAVAILABLE 2,4,5-T, WHICH IS BEING HEAVILY UTILIZED BY THE DEFENSE DEPARTMENT, AND FOR ALL PRACTICAL PURPOSES IS UNAVAILABLE FOR GENERAL SALE.

ASK FOR THE NEW AMCHEM 2,4-DP BRUSH KILLERS BY NAME. THEY WILL SERVE YOU WELL.

JOHN H.KIRCH, MARKETING MANAGER INDUSTRIAL CHEMICALS, AMCHEM PRODS. INC., AMBLER, PA. 19002.

BRUSHKILLER 155 For use in water borne foliage sprays only. Contains 1 lb. 2,4-D, plus ¾ lb. 2,4-DP, plus 1 lb. 2,3,6-TBA per gallon as amine salts.

BRUSHKILLER 170 Used for stump, frill, basal, modified basal or foliage spray. Contains 2 lbs. 2,4-D, plus 2 lbs. 2,4-DP per gallon. For use in water, oil-water or oil carriers.

BRUSHKILLER 171 For use as an invert emulsion, applied by Amchem's Spra-Disk.® Contains 1 lb. 2,4-D, plus 1¼ lbs. of 2,4-DP per gallon.

AMCHEM®

First name in herbicide research

AMCHEM PRODUCTS, INC., AMBLER, PENNSYLVANIA

Spokane to 300 feet at Coeur d'Alene. Most of Jacklin's wells are hand dug with holes being cribbed at the sides during digging.

Seed delivered to the processing plant is normally 55-60% pure. After removal of the inert material, consisting of leaf straw, seed hulls, and cotton-like substance, the finished seed averages 95-99% pure. To meet market requirements, all seed is blended to pre-calculated grades. In some cases, buyers specify seed with a purity of 85% and 80% viability, in addition to the higher purity lots.

Extensive Research Program Important In Operation

Varietal development, plant breeding, and testing constitutes an extensive research program. More than 80 varieties are always being grown in the evaluation plots. Besides testing their own producing varieties, the Jacklins do evaluation and testing work for a number of companies and experiment stations. They are extremely impressed with a new variety which they have just put on the market, 0217 brand Fylking Kentucky bluegrass. This variety, originally from Sweden, has been tested extensively by golf courses, home owners, and university research stations throughout the United States, four Canadian provinces, and several foreign countries. Test results for ten years have proven 0217/Fylking's resistance to a complete assortment of troublesome lawn diseases, including leaf spot and stripe smut. Spreading by means of underground stems or rhizomes, 0217/Fylking can take severe punishment and withstand close mowing even under drought conditions. Fylking's low growing carpet of green withstands close mowing because of the short distance between the crown and first leaf sheaf, and can be mowed less because of a slow vertical growth. Jacklins believes it has a great future as a lawn and specialty grass in this country.

Materials handling receives particular attention in this operation. Any efficiency which can be effected will pay dividends because of the large volume handled. All seed, from combine to market bag, is handled in pasteboard cartons. This move has proved a boon to the operation. Seed goes from combine to cartons which can carry up to 1,500 lbs. of processed seed each. These are handled by fork lifts and hauled on specially designed truck beds which can be unloaded hydraulically. Jacklins, together with a Portland engineering firm, designed the sliding, hydraulic truckbed unit which has become standard in the company. Seed is stored at some 5 warehouses, the largest being an Industrial Park warehouse near State Line, Wash., where 5,500 cartons are normally held in storage. One warehouse is large enough that growers can unload bulk trailer loads in a loose state. Normal supply at this single warehouse is 6½ million pounds of bluegrass seed.

Each grower's seed is weighed and tested on delivery. Each lot of seed is inventoried separately, processed separately, and stored as a separate lot until final blending and bagging. In this way, growers have a check on their own seed and are paid accordingly. Final payment is based on the cost accounting system of the company. Growers gain when sales are high and the market is strong. They thus have a vital interest in production and delivery of a quality product.

Arden Jacklin is known nationally for his work with the International Crop Improvement Association. He has served as president of the Washington State Crop Improvement Association, and on numerous committees throughout the years. He is currently a member of the ICIA's National Variety Certification Review committee. One goal of the ICIA is to establish a national authority for standards which will serve to guarantee the genetic purity of any variety being offered to the market.

The Jacklins are pioneers in the field of seed production and processing, and believe that the future of the grass seed industry depends on a supply of seed which satisfies a more and more demanding market. Today, quality seed from proven varieties must produce turf which is resistant to disease and tolerates abuse while maintaining the luxurious appearance of a natural growing carpet.

Burning harvested fields is an annual practice. Though hazardous and requiring a permit, it is a necessity to provide the physiological shock needed to insure maximum seedhead production for the following crop. The Jacklins use a crew with two firetrucks and three portable spray units to guard against a fire getting out of control. Perimeter of the field is watered, then fired.

What is there to weed control besides just killing weeds?

Maybe the area to be treated is already weed-free. Or maybe it's infested with established weeds. Perhaps the weeds are annuals. Or deep-rooted perennials that ordinarily are more difficult to control.

Could be the area is large. Or small. It may be easily accessible. Or it might be difficult to reach, either with sprays or big equipment.

These, as well as moisture availability and soil type, are just some of the conditions you have to consider before selecting a herbicide.

But whatever the weed problem, you'll find the right answer in one of the five Geigy industrial herbicides. Why? With them, you can solve just about any weed problem you might encounter.

What's more, each Geigy industrial herbicide delivers long-lasting residual control with once-a-year application. So they're most economical, too.

Geigy herbicides are easy to handle and apply. They require no special protective clothing or devices and can be applied through most application equipment.

For spraying, you can use Atrazine 80W or Simazine 80W wettable powders, or Pramitol® 25E emulsifiable solution. Where spraying is impractical, you can apply dry Pramitol® 5P or Atratol™ 8P pellets, by hand or mechanical means.

Find out more on how these Geigy industrial herbicides can solve practically all your weed problems . . . effectively and economically.

Be sure to write us today for fully descriptive literature.

Geigy Agricultural Chemicals, Division of Geigy Chemical Corporation, Saw Mill River Road, Ardsley, New York 10502.

Geigy

CREATORS OF CHEMICALS FOR MODERN AGRICULTURE

Project Trees

60,000 for 50,000 Modestans

By MARIETTA GUNN

MODESTO'S park department operates as a division of this California city's Park and Recreation Department.

As a separate division, its work involves tree care work for 31 parks, maintenance of 2 golf courses which involves 200 acres, and the care of 60,000 street and park trees. Current budget for planting, removing, and propagation of trees, according to Superintendent Wm. W. (Bill) Brown is $155,000 yearly.

Tree crews clear plant growth on rights-of-way, and thin, prune, spray, and fertilize trees and shrubs. Foreman Ray Pifferini whose tree section handles these activities says a tree crew for a typical tree removal day ranges from 7 to 11. Last year they removed 393 trees, and planted a total of 1300 trees. Pifferini says that removal of 16 grown trees constitutes a good day for them. This includes leaving all removal sites clean, including eliminating the stumps.

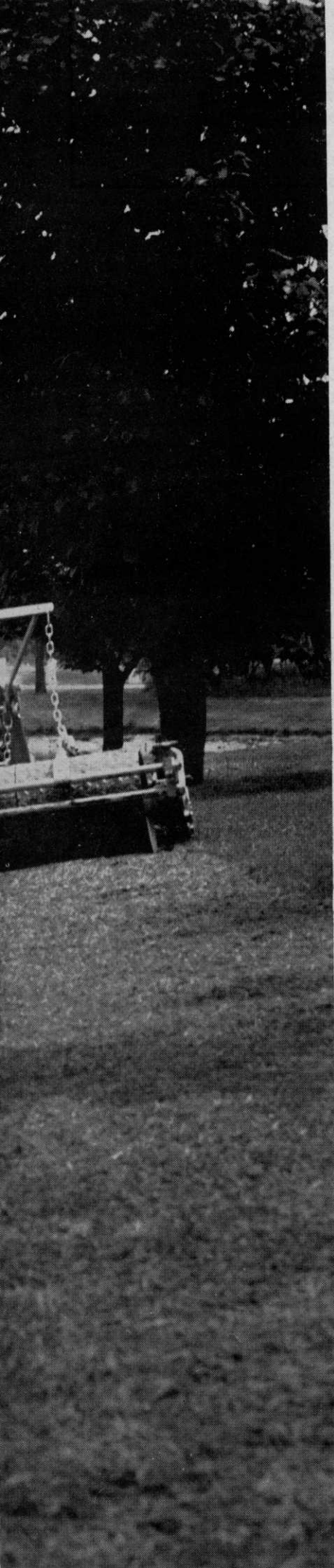
A typical tree removal day begins with a Sky Ranger aerial bucket mounted on a motorized truck. Operator-controlled buckets carry manual and hydraulic pruners, ropes for guiding fall of trees and limbs, and a self-contained Pioneer chain saw. One or two groundsmen accompany the trimming rig, which keeps well in advance of the rest of the removal crew and equipment by first felling larger trees in open areas. This work pattern allows the trimmer sufficient time to capably accomplish any job where trees may be in close proximity to power lines or residential property requiring extra precautions and extensive pruning.

Operator controlled Sky Ranger aerial bucket is maneuvered by trimmer as he drops large limbs with aid of hydraulic pruners, rope, and self-contained chain saw. Tree foreman Ray Pifferini believed that this tree died because of excess water. Removal was delayed until tree division was sure that tree was dead.

An Asplundh chipper towed by a basket truck follows the trimming trio. While ground crews sort fallen branches and debris, meanwhile feeding the chipper, two men arrive with a 2-ton flatbed truck for loading debris and limbs not fed into the chipper. Large limbs are sawed into manageable size and delivered to designated spots per public request or taken to the sanitary fill site for burial and eventual decomposure. Main sections of large trunks are placed on the flatbed by a Hyster fork lift, while a Vermeer stump digger eradicates the three or four inches of stump left protruding above ground. One operator tows the Vermeer via pickup while the fork lift is self-propelled to

ASK ABOUT OUR WORTH-MORE FEATURES

70 Flail mower. Knife action throws debris straight to the ground, not out. Rubber safety curtain won't rip, rot or shred. You get the aggressive cutting action of a rotary with the safety and fine trim quality of a reel mower.



Mow fairway smooth quicker than ever

New International 2444 tractor with matched gang mowers

Specifically matched for manicuring large expanses of turf at minimum expense—new International 2444 tractor and lift-type gang mowers.

A true turf tractor, the new 2444 is a quiet-running, 47 hp husky. A compact low-profile rig with a short wheelbase, 8½′ turning radius and full-time hydrostatic power steering. High-flotation tires protect your finest grounds. Wide stance gives you extra sidehill safety. Includes differential lock and constant running PTO for sprayers, other gear.

You mow quicker, neater than ever with a 5-gang mower. A reel ahead of each rear wheel cuts the grass before the tire. With three trailing gangs, you cut an 11′ swath. That's three times faster than a 3-reel, self-propelled combination to lower your time and labor expense.

Exclusive rear drive behind the reels allows the reels to overhang curbs up to six inches without dropoff. This eliminates expensive hand trimming. The five-gang, 11-foot mower reduces to three gangs and a 7-foot cut for tight quarters. Attach or remove mower from the 2444 tractor inside of 10 minutes. You can pick up, transport and drop the mowers with fingertip hydraulic hitch control.

Choose 7′ or 11′ mowers. Select laminated, puncture-proof tire drive with 1″ to 3½″ cutting heights—or hollow roller drive with ¾″ to 2½″ cutting heights. See your dealer for details on the worth-more features of a 2444 mowing combination. Financing is almost as flexible as you want to make it.

INDUSTRIAL EQUIPMENT

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

Large trunk sections are positioned by Hyster forklift and sawed to size before loading on flatbed truck for removal. All removal sites are left clean by tree crew.

the removal site by one operator.

Chips Used In Modesto Park Areas

Chips are generally distributed in city parks for mulching. Acid or oily chips are spread on road bed entries to the municipal fill site. The fill site is located on undeveloped city property already proposed as part of the city park system. Debris is emptied into 15-foot trenches, impacted by tractor, filled and levelled.

Most prevalent tree and shrub problems plaguing the Modesto area are elm beetle, elm scale, ash scale, and red headed caterpillar. According to the tree foreman Pifferini, anthracnose has been responsible for eliminating many sycamores. Unusually prolonged, damp springs the past 2 years have created ideal conditions for the fungus. Pifferini says the department hesitates to spray profusely in consideration of residents. Rather, they use arsenic lead during dry summer months when rains will not cause wash-off. Surrounded by orchards and general agricultural activity, Modesto city plantings are susceptible to the same infestations attacking commercial grower's crops. Rural orchards were highly infested with several types of mites and persistent leaf rollers this year. Unless the city is seriously endangered by invasion of such rural infestation, the department delays spraying street and park trees, but does recommend spray mixtures for residential gardens. They offer assistance in preparation and application.

Ten years ago a Modesto Master Tree Plan was inaugurated to assist in prevention of massive or rapid spread of infestation and disease. They alternate tree varieties in selective areas. These are designated by a city map on the wall of Pifferini's office. Specific trees are identified by colored plastic strips arranged in logical sections for both present and future controlled planting. Listed in the plan are varied types of Ash, Locust, and Liquidamber. Other species included in the scheme are Pistachio, Elm, Maple, Walnut, Hackberry, Purple Plum, and Zelkova. Seven varieties of Locust have been tested and planted in this area and the department presently favors the Shade Master Honey Locust to any of the formerly used types. High on the list of disease and insect-free trees in the area is Ginkgo. Considerable numbers of Ginkgo are scattered throughout Modesto and are foolproof for the area, according to Superintendent Brown. Albizzias in Modesto parks are disease and insect resistant, but do not lend themselves well to street plantings because of messy bloom and leaf drop.

Bidrin and Metasystox R Used In Treatment Program

During spring months the department follows a regular regi-

Operator removes last traces of stump in residential area with Vermeer stump machine. In this particular instance, stump is from large sycamore tree which was victim of anthracnose.

men of systemic injection to relieve trees of damage from sucking insects. Bidrin, heretofore used in bulk form, is now available only in capsule form. It can be applied only once with equally successful results. In bulk form, Bidrin was formerly injected into a small drilled hole in each tree via a repeating veterinarian syringe, the hole plugged with sealing compound, and the tree washed. Present procedure consists of inserting a 2½ inch long, ⅛ inch diameter aluminum feeder tube into live wood. Introduction and compression of the capsule is followed by washing of tree after removal of tube and empty capsule. This method provides prolonged protection via distribution of the chemical in both leaves and wood. Bidrin, available only to qualified, licensed users, is not as readily nor inexpensively attainable as in former years. Bidrin's high potency content has occasioned more rigid agricultural control laws, therefore the department is now using Metasystox R.

Metasystox R solution must be used 3 times to equal the effectiveness of one Bidrin capsule injection. Superintendent Brown says that Bidrin at $40 per gallon in bulk form has risen in cost to $400 for the same amount in capsule form. During 1966, Brown says, the city treated 1000 trees at a cost of $600. Expenditure now for treating an equivalent number of trees has skyrocketed to $5,895 for an equal amount of chemical application. Modesto, he says, is forced to abide by agricultural controls. Therefore, they now use lesser solutions applied more often. However in particular instances, the more expensive and powerful Bidrin is the only solution for saving a valuable tree and is used.

Park Division equipment is replaced on practically the same level as in any other industry. When annual repair bills exceed purchase price of new equipment, the division finds it advisable to replace rather than continue expending funds on aged equipment. Mowers currently used include 1 Worthington, 2 Jacobsen, 16 21-inch Toro rotaries, and 16 edgers. Pioneer chain saws are used exclusively with an average of 4 per year purchased. A ratio of one small mower to every 4 is replaced on an annual basis. The department uses a LoBlo for windrowing and clearing of golf courses and tennis courts, and this fall is purchasing a new Rake-O-Vac. For wide expanses and Aer-O-Mist is indispensible for windrowing and/or bunching fall leaves from outer park perimeters to the center for pickup and removal. Employing the Aer-O-Mist in adjustable position also aids in detaching the few remaining leaves clinging to nearly barren branches.

Youths Cannot Be Used On Hazardous Jobs

A federal order restricting youths under 16 years of age from performing hazardous jobs became effective January 1. Issued by Secretary of Labor W. Willard Wirtz, the order lists 16 specific agricultural activities. Because some are common to the vegetation care industry, they are being listed for readers. They do not affect youngsters employed by their parents.

The 16 occupations forbidden to minors below the age of 16 are as follows:

1) Handling or applying anhydrous ammonia, organic arsenic herbicides, organic phosphate pesticides, halogenated hydrocarbon pesticides, or heavy-metal fungicides, including cleaning or decontaminating equipment used in application or mixing of such chemicals.

2) Handling or using a blasting agent. For the purpose of this subparagraph, the term "blasting agent" shall include explosives such as, but not limited to, dynamite, black powder, sensitized ammonium nitrate, blasting caps, and primer cord.

3) Serving as flagman for aircraft.

4) Working as driver of a truck or automobile on a public road or highway, or driver of a bus.

5) Operating, driving, or riding on a tractor (track or wheel) over 20-belt horsepower, or attaching or detaching an implement or power-take-off unit to or from such tractor while the motor is running.

6) Operating or riding on a self-unloading bunk feeder wagon, a self-unloading bunk feeder trailer, a self-unloading forage box wagon, a self-unloading forage box trailer, a self-unloading auger wagon, or a self-unloading auger trailer.

7) Operating or riding on a dump wagon, hoist wagon, fork lift, rotary tiller (except walking type), or power-driven earth-moving equipment or power-driven trenching equipment.

8) Operating or unclogging a power-driven combine, field baler, hay conditioner, corn picker, forage harvester, or vegetable harvester.

9) Operating, feeding, or unclogging any of the following machines when power-driven: Stationary baler, thresher, huller, feed grinder, chopper, silo filler, or crop dryer.

10) Feeding materials into or unclogging a roughage blower or auger conveyor.

11) Operating a power-driven posthole digger or power-driven driver.

12) Operating, adjusting, or cleaning a power-driven saw.

13) Felling, bucking, skidding, loading, or unloading timber with the butt diameter of more than six inches.

14) Working from a ladder or scaffold at a height over 20 feet.

15) Working inside a gas-tight type fruit enclosure, gas-tight type grain enclosure or gas-tight type forage enclosure, or inside a silo when a top unloading device is in operating position.

16) Working in a yard, pen, or stall occupied by a dairy bull, boar, or stud horse.

Dr. C. E. Minarik, Fort Detrick, Frederick, Md., discusses herbicide use in Viet Nam.

Frank McFarland, Kerr-McGee Chemical Co., Baltimore, Md., left, and Dr. Arthur Bing, Cornell Ornamentals Research Laboratory, Farmingdale, N.Y., and secretary-treasurer of NWCC, discuss weed control problems during the conference.

Broad Range of New Research Reviewed At 22nd Northeast Weed Control Conference

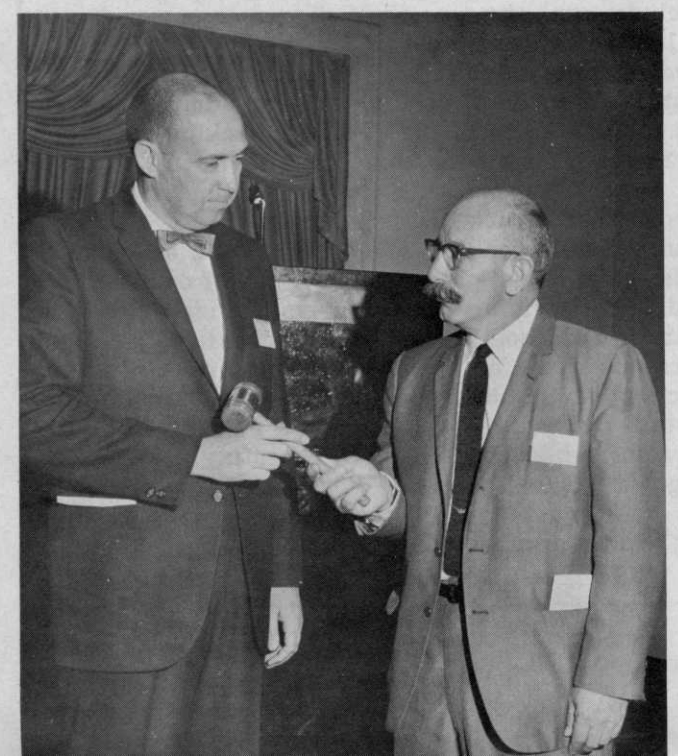
Weed control costs are about the same as five years ago for the Western Maryland Railway Company. In fact, according to R. R. Gunderson, chief engineer, right-of-way weed control costs have climbed only about 25% since the Company started a chemical weed control program 15 years ago.

This 25% increase for cost of herbicides and application, reported at the Northeastern Weed Control Conference at New York City last month, compares with basic labor rates which have jumped 100% during the same period.

Current weed control costs on the company's 850 miles of right-of-way range from $20 to $150 per mile. Costs vary because some yard areas require bare ground control, track elevations run from sea level to more than 4000 feet, and a variety of weed problems exists.

Gunderson said that prior to 1951 when the chemical weed control program was started, the Company used about 900 men several times yearly on clearing work. Today, labor costs prohibit such use of manpower. Further, men to do the job are not available.

Discussing Western Maryland Railway's experience with herbicides, Gunderson said that despite the variability of weed species, his Company has had excellent weed control of grasses and broadleaf types with water or oil soluble formulations and bromacil as the principal ingredient. The formulation, he said, also usually included herbicidal oils, other contact weed killer and 2,4-D.



President for 1968, Dr. John A. Meade, department of Soils and Crops, Rutgers University, New Brunswick, N.J., left, receives gavel from outgoing NWCC president John Gallagher, Amchem Products, Inc., Ambler, Pa.

Weed Control Is Two-Week Operation

The Railway's program, according to Gunderson, is to begin applying herbicides in early June. Two weeks are needed to do the job. Contact weed killers give quick knock-down, 2,4-D provides systemic effect, and bromacil gives residual control. With this application, the Company can forget about vegetation control until the following

Why let hordes of crabgrass take over your turf?

Stop the invasion <u>before</u> it starts.

The crabgrass - control program you

Balan goes all out...all over...all season. Stops crabgrass for as little as $15 an acre.*

All-out control: Tests prove Balan's power. It's the one pre-emergence herbicide as easy on your grounds maintenance budget as it's rough on crabgrass and other undesirable grasses.

Turf professionals aren't easily satisfied. Not with weed-killers that cost 3 to 4 times as much . . . or quit working after 4 to 6 weeks . . . contain poisonous chemicals (a big consideration in public areas).

Balan is the result of exhaustive testing at the Eli Lilly-Elanco research center. Its performance was confirmed by years of field trials. Many leading universities added their recommendations. Golf course and grounds superintendents began using it. They agreed. Balan stops smooth crabgrass, hairy crabgrass, goosegrass (silver crabgrass), watergrass (barnyardgrass), yellow and green foxtail on established turf.

***All-over control: Balan's modest price permits it.** Costs as little as $15 per acre, depending on the type of turfgrass and climatic zone. On northern (cool


SCHOOLS


PLANT GROUNDS


GOLF COURSES

This side-by-side test is proof. Straight through the summer, all-season control Balan continues working in the treated area at right. Desirable turf isn't crowded out by crabgrass, isn't competing for moisture and nutrients. Look how crabgrass has taken over the untreated area at left and then browned out.

ı can afford. 1. Apply Balan.™ (That's it!)

season) turfs, one yearly application provides effective control.

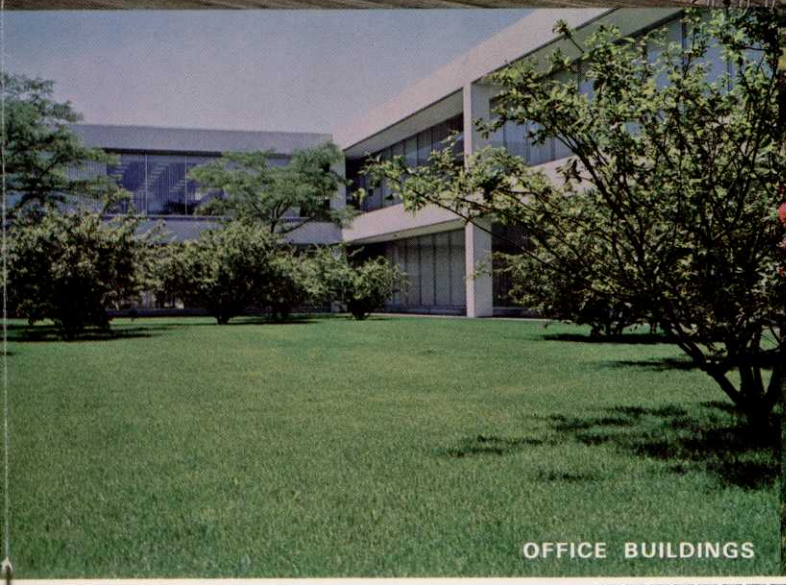
On southern (warm season) turfs, where a heavier and a second application may be needed, the cost will be higher. Even so, Balan's economy makes it ideal for use everywhere, including areas you may have thought were too costly to warrant treating with a herbicide.

How can Balan give you this kind of stopping power —and economy besides? Because Balan's active ingredient has more killing power. With more strength to unleash, it covers more ground.

All-season control: weatherproof Balan stays put. Many herbicides are very soluble in water and subject to leaching. Rainfall and irrigation quickly wash them out of the weed-control zone. Not Balan. Balan's low solubility and strong adherence to soil particles means that it stays put. It resists leaching, even under excessive rainfall or irrigation, to give you months and months of control. Balan doesn't give crabgrass a chance to mar your turf.

On warm-season turfs and in southern areas where the growing season exceeds 4 to 6 months, a second application may be necessary for continued control.

ATHLETIC FIELDS



OFFICE BUILDINGS

PARKS

(Balan™—Benefin, Elanco)

ELANCO PRODUCTS COMPANY:

I'd like to know more about Balan Granular pre-emergence herbicide. Please send me complete technical information.

I'm interested in treating a total area of_____acres.

I presently do_____do not_____use a pre-emergence herbicide.

Name_____Title_____

Establishment_____

Address_____

City_____State_____Zip_____

Balan Granular is the easy-to-use herbicide formulated for turfgrass professionals.

You'll appreciate Balan's convenient granular form. There's no messy wettable powder or spray to handle. Granules pour smoothly and won't clog equipment.

Both drop-type and rotary-type spreaders, commonly employed to apply granular herbicides and insecticides, may be used to apply Balan. However, a spreader that provides a consistently uniform distribution of granules is recommended. Use a spreader that avoids any uneven distribution or concentration of the herbicide in narrow bands, and spreads the granules evenly over the area.

Balan offers a good safety margin. It will not injure these established turf grasses, when applied as directed: perennial bluegrasses, perennial ryegrass, fescue, centipedegrass, St. Augustinegrass, Bermudagrass, zoysiagrass, and bahiagrass.

And Balan contains no poisonous arsenic, mercury, or lead. Used properly, it attacks only your undesirable grasses by killing the seeds as they germinate. It does not control established problem grasses.

Dependable, long-lasting Balan—the turf herbicide formulated for professional use. Do you want technical information or assistance? It's yours for the asking. Then watch Balan go all out, all over, all season to give you even better looking turf.

Balan™ **ELANCO**

(Balan™—Benefin, Elanco)

ELANCO PRODUCTS COMPANY • A division of Eli Lilly and Company • Indianapolis, Indiana U.S.A.

FIRST CLASS
PERMIT NO. 723
Indianapolis, Ind.

BUSINESS REPLY CARD
No postage stamp necessary if mailed in the United States

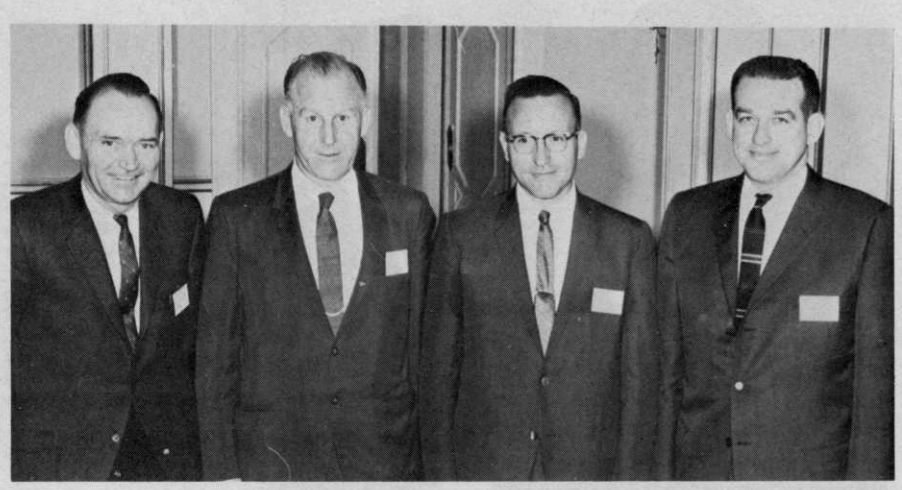
postage will be paid by

ELANCO PRODUCTS COMPANY
P. O. Box 1968
Indianapolis, Indiana 46205

Attn: Dept. E-455

DETAILS FREE! MAIL THIS CARD TODAY!

Dr. Philip A. Butler, U.S. Bureau of Commercial Fisheries Biological Laboratory, Gulf Breeze, Fla., presented new information on pesticide monitoring of streams.



NWCC panel on problems of perennial weeds, left to right: Dr. Henry A. Friesen, Canada Department of Agricultures, Lacombe, Alberta; Dr. S. N. Fertig, Amchem Products, Ambler, Pa.; Dr. Ellis Hauser, USDA Crops Research Div., Tufton, Ga.; and Dr. William F. Meggitt, Michigan State University, East Lansing, Mich.

year, he said. Despite heavy rainfall this past season, Gunderson reported that the bromacil held up remarkably well as a residual type weed killer.

Long term weed control also helps keep spilled grain from germinating in work areas. Under signal and communications lines, and at road crossings where brush threatens overhead wires or blocks vision, a combination of brush killers achieve control. Where rights-of-way run through farm country, liability claims have been reduced by using a formulation which reduces spray drift. With perennial grasses, and biennial and annual weeds controlled, Gunderson said, a favorable environment was created for growth of milkweed and dogbane. Rather than increase the rates of bromacil being used, which would add greatly to herbicide costs, the Company added aminotriazole to the regular formulation. This gave excellent results, he said.

Discussing a different approach to rights-of-way maintenance was Professor William MacConnell, University of Massachusetts. MacConnell told of research the University is doing in cooperation with the Holyoke Water Power Company, Holyoke, Mass. The approach has been to find other than agricultural uses for rights-of-way, especially in forested or hilly areas. The idea, MacConnell said, is to reduce rights-of-way maintenance costs. To this end, a project now in its third year is Christmas tree production. Christmas tree plantations, he said, do not interfere with power line maintenance. They are attractive and they reduce the cost of brush control. And they should have a substantial cash value at maturity. Trees, MacConnell offered, might be used as a donation to service organizations which would harvest and market the trees. During the growing cycle, trees benefit both people and wildlife. Larger utilities, MacConnell reported, are watching this 68-acre pioneering effort.

John A. Meade Elected 1968 President

More than 650 persons, mostly weed control specialists and researchers, attended the 3-day session at the Hotel Commodore, Jan. 3-5. J. R. Hansen, in charge of public relations for the group this year, said that interest among newspapers, television and magazines in special fields had been greater than ever. Officers were elected at the Thursday business session. John A. Meade was elected president. Meade, who is a member of the Soils and Crops Department, Rutgers University, New Brunswick, N. J., moved up from the vice-presidency. He succeeded John Gallagher of Amchem Products, Inc., Ambler, Pa. Arthur Bing, Cornell Ornamentals Research Laboratory, Farmingdale, N. Y., was reelected secretary-treasurer for the coming year.

Of special interest to turfmen was a research report on evaluation tests of preemergence herbicides for control of crabgrass in turf. John A. Jagschitz, Department of Agronomy, University of Rhode Island, Kingston, R. I., discussed tests carried out this past season of 1967. He said that Bandane and Betasan gave better residual control the year after treatment than did Azak, Balan, Dacthal, Planavin, Siduron, and Sindone.

According to Jagschitz, crabgrass control from Bandane and Betasan ranged from 75 to 83 percent at the standard rate of application. Control jumped from 92 to 98 percent when the rate was doubled. Double rates on the other chemicals showed less than 71 percent control, he said.

Herbicides in the Rhode Island study were applied in May, 1967. Turfgrass injury observations were recorded during the season and the degree of crabgrass control noted in September. To determine residual effectiveness, crabgrass seed was broadcast in December, 1966, over areas which had been treated in May, 1966. Control was then checked in September the following year.

Effective seasonal crabgrass control with only slight injury was obtained with certain formulations or rates of Azak, Bandane, Betasan, Dacthal, Planavin, Siduron, and Sindone.

George H. Bayer, Product Development Manager, Agway, Inc., Syracuse, N.Y., left, and Dr. Chester L. Foy, Department Plant Pathology and Physiology, Virginia Polytechnic Institute, Blacksburg, Va., visit regarding efficiency of new weed control chemicals.

With the exception of Betasan, certain rates or formulations of these materials, in addition to Balan, Eptam, Neburon, RP-11561, and Zytron, did not give effective control, or caused more than slight turf injury or both. Spray and granular formulations of most chemicals gave similar control, but some sprays caused greater turf injury. The least injury was noted with fertilizer formulations.

Oils Mixed With Atrazine Gave Superior Results

Dr. Henry P. Wilson, Virginia Truck Experiment Station, formerly of Rutgers, reported on his work with Dr. Richard D. Ilnicki, Rutgers. They ran tests on the effects of atrazine and linuron when mixed with certain phytobland oils for control of annual broadleaf weeds and grasses.

Uses of adjuvants composed of combinations of phytobland oils and surfactants increase herbicide effectiveness in their studies. They found that applications were most effective at a rate of 20 gallons per acre. A single application at a delivery rate of 20 gallons an acre containing 1 gallon of oil was more effective than an application in 40 gallons containing 2 gallons of oil. Most effective were applications in 20 gallons per acre containing 2 gallons of oil. In short, Wilson reported good broad-spectrum weed control can be obtained with ¾ lb/acre atrazine, if applications are made when weeds are small and if the applications contain adjuvants composed of phytobland oils and surfactants.

Ragweed control and the resulting comfort of hay fever sufferers was the subject of several Conference papers. Today, ragweed can virtually be eliminated from any community before the pollen is released. In the northeastern U.S., the season usually begins about August 1 and is over by the end of September.

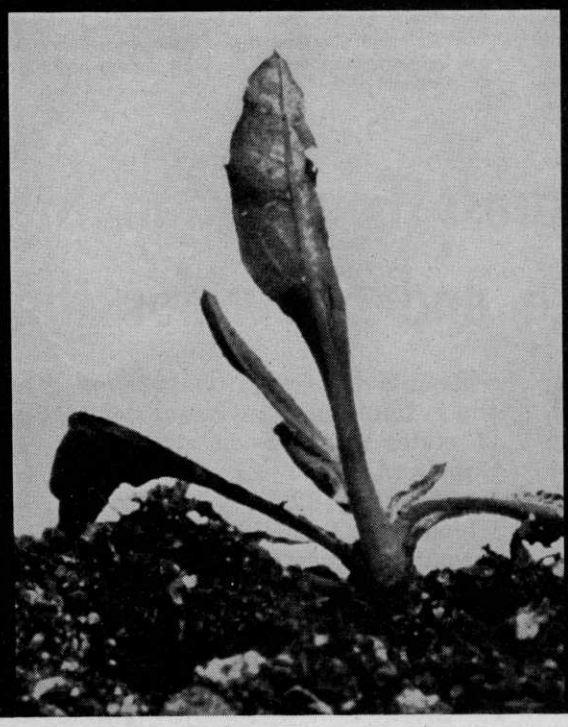
One outstanding community program was that reported by Sanitarian Hans W. Stegemann, Dover Township, Ocean County, New Jersey. Stegemann said that community obtained control last summer and fall by spraying the 52 square mile area weekly with 2,4-D weed killers. First spraying was done August 18 and the final one September 20. According to Stegemann, airborne pollen collected on slides indicated a count of zero for both August and September. Streamflow from a forested watershed was increased fourfold in a section of the White Mountains, New Hampshire. Methods used were clearcutting of timber and application of herbicides to prevent new vegetation. Robert S. Pierce, research forester for the USDA, told the conferees that a study on a 39-acre hardwood forest showed that it is possible to eliminate water lost by transpiration by trees and to measure the increase in streamflow which results.

In the White Mountain work, Pierce said that trees were felled on snow-covered ground and no wood products removed. At the beginning of the first growing season following cutting, bromacil, which is non-toxic to animals, was applied by helicopter. This restricted growth of herbaceous vegetation and woody sprouts. Spot applications of 2,3,5-T were used the second summer to kill persistent stump sprouts. In the first growing

(Continued on page 41)

New officer slate for 1968 is, left to right: Dr. Walter Gentner; Dr. Arthur Bing, secretary-treasurer; Dr. Homer LeBaron, vice-president; John Gallagher, past-president; Dr. John Meade, president; Dr. Eugene Wilson; Dr. George Bayer; and Dr. Chico Haramaki. Absent was Dr. Richard Swartzbach.

Sudden death to all weeds.



Spray once with Assault® and kill off all weeds. Assault begins destroying foliage immediately and penetrates the soil to attack the roots. Regrowth is no problem, either. Assault stays in the soil for as long as 12 months.

But that's only half of it. There are no messy powders to dilute. Just add water to the liquid concentrate and you're ready to spray.

It makes clearing the land a one man job.

For details, and for a free weed identification chart, write: West Chemical Products, Inc., Dept. WTT-2, 42-16 West St., Long Island City, N.Y. 11101.

GO WEST

Assault

Frederick L. Witt, landscape architect, Catholic Cemeteries Association, Cleveland, O., left, discusses conference topics with Dr. Richard R. Davis, agronomist, Ohio Agricultural Research and Development Center, Wooster, O.

Prominent at the first Ohio Turfgrass Conference and Show were, left to right: Cecil F. Kerr, Chipman Chemical Div., Rhodia, Inc.; Robert W. Miller, agronomist, Ohio State University, and executive-secretary of the Ohio group; and Harry Murray Jr., Warren Turf Nurseries, Akron, O., president of the group.

Ohio Turfgrass Foundation Stages Major Conference and Show for the Industry

Industry members, 870 strong, gathered recently at Cleveland, O., for what promises to become an important yearly event for turfmen.

The Ohio Turfgrass Foundation staged a major show and conference of national interest. Feeling that there was a need for an industry show coupled with a meaty educational program, the Ohio group chose to gamble that turfmen and suppliers on a nationwide basis would participate.

Results bear out the logic of their thinking. Turfmen from 25 states and Canada attended. Suppliers, 54 in all, purchased the entire 100 booth spaces which were available. The educational program, which was attended almost en masse by the group, featured the most prominent turf specialists and researchers in the nation. These program participants represented every section of the U.S.

Organization this first year naturally required cooperation and the utmost effort on the part of the Foundation members, particularly those charged with committee assignments. Harry Murray, Jr., president of the host group, and a representative of Warren's Turf Nursery, Akron, O., was officially thanked by the organization for his work in staging the event, particularly in lining up the exhibit area at the Sheraton-Cleveland Hotel, and for his work with exhibitors. Professor Robert W. Miller, executive secretary of the Ohio group, and Extension agronomist at Ohio State University, Columbus, O., was largely responsible for the educational program.

Enthusiastic discussions proved to be a highlight of the Ohio event. Engaged here are Jim Olinger, Warren Turf Nurseries, Plymouth, O., left, John Spodnik, Westfield Country Club, Leroy, O., center, and William Lyons, Sr., Lyons Den Club, Canal Fulton, O.

Discussing his 30 years of experience in growing commercial sod, Ben Warren, Warren's Turf Nursery, Palos Park, Ill., told the group that the company presently had 360 different strains of bluegrass in evaluation plots at the Palos Park, Ill., headquarters of the company. Commercial sod grown and sold by the company is being produced in New York, Ohio, Indiana, Illinois, Wisconsin, and California, he said.

Warren reported that the company is not completely satisfied

On the program which featured turfgrass management were: Dr. Edward W. Stroube, agronomist, Ohio State University, Columbus, O., left, Dr. Houston B. Couch, plant pathologist and physiologist, Virginia Polytechnic Institute, Blacksburg, Va., and Dr. William H. Daniel, agronomist, Purdue University, Lafayette, Ind.

Past Presidents of the Ohio Turfgrass Foundation were honored by members. Left to right are: Harry Murray, Jr., Akron, O.; Curtis Overson, Columbus, O.; George Hammond, Columbus, O.; and Roy Haney, Troy, Mich. Unable to be present for the conference this year was Past-President Dick Weaver, Cleveland, O.

with any bluegrass which is available today. His remarks indicated that as a result of testing by his company, commercial bluegrasses will become important in the market.

New Varieties Compared To Merion Bluegrass

Before Merion bluegrass was available, Warren said that the biggest problem faced was Helminthosporium leaf spot. Since Merion is resistant to this disease, every new selection of bluegrass has had to match or beat the resistance of Merion. A new grass must also excel in the areas where Merion is weak. These areas are primarily susceptibility to stripe smut, Fusarium roseum, powdery mildew and stem rust.

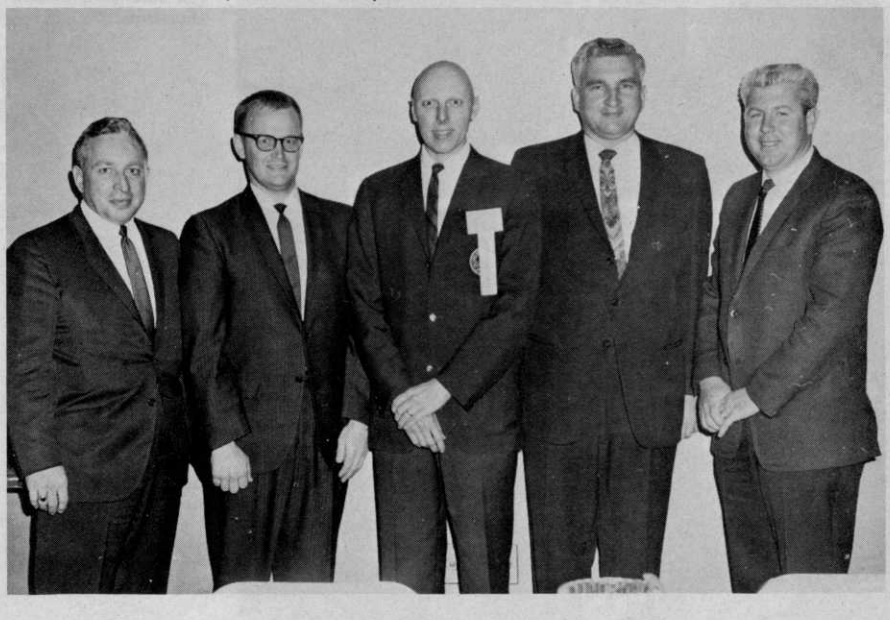
Warren said his company now has about 40 selections which have leaf spot resistance equal to Merion. He mentioned Warren's A-20 bluegrass as outstanding, and reported that in 7 years of observation, no leaf spot, stripe smut, mildew nor stem rust had been detected. Another Warren selection, A-10, has avoided Fusarium roseum completely. Because of this and other resistances, he feels it may allow the southern range of bluegrass adaptability to be extended. Another Warren selection which he rates very high is known as A-34. It has proved to be very good in shaded areas.

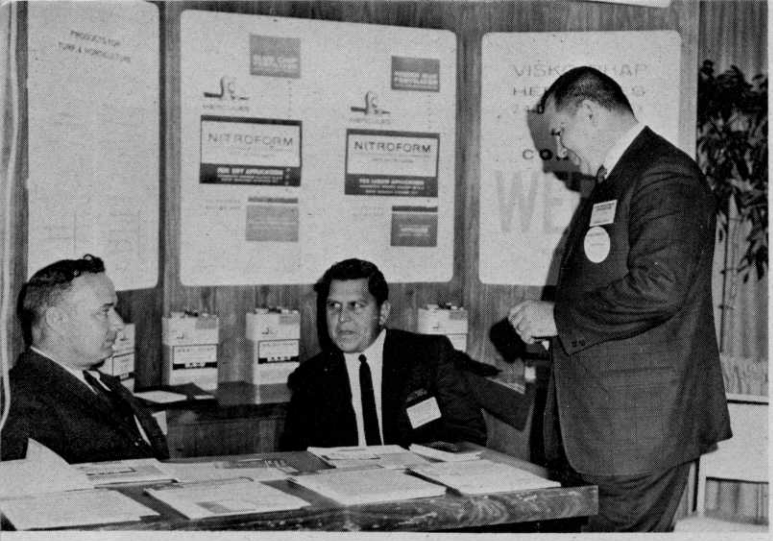
Effective irrigation systems do not just happen. They require many stages of design, building and trial use before they can be considered "happy" systems. Such is the thinking of Walter J. Wilkie, March Irrigation, Muskegan, Mich. Discussing irrigation system design with turfmen, Wilkie defined a so-called "happy" system as one which is useful and effective, and which fits the specific requirements of the user.

Because an irrigation system often represents one of the greatest capital expenditures within the turf industry, Wilkie cautioned turfmen against gambling or becoming a guinea pig for an untried system. He urged buyers of systems to investigate and research every possible type of system available. He believes the prospective buyer must become knowledgeable and, above all, must know his specific needs. Wilkie discussed his experience during the planning and construction of Cleveland's Oakwood Country Club system.

The Oakwood Club system, Wilkie said, involved a 5-part process. He listed the parts as follows: (1) information gather-

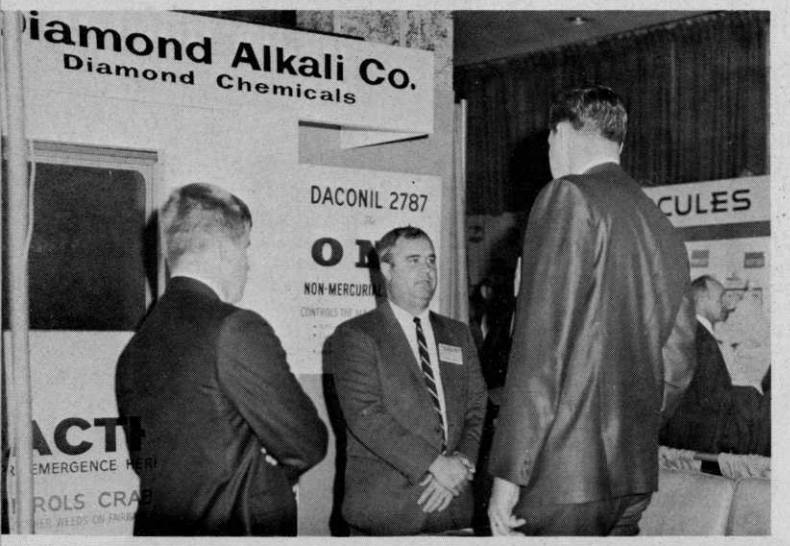
Officers for 1968 and the two newly named directors are, left to right: Robert O'Brien, Century Toro Distributor, Toledo, O., a new director; Gene Probasco, Lakeshore Equipment & Supply Co., Columbus, O., treasurer; Charles Tadge, Mayfield Country Club, South Euclid, O., president; Richard Craig, Chemargo Country Club, Cincinnati, O., 2nd vice-president; and Paul Morgan, Browns Run Country Club, Middletown, O., new director. First vice-president Robert Rieman, Woodville, O., was not present for the picture.





Hercules, Inc., representatives, Charles K. Mruk, left, and R. E. Gorfowski, center, talk shop with Dean Peterson, Lakeshore Equipment Co., Cleveland, O.

Russell E. Rose, Ryan Equipment Co., St. Paul, Minn., mans Ryan's booth which was one of 100 among 54 exhibitors at the show.



Diamond Alkali which has now been announced as Diamond Shamrock Corporation exhibited the full line of Diamond chemicals.

Busy at the Toro booth are, left to right: Frank Petrancek, mayor of Garfield Heights, O., Tom Steers, Toro, Dr. James Watson, Toro, J. G. Dunbar, Toro, and Jack Brantl, Century Toro Distributor.

ing stage; (2) design stage; (3) construction stage; (4) balancing and adjusting stage; and (5) happy usage stage. By this approach, Wilkie says, a system doesn't just happen. It unfolds. It comes about by direct and deliberate planning. Through every stage, questions evolve and are answered. Among the questions answered as the various stages unfold are the following, which are typical concerns of the turfmen contemplating an irrigation system: (1) what type turf are we watering; (2) how much water does it require; (3) how fast will the soil take the water; (4) are there any extreme dry or wet spots within the given soil structure; (5) where do we get our water; (6) how much water is available; (7) how much time can we have in a given day to apply the water; (8) whose equipment should we use; (9) what type of pipe should we use; and (10) how much money can be spent on the system.

Most Questions Answered As System Plans Unfold

As the system design and construction unfolds, these and other questions, Wilkie believes, can be answered and incorporated into the master plan. He points out that it is a tedious and time consuming process. But he stresses that a "happy" system is worth the effort.

William E. Lyons, Lyons Den Golf, Inc., Canal Fulton, O., told conferees that there is a fine distinction between liming turf areas and liming regular soils. Mixing lime with turf, based on a mixed sample of the top 6″-8″ can be very misleading, he says. In agriculture seedbed preparation, this may well be the best method. But with turfgrass, Lyons made the point that lime moves downward and turfgrass soil mixtures tend to be much more alkaline in the lower zones. Yet the mat and the upper layers may be quite acid. He believes this comes about as a result of heavy watering and nitrogen use which is necessary and common on golf greens.

Lyons takes soil samples by

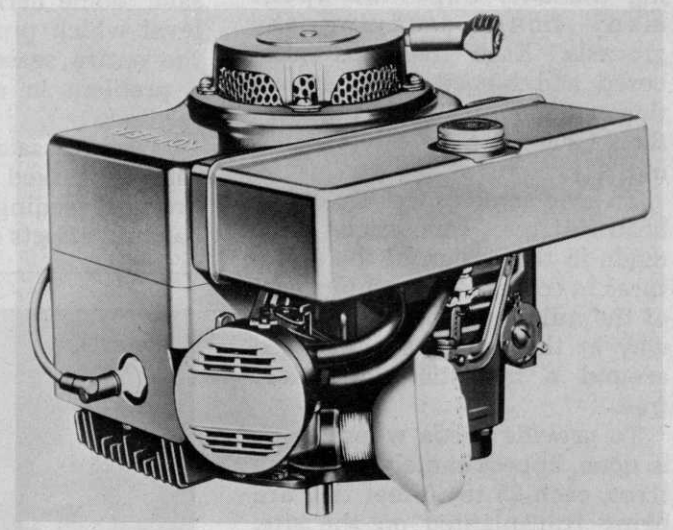
(Continued on page 42)

New Products . . . Designed for the Vegetation Care Industry

Viking's Landscaping Roller Blade, a one tool, multi-job, turf building and maintenance tractor attachment, is now available in four model sizes, 7 h.p. to 50 h.p., to fit garden, utility and industrial tractors. One man can build, renovate, or maintain lawns, parks, recreation areas, golf courses, and industrial sites without leaving tractor seat. Viking Roller Blades can be used for scarifying, aerating, leveling, seeding, fertilizing and slicing. Tractor attachment consists of grading blade, spreader hopper and grid roller. The spreader accurately spreads all common types of grass seed and fertilizers. Write: Viking Manufacturing Company, Manhattan, Kan. 66502.

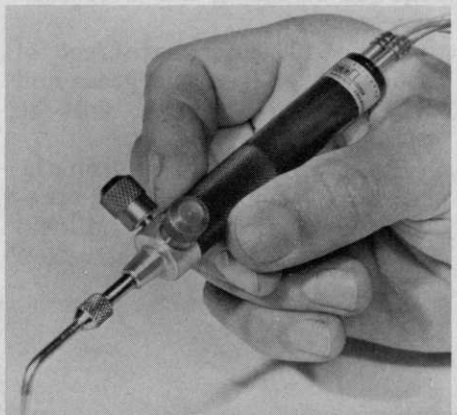
Fully-powered, air-electric Tire-Matic tire changer that handles tube-type as well as tubeless tires. Unit runs on 110 volt AC current, while bead breakers operate on 125 to 150 lbs. of air pressure. Write John Bean Automotive, FMC Corporation, 1305 S. Cedar St., Lansing, Mich. 48910.

Kohler Co., Kohler, Wis., is introducing five vertical shaft engines for 1968. Model KV101 pictured, smallest of the five, is a compact, four-cycle, cast-iron engine which develops its rated 4 h.p. at 3600 rpm. Weight is 42 pounds, and measurements are 12½" by 12$\frac{15}{16}$" by 10¼" high. It is equipped with ACR, Kohler's patented automatic compression release for easy starting.



"Little Torch", which welds metal is smaller than .002" wire and up to 16 gauge steel has been developed by Tescom Corp., 2633 S.E. 4th St., Minneapolis, Minn. It uses oxygen and a fuel gas (acetylene, hydrogen, LP-Gas or natural gas) to produce flame temperature to 6300°F. Torch is equipped with five different sized tips which swivel 360° for complete handling ease.

New tilt-deck utility trailer has been announced by the Snow Corp., 4350 McKinley, Omaha, Neb. 68112. Principal design improvements include a "lo-ride" suspension system which decreases deck height; an increase in deck width; and a hydraulically controlled tilt mechanism on the three largest models.



San Antonio's Hemisfair Will Feature Native Trees

When San Antonio's Hemisfair '68 opens to visitors April 6, one of the features will be almost 2000 native specimen trees. Budget for landscaping at this world's fair is $800,000. Of this, more than $250,000 will be spent for pruning, planting and caring for trees and ground cover.

The 92.6-acre site of the 1968 world's fair, in the heart of downtown San Antonio, was once a desirable residential area. In later years it had become crowded with one, two and three story homes. Here, too, were nearly 2,000 native trees, including pecan, hackberry, liveoak, elm, lemon, orange and avocado.

Some of the striking old homes will be restored by Hemisfair for use during the fair. Preserving the trees is the job of Robert Copeland, landscape architect for Hemisfair.

Before bulldozers started razing the site, Copeland spent many hours studying the grounds. Each tree was numbered and tagged for preservation or removal. In the end, more than 1,300 trees were left standing.

To save some especially old or beautiful tree, concessions were made in the design of the structures to come. For example, part of the mile-long artificial waterway at the fair was dog-legged around a majestic old 60-foot tree.

To provide shade where there is none, approximately 400 large trees, each 25 to 40 feet tall, are being transplanted on the site. Native oak and elm are being trucked from the "hill country" north of San Antonio. The topsoil here goes down less than three feet before bedrock is reached. Root structure spreads laterally over the rock, making the job of lifting the trees relatively easy.

Some 100,000 square feet of sod, most of it zoysia grass and St. Augustinegrass, will be planted.

Trees already growing on the site have been barricaded to prevent damage by trucks, bulldozers and other heavy construction equipment. Each tree has been given a value tag, ranging from $200 to $2,000, according to size and type. Any contractor who destroys one unnecessarily must pay the fair corporation for a replacement.

Activated Charcoal Helps Nullify Herbicide Residue

Activated charcoal has been used to nullify the harmful effects of herbicide residues on turf. Research at the University of Rhode Island, Kingston, R. I., by John A. Jagschitz shows that this product will absorb the molecules of harmful residues.

Discussing this at the Northeastern Weed Control Conference at New York City last month, Jagschitz pointed out that weed control chemicals used on turf leave a residue in the soil which prevents establishment of new turfgrass from seed. Such residues may last from several weeks to several months, he said. Some herbicides require a level which proves harmful for the entire season. This creates a problem in establishing new seedings.

Jagschitz said that activated charcoal mixed with soil at the time of seeding eliminated the harmful effects of such broadleaf weed killers as 2,4-D, Banvel D, MCPP, Tordon, and Silvex. Successful seedings in the Rhode Island experiments, he said, were also made in soils previously treated with preemergence crabgrass chemicals such as Azak, Bandane, Betasan, Dacthal, and Planavin.

Activated charcoal, a powdery carbon substance, is one of the most efficient adsorbants. It has an extremely large surface area in comparison to its volume.

Siduron was the only chemical used which did not inhibit turfgrass establishment.

Southern Cal Turf Council Elects Officers For 1968

Officers and directors for the Southern California Turfgrass Council were elected at the January membership meeting at Los Angeles, Calif. President for the new year will be Robert Scofield, Robinson Fertilizer Co., and vice-president in charge of programs is Hugh McKay, Moist-O-Matic Division, Pacific Toro Company.

William E. Howlett, Cal-Turf, Inc., was elected vice-president in charge of membership; Paul Adams, City of Burbank, secretary; and Dr. H. Hamilton Williams, Los Angeles State and County Arboretum, treasurer.

Orville G. Bentley, dean of the University of Illinois College of Agriculture, center, looks over the program for the 8th Illinois Turfgrass Conference with 4 of the 200 people who attended. They are, from left: Peter Vandercook, Orland Park; Francis Hinricks, Racine, Wisconsin; Bentley; C. M. Hunt, Keokuk, Iowa; and Wayne Trometer, Orland Park. U. of I. turf specialists reported the latest turf research at the December 7-8 meeting.

Green Valley Turf Company Integrates Both Production and Marketing in 400-Acre Farm

Vince Lombardi, Green Bay Packer football coach, has often been quoted as saying that nice guys can't win. But this certainly is not the case with J. R. "Rusty" Wilkins, manager of the Green Valley Turf Company at Littleton, Colo. He is both nice guy and winner.

A visit to this Rocky Mountain operation will prove the point. Rusty, who is manager and vice-president of the company, has developed a demand market for the more popular varieties of quality sod.

Green Valley specializes in Park, Merion, and Prato bluegrasses. Windsor and several varieties of specialty golf course sods are also grown. Sod sales to an ever-growing clientele include the home lawn, industrial, institutional, military, golf course, and highway department markets. Both wholesale and retail sales are made.

President of the company is K. C. Ensor, a Denver home builder. His need for sod, which prior to 1960 was largely unavailable in this area of the nation, led to development of the sod company. Before growing his own sod, Ensor was transporting sod some 700 miles from Iowa growers. Naturally, little was used in the area. Wilkins, son-in-law of Ensor and business graduate of Arizona State University, Tempe, Ariz., joined Ensor in the venture as farm manager and vice-president of the firm. Eddye Lea Ensor, daughter of Ensor, is secretary-treasurer of the firm and serves as office manager. She is responsible for much of the marketing effort of the company.

Once sod is palleted, fork lifts are used to quickly load trailer trucks. Loaded trucks are covered with a tarpaulin to protect sod from sun during transport. Tarp also helps hold sod rolls in place on pallets.

Specially designed accessory helps maintain stability of cutting depth on cutter. Designed by Rusty Wilkins, it is transferred to new cutters as they are purchased.

Green Valley Turf Company, Denver, Colo., management team: Miss Eddye Lea Ensor, seated, secretary-treasurer; Ken C. Ensor, president, center; and J. R. "Rusty" Wilkins, vice-president.

Past Marketing Experience Helpful In Selling Turf

Miss Ensor, who attended Stephens College, Columbia, Mo., and graduated from the University of Denver, finds sod marketing closely related to marketing and merchandising in other fields. Formerly, she worked as a buyer and in marketing for the Marshall Field Department Store, Chicago.

The Green Valley operation consists of 400 acres of cultivated

Turf buggy built from a used Volkswagen is used by Green Valley Turf Company to ride herd on the extensive irrigation system. Buggy can pass over aluminum pipe without damage, and at the same time eliminates compaction of new sod.

Sod is cross stacked on pallets after cutting and hand rolling. Wilkins reports little or no trouble has been experienced in movement of the sod rolls during transport.

sod. Wilkins uses a combination harvesting system. Sod is cut with a Ryan sod cutter, rolled by hand, loaded by hand on pallets, and then loaded on trucks by forklifts. To date, Wilkins has found this the most efficient system for his own particular operation. Labor, while not in great supply, is sufficiently available that he can hire the help needed to roll sod behind the cutter and load the pallets.

Normally, sod is cut and loaded out immediately. Three laborers are used behind the sod cutter for rolling. They follow this operation by loading pallets. The cutter operator also fills in on loading pallets as he becomes free of the cutting operation. In addition, this man handles one of two forklifts in loading out trucks. During loading, the second forklift is handled by the truck driver.

Once a truck is loaded, the truck driver attaches his forklift to the truck and it is towed to the delivery site and used to unload the freshly cut sod.

This system, Wilkins reports, makes efficient use of manpower. At the same time, the use of equipment designed to do the job keeps the number of harvesting man hours as low as possible. Right now, Wilkins and Ensor are investigating sod roller harvesting equipment to further reduce the hand labor requirement.

Green Valley sod is marketed in outlying areas as well as metropolitan Denver. Clientele

Mowing is done twice weekly during summer season. Tony Nickerson, above, runs company's diesel-powered, 7-gang mower. A custom built rotary mower is used to mow under irrigation lines.

ranges from Boulder, Colo., which is 35 miles north, to Pueblo, more than 100 miles south. Mountain areas to the west are also served. To keep sod in as fresh a state as possible during transport, each load is covered tightly with a tarpaulin. This tarp also serves to hold sod rolls which are cross stacked in place on the pallets.

Lag Time From Seeding To Harvest 10-24 Months

New seedings are made after each harvest. Lag time between seeding and harvest ranges from 10 to 24 months, depending on the grass variety and season. Chemical fertilizers are used in combinations which are needed for best plant development. Irrigation at seasonal rates of more than 2 million gallons of water daily is from river bottom wells. Irrigation pipe of 1¼" and 2" sizes are used. Wilkins says the system right now consists of 5500 heads of the 1¼" size on as many pieces of pipe, and 2500 additional heads and 6000 pieces of pipe of the 2" size. Riding herd on this extensive system is aided by use of a "turf buggy", built from a used Volkswagen. Rainbird sprinklers are automatically sequenced by time-control valves.

During summer months, mowing is done twice weekly by a combination of flail mowers. Wilkins uses a diesel-powered 7-gang mower and a custom-built rotary mower. The latter is equipped with shield over the turbo cones and used to mow under irrigation pipe.

Marketing is an integral phase of the Green Valley operation. Ensor, who has built and sold thousands of homes in the area and is still a progressive builder, has contributed his experience in business management to the operation. Eddye Lea Ensor also has previous marketing experience, and Wilkins is a personable and effective salesman. They sell both quality and service. Every purchaser of sod, whether retail or wholesale, is provided with information sheets and folders on care of sod after laying. Instructions for laying sod are also included for the homeowner who may be laying his own sod.

A sales piece which has proved helpful is a simple, 2-page, mimeographed cost comparison sheet. It gives itemized costs of seeding versus sodding. Besides costs, labor needed for each type of lawn is compared. Best sales point for the sodded lawn is the fact that the homeowner has a lawn immediately with sod, and is not faced with the 2- to 3-year time lag needed to develop an attractive lawn.

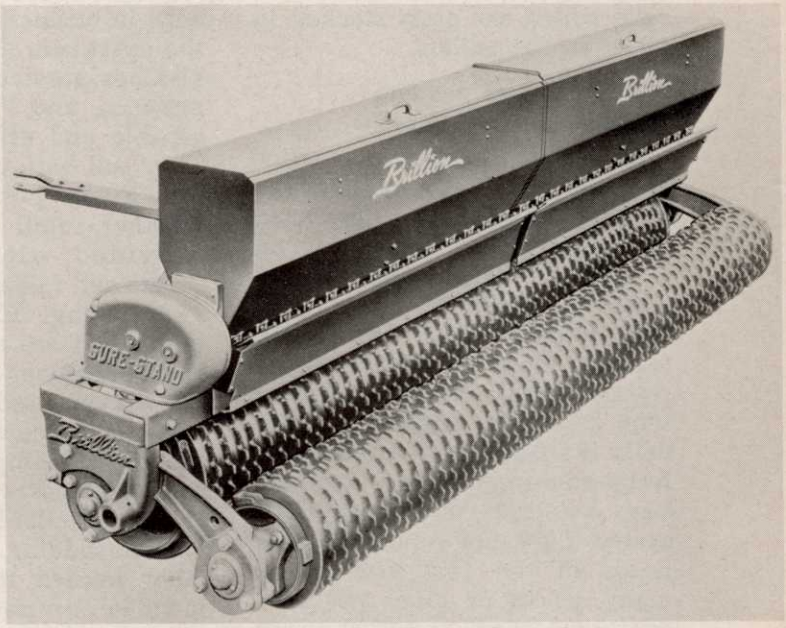
Outlook for the sod industry is favorable in the view of the Green Valley management team. The Ensors and Wilkins believe that the instant lawn idea will become even more popular and that demand for quality sod will continue to grow.

For Sod Producers

Equipment to Fit Your Operation

Nunes sod harvester, above, is being used on Summit Hall Turf Farm, Gaithersburg, Md. Nunes harvester operates with a 3-man crew and can lift, roll, and palletize up to 1200 square yards of sod per hour. Developed at Cal-Turf Farms, Patterson, Calif., the harvester handles any desired length of rolled or slabbed sod. John Nunes, designer of the harvester, reports that the unit will travel at speeds up to 17 mph and will handle conveyor extension for direct truck loading when desired. Nunes harvester permits field grading of sod by operator, who has continuous clear visibility of sod during transport to deck of unit. Harvester travels alongside turf during harvesting and is not affected by moisture conditions. For more information contact: The John Nunes Mechanical Harvesting Co., 2518 Loquot Ave., Patterson, Calif.

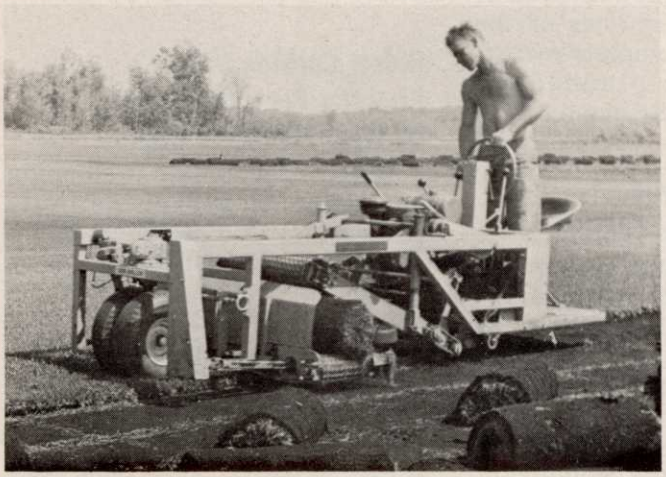
New precision grass seeder by Brillion is designed especially for sod and turf growers and for professional landscapers. Turf-Maker combines precision fluted feed rolls and unique micrometer adjustment for accurate seeding of fine grasses and lawn mixtures, with seed savings ranging up to 50%. The Turf-Maker minimizes pre-planting labor and costs. It crushes, seeds and rolls in one operation. Offset notched rollers press down small stones, eliminate air pockets and tuck the accurately metered seed within the top one-half inch of the moisture-trapped seedbed for rapid germination and growth. Notched rollers also bring up moisture from below through capillary action. Exclusive Brillion Micro-Meter adjustment provides an infinite number of settings for precise metering of fine seeds to suit varying job requirements. The Brillion Turf-Maker is available in 8-foot and 10-foot drawbar models, with 6⅛-bushel and 7½-bushel capacity double compartment seed boxes respectively. Options include transport wheels and a 3-point Category II pick-up for the 8-foot seeder. For additional information, write to Brillion Iron Works, Inc., Brillion, Wisconsin 54110.



Specially engineered wide metal wheels are designed and sold by Daymon Manufacturing Corporation. Robert Daymon, manufacturer, is also president and owner of Emerald Valley Turf Nurseries, Gregory, Mich. Emerald Valley is one of the leading sod producing farms in the nation. Wide wheels are built for use on all equipment which travels on new sod fields. Purpose is to roll and level field to prevent tracks or ruts, insuring an even cut when sod is harvested. For information, write: Daymon Manufacturing Corp., Emerald Valley Turf Nurseries, Gregory, Mich.

Princeton Turf Farms is now marketing sod harvester with capacity of about 10,000 square feet of sod per hour. The machine utilizes 3 men. Practical maximum for 10-hour day is 7000 square feet per hour because of physical capacity of men to handle sod and pallets. Pallets carry 1500 to 4000 pounds of sod, depending on moisture conditions of sod when harvested. Princeton unit is complete harvester, cutting sod which is transported to pallet decks. Two men on rear of harvester fold sod and load pallets. Harvester drops loaded pallet to ground without a machine stop. For information, write Princeton Turf Farms, Inc., Box 392, Union Valley Road, Cranbury, N.J.

Ryder-Roller sod rolling attachment is designed to fit Ryan sod cutter. Operator rides while machine cuts, marks off lengths, rolls, and moves sod aside so that it clears machine allowing for return trip. Maker reports that single operator rides seat of a trailer unit, attached by a pin to a clevis type hitch which is mounted by 6 bolts to back of cutter. All bolts fit into existing bolt holes of the Ryan cutter and cutting, drilling or welding is not necessary for installation. New development of the Ryder-Roller is attachment which fits on the front of the cutter and moves the sod rolls to one side on the return row. Attachment swings 180 degrees for operation on either side. Ryder-Roller fits a Ryan machine with 18-inch cut, and auto-cutoff unit C-8, C-9, or later. For information, write: Merion Sod Farms, Inc., 44533 Sterritt, Utica, Mich. 48087.



Fork lifts and pallets for handling and transporting sod are being widely used. This is true for both rolled, flat, and folded sod. Above fork lift is a tractor-mounted unit by Massey-Ferguson. It is in use on Princeton Turf Farms, Cranbury, N. J. General Manager E. C. Tantum says the tractor is very useful for helping move mired sod trucks and equipment in addition to loading pallets.

Daymon sod roller rolls sod in either one or 1½ square yard rolls. Designed at Emerald Valley Turf Nurseries, Gregory, Mich., the unit has been in use for the past 5 years and is being used throughout the U.S. and Canada. Capacity is 2000 yards per hour. Riding unit requires single operator and transports sod rolls to one side to permit return trips. For information, contact: Daymon Manufacturing Corp., Emerald Valley Turf Nurseries, Gregory, Mich.

Meeting Dates

Weed Society of America, 1968 Meeting, Jung Hotel, New Orleans, La., Feb. 5-8.

Maryland Arborists, Nurserymen, and Florists Days, Center of Adult Education, University of Maryland, College Park, Md. A day for each in order listed, Feb. 13, 14 and 15.

Mississippi Aerial Applicators Association, Annual Meeting, Buena Vista Hotel, Biloxi, Miss., Feb. 14-16.

Annual Agricultural Chemical Conference, Oklahoma State University, Student Union, O.S.U., Stilwater, Okla., Feb. 14-15.

National Arborists Association Mid-Winter Meeting, International Inn, Tampa, Fla., Feb. 18-21.

American Sod Producers Association, First Annual Meeting, In conjunction with Golf Course Superintendents Assn. Convention, San Francisco Hilton Hotel, San Francisco, Calif., Feb. 18-23.

Midwest Regional Turf Conference, Purdue Center, Purdue University, Lafayette, Ind., Mar. 4-6.

Maryland Sod Conference, University of Maryland, College Park, Md., Mar. 6.

Massachusetts Fine Turf Conference, White House Inn, Chicopee, Mass., Mar. 6-8.

Midwest Regional Turf Conference, Midwest Regional Turf Foundation, Purdue University, Lafayette, Ind., Mar. 4-6.

Western Agricultural Chemicals Association, Spring Meeting, Hilton Inn, San Diego, Calif., Mar. 11-13.

Western Society of Weed Science, formerly Western Weed Control Conference, Owyhee Hotel, Boise, Idaho, Mar. 19-21.

Michigan Turfgrass Conference, Annual Meeting, Kellogg Center, Michigan State University, East Lansing, Mich., Mar. 20-21.

Northern California Turfgrass Exposition, Northern California Turfgrass Council, Hall of Flowers, Golden Gate Park, San Francisco, Calif., Mar. 20-21.

Turfgrass Grower's Seminar, Annual Meeting, Memorial Union, University of Rhode Island, Kingston, R.I., Mar. 21.

Chipman Chemical Company Merges With Rhodia, Inc.

Chipman Chemical Company, New Brunswick, N. J., has become a division of Rhodia, Inc., N.Y.C. as a result of a merger of the two companies.

Chipman will retain its present management team. Blanchard Smith, general manager of the Chipman Division, has been named a vice-president of Rhodia, Inc., according to R. J. Picard, president of Rhodia. Warren Moyer, former president of Chipman, though of retirement age, will continue as a Rhodia consultant.

National Arborists Stage Winter Meeting At Tampa

Arborists are staging their annual winter meeting this month at the International Inn, Tampa, Fla. Meeting dates are Feb. 17-21, according to Clarke Davis, executive-secretary of the National Arborists Association, Inc.

Committee meetings begin early Saturday, Feb. 17, and the business session will be held Sunday at 9:00 a.m. Registration for members begins at 4:00 p.m. Sunday, Feb. 18.

On the program this year will be discussions on unions, accidents, estate planning, electronic data processing, lightning protection systems, and a revision of constitution and by-laws of the organization. A complete recreation program is planned for wives attending the event.

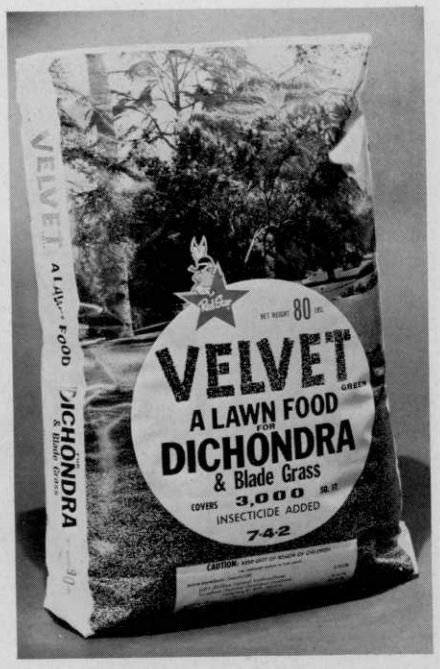
New Chemical Products Prevent Fertilizer Caking

Two new products are now on the market which will prevent fertilizer caking. Both new conditioners are produced by Nopco Chemical Division of Diamond Shamrock Corp.

Known as Sellogen NS 50 and Sellogen NS 96, tiny amounts of either are potent enough to prevent caking in extremely large quantities of fertilizer. As little as ½ pound of Sellogen NS, according to Nopco, will condition a ton of fertilizer.

Sellogen NS 50 is a 50% active liquid for spraying and adding to fertilizers in solutions. Sellogen NS 96 is a 96% active powder for use in dry blending fertilizer operations.

Sellogen NS may be added directly to mixed fertilizer, ammonium nitrate, superphosphate or urea. Technical data and laboratory samples are available from company headquarters at 60 Park Place, Newark, N.J.



Merit award for square-cornered polyethylene bag engineered by Union Carbide Corporation and presented by The Packaging Institute and its Hardware-Housewares Packaging Committee went to The Downey Fertilizer Co.

Union Carbide Wins Plaudits For Production Of New Fertilizer Bag

Highest award for a shipping bag at the 7th annual Hardware & Housewares Packaging Exposition went to The Downey Fertilizer Co. for its polyethylene shipping bag, which was produced by Union Carbide Corporation, N.Y.C.

Downey Fertilizer uses the bag to market its "Velvet Green" lawn fertilizer. The bag and packaging design were selected over more than 300 entries.

The polyethylene bag is square cornered. Advantages include significant space savings over conventional pillow-type bags plus moisture resistance and burst strength.

New Chemical Approved For Industrial Weed Control

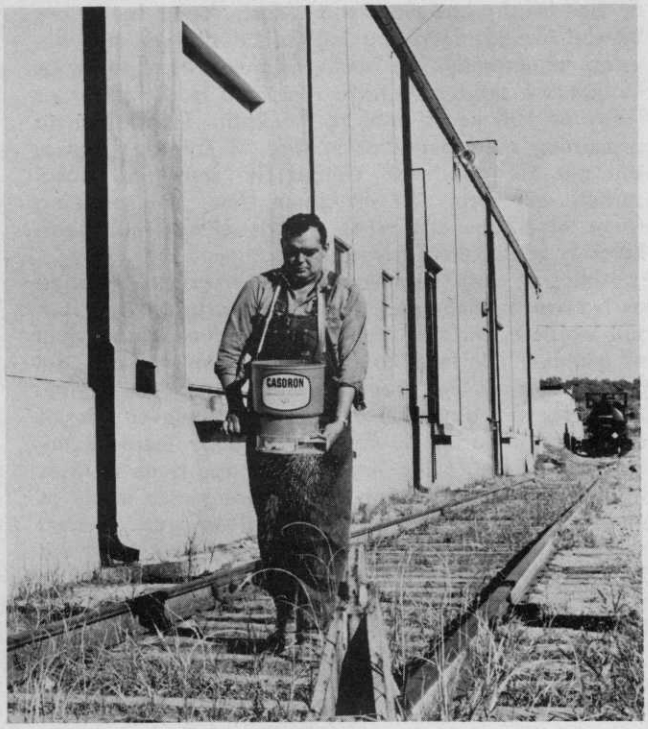
A new industrial weed control chemical is now on the market. It is Casoron G-10, a product of Thompson-Hayward Chemical Company, Kansas City, Mo.

Casoron G-10 is a dichobenil weed and grass killer. It has just recently received clearance by the U.S. Department of Agriculture. The new chemical provides non-selective control of a broad spectrum of annual and perennial weeds. Thompson-Hayward expects its greatest use to be in industrial areas which are difficult to handle by normal weed eradication methods. Such areas as electric substations, petroleum installations, buildings, railway rights-of-way, fence rows and similar areas where bare ground control is needed are likely.

Casoron G-10 is a free flowing granule and non-flammable. It should be spread uniformly over the soil surface by hand operated or tractor mounted granule spreader. For non-selective weed control Casoron G-10 should be applied at the rate of 120 to 200 pounds per acre or 4½ to 7½ ounces per 100 square feet. The lower rates may be used if the weed infestation is primarily annuals. For perennial weeds, and in dry areas the higher rates should be used.

Best results will be obtained by applying Casoron G-10 during the coldest weather when perennials are fully dormant. For annuals, application should be made prior to germination or when new plants are very small.

Other formulations of Casoron are widely used for weed control on ornamentals, fruit orchards, citrus groves, cranberries and as aquatic herbicides.



Casoron G-10 being applied to control unsightly weeds on railroad spur in company loading area. Note ease of application.

Difficult maintenance problem posed by weeds growing between pipelines and like areas can be solved easily with Casoron G-10.

DEERBRUSH

(Ceanothus integerrimus)

Drawing from: California Range Brushlands and Browse Plants by Arthur W. Sampson and Beryl S. Jespersen. Calif. Agric. Expt. Sta. — Ext. Ser. Manual 33.

Prepared by: O. A. Leonard, Botanist, Assisted by B. J. McCaskill Senior Herbarium Botanist, Botany Department, University of California, Davis, California

The genus *Ceanothus* contains about 60 species of evergreen and deciduous shrubs and small trees belonging to the family Rhamnaceae. Most members of the genus are native to the Pacific Coast of North America. Some members of the genus are attractive ornamentals. Deerbrush, while not normally used for this purpose, is an attractive shrub.

Deerbrush or sweet birch *(C. integerrimus)* is distributed in the coastal mountains from southern California to Oregon, and in the Sierra Nevada from southern California northward through Oregon to the east side of the Cascades in Washington. It also occurs in Baja California, Arizona, and New Mexico. Other species of *Ceanothus* occur at greater and lower elevations than deerbrush; in fact, some members of the genus can be found in all of the forests, chaparral, and non-desert shrublands of the Pacific Coast.

Deerbrush is a loosely branched deciduous shrub, 3 to 12 feet tall, with green or yellowish, often somewhat drooping, branches. Leaves are alternate, mainly elliptical, 1 to 3 inches long and ⅜ to 1½ inches wide, usually 3-veined from the base and light green. The flower clusters are mainly compound, 2½ to 6 inches long, with peduncles of about the same length. The flowers are white to deep blue, or sometimes pink, and are quite showy. The fruit is globose to triangular, about ¼ inch wide, and contains 3 legume-like seeds.

The ecological development of this plant is favored by fire. Germination of the seed requires heat; this causes the hilum tissues to split, allowing water to enter the seed. Old mature forests may be devoid of deerbrush; however, when such forest lands are burned (usually following logging) deerbrush may develop abundantly. In such instances it appears as though the seed may have remained dormant for as many as 100 years prior to the burn. In addition to promoting seed germination, fire, if not too intense, will not kill deerbrush completely; stem and basal sprouts will form. At the same time, non-sprouting forms of shrubs and trees will be killed; thus deerbrush is ecologically favored.

Although both sprouts and seedlings are relished as browse by deer and livestock, deerbrush does use soil moisture and thus can greatly reduce the survival of planted conifers; further, deerbrush reduces the growth-rate of the young conifers which do survive. An important objection to having dense stands of deerbrush in forests is that they greatly increase the difficulty of controlling fire and damage done to trees when it occurs. Many of these reasons also apply to other species of *Ceanothus* and other brushy plants occurring under similar situations. Problems listed are far more critical in the Mediterranean-like climate, the summers of which are essentially rain-free, of the Pacific Coast than in other parts of the U. S.

Esters of 2,4-D and 2,4,5-T can be used to kill the seedlings or sprouts of deerbrush. Best control is achieved by spraying early in the summer, following a fire of the previous year. Seedlings of other woody plants are also controlled in this manner. In addition, the sprouts of other woody species (including mountain misery, *Chamaebatia foliolosa,* which, although less widespread, is even more adverse than deerbrush to conifer seedling survival) are best controlled by following this approach. Pine seedlings should be planted during the following winter or spring. By so doing, brush competition will be minimized, while at the same time grass, whch can be lethal or extremely harmful to young conifers, will not have had sufficient time to invade the areas.

When pine or other conifer seedlings develop abundantly along with deerbrush, spraying should be delayed until late August or early September during the second growing season following the fire. Delay in spraying until after the pines have stopped growing minimizes spray damage to the conifers. 2,4,5-T should be used because it appears to be more selective than is 2,4-D under the conditions described. Pines can also be sprayed well in advance of commencement of growth in the spring as another means of minimizing injury.

By following a proper series of spray applications, one can develop good pine or other types of coniferous forests, and such forests can be less fire-susceptible than were the original forests.

Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 1900 Euclid Avenue, Cleveland, Ohio 44115.

Rates: "Position Wanted" 5c per word, minimum $2.00. All other classifications, 10c per word, minimum $2.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment.

FOR SALE

PRACTICALLY NEW FITCHBURG Chipper, completely equipped. Chase Nursery Company, Chase, Alabama 35743.

SPRAYERS, NEW AND USED, all sizes and makes, at large savings. Send your requirements. Equipment Sales Company, 4742 Sunrise Highway, Massapequa Park, N.Y. 11762.

NWCC Conference

(from page 26)

season, water yields from the area were increased 300,000 gallons per acre for the May-September period.

Secretary-Treasurer Bing announced that the more than 500-page volume of the 1968 proceedings was again available. Cost is $4.50 for the complete report.

Sod Harvesting Costs

(from page 9)

increases, however, so does the cost of owning and operating that machinery. The self-propelled sod harvester that we tested has an annual cost of $1607.64. This includes the operational costs as well as the fixed costs of owning the machine.

Assuming that the average sod farm has 84 acres, (See WTT April 1965) and assuming that one-half of this is harvested each year, the yearly machinery harvesting cost per acre would be $38.28. This is just less than 1¢ per yard of sod, assuming that the grower can harvest and sell 4000 yards of sod per acre. The total harvesting cost of labor and machinery would be 2.5¢ per yard of sod sold. Thus, the savings of using machinery in place of using hand labor is not so much a savings of cost as it is a savings of labor. This will be especially helpful in areas where labor is difficult to obtain at satisfactory prices.

From this study, it would seem that the cost of harvesting sod, both labor and machinery costs, will vary from 2.5¢ to 3.0¢ per yard (9 sq. feet) of sod sold, depending on the method of harvesting and the efficiency of the harvesting operation.

Advertisers

INDEX TO ADVERTISEMENTS

Ohio Turf Show

(from page 30)

using a home made golf shaft plugger. He lifts a sample of the mat without soil, then a surface sample. Next he takes sample chips at succeeding half-inch depths. Each sample is saturated with Reagent #2 from the Purdue University soil test lab. Color changes are matched on the color chart to determine the alkalinity or acidity of each zone and lime is applied accordingly.

If only the mat is highly acid, Lyons suggests applying only 2 pounds of hydrated lime per green or per 1000 square feet. When both mat and surface area are acid, he applies 25 pounds of superfine dolomite lime per 1000 square feet. In eastern Ohio, Lyons said, it is safe to apply 25 pounds of superfine lime of heavier applications of agri-slag per 1000 square feet every spring.

Dr. Edward W. Strouble, Ohio State University agronomist, presented an in-depth paper on weed control in turf. He said that a dense, healthy stand of turfgrass is the best method of controlling weeds. But, he also stressed that herbicides must be used to develop completely weed-free turf.

Dr. Stroube emphasized that the important facet in weed control is to get uniform distribution of the correct amounts of chemical. There are many formulations of herbicides, and many types of equipment with which to apply them. When the proper active ingredient is present in the herbicide and it is applied properly it will help produce desirable, weed-free turfgrass.

Dr. Strouble said the simplest way to apply the desired amount of material as a spray is to add the amount required for a given area to a relatively large quantity of water. He suggested one gallon of water for each 200 to 300 square feet of area. Then the measured lawn area can be covered repeatedly until all the solution is used. After the first coverage, he believes it is best to go crosswise to the previous spray pattern each time.

When applying granular herbicides, Dr. Strouble said that the setting with one of the smallest openings is often required. To be sure the setting is correct, he suggests applying a given amount of granules to a small measured area before treating an entire turf area.

Dr. Robert W. Miller, executive-secretary of the Foundation, was awarded the first "Man of the Year" honor. Harry Murray, Jr., president of the group, in presenting the award pointed out that among Dr. Miller's accomplishments this past year were helping organize this first Ohio Turfgrass Conference and Show, advising and teaching Ohio turfgrass students, and developing a new field research area at Ohio State for evaluation of grass species and varieties, fertility studies, ecology research, and weed control tests.

Officers elected for 1968 are as follows: Charles Tadge, Mayfield Country Club, South Euclid, O., president; Robert Rieman, Ohio Lime Co., Woodville, O., 1st vice-president; Richard Craig, Chemargo Country Club, Cincinnati, O., 2nd vice-president; Gene Probasco, Lakeshore Equipment & Supply Co., Columbus, O., treasurer; and Dr. Robert W. Miller, Ohio State University extension agronomist, Columbus, O., executive-secretary.

Thiodan Registered For Spruce Gall Aphid Control

Spruce gall aphid infestations can now be combatted with Thiodan. This chemical has recently been granted registration by the U. S. Department of Agriculture.

Produced by the Niagara Chemical Division, FMC Corporation, Middleport, N. Y., Thiodan is an insecticide especially valuable for use on spruce trees.

For 100 gallons of water, the label calls for 0.5 lb. of actual Thiodan in emulsifiable concentrate form. Application, according to Niagara, needs to be made in late April or early May when aphids are present, but before galls are formed.

Trimmings

Insist On Seeing the Label. Turf specialist Dr. Elwyn Deal at the University of Maryland tells of a homeowner caller who related that he had purchased 5 pounds of "Kentucky bluegrass" seed at 95¢ per pound. His first-class soil preparation and seeding job netted him a good stand in just 6 days. But a check with the state seed lab showed he had actually received annual ryegrass for his 95¢ per pound price. He admitted that he had bought the seed in bulk without seeing either the label or the container from which it came. We have bought seed like this ourselves but we are sure that professional turfmen wouldn't buy seed from an open barrel without seeing the label, even if it looked good.

* * *

Trees Can Be Hurt By Winter Drought. *Long periods of freezing weather without snow cover can lead to winter drought damage on trees. President of Bartlett Tree Experts, Robert A. Bartlett, says even though frozen soils contain some moisture it may be locked up. He suggests watching for winter injury early in the spring. If it exists, feed trees amply and give continuous care by pruning, spraying, and watering. Winter damaged trees usually put forth only half the normal foliage, fruit heavily, then die during the growing season. Street trees are particularly susceptible.*

* * *

Giant Red Pine Located. A 120-foot Red Pine has been located in Itasca State Park, Minn., by University foresters. They estimate the tree is 300 years old. It shows evidence of fire scars from at least 6 forest fires. The tree is 37 inches in diameter, 115 inches in circumference, and has a crown spread of 36 feet. Officials are particularly happy with the find since this is Minnesota's official state tree. Also, the previously largest known Red Pine was a 98-footer in Wisconsin. Certification of the new record has been registered with the American Forestry Association which records American "Big Trees."

* * *

Industries Need Spray Service. *More spraymen to do custom weed control work are needed by industry. Many factories and warehouse areas are troubled by weed problems, especially in little used areas. Plant managers don't have the personnel or know-how and are not aware that such service is available, even to a limited extent. We discussed this with John Veatch, Veatch Chemical Company, at St. Louis this past week. He feels as we do, that Pest Control Operators can easily move into this area. They have the equipment and the personnel who know how to handle chemicals. Training should be minimal. Tree care companies are also doing some of this type work but the word isn't general among industries needing the service, Veatch says.*

Insect Report

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

Turf Insects

AN APHID

(Asiphonella dactylonii)

California: Infesting Bermudagrass at Calexico, Imperial County.

LESSER CORNSTALK BORER

(Elasmopalpus lignosellus)

Florida: Damaging 75 percent of white clover in Hillsborough County; some damage to Pangola grass in county.

Insects of Ornamentals

AN ANT

(Camponotus pylartes fraxinicola)

Florida: All stages light on stems of 2 bullhorn acacia, *Acacia cornigera,* inspected at nursery in Hypoluxo, Palm Beach County.

MEALYBUGS

Florida: *Ferrisia virgata* adults on stems and leaves of coconut, *Cocos nucifera,* nursery plants inspected at Hypoluxo, Palm Beach County. Controls required. **California:** *Pseudococcus adonidum* heavy on euonymus nursery stock at Yucaipa, San Bernardino County.

ARMORED SCALES

California: *Aonidiella aurantii* heavy on euonymus and privet at Gridley, Butte County. *Hemiberlesia rapax* heavy on dracaena nursery stock at Coronado, San Diego County. **Florida:** All stages of *Odonaspis penicillata* moderate on stems of bamboo plants inspected at nursery in Rockledge, Brevard County.

TEA SCALE

(Fiorinia theae)

Florida: All stages moderate to severe on leaves of camellia plants at nursery in Titusville, Brevard County; moderate on leaves of camellia plants at department store in Mt. Dora, Lake County. All stages severely damaged leaves of Burford holly inspected at nurseries in Inverness, Citrus County, and Daytona Beach, Volusia County.

FLOWER THRIPS

(Frankliniella tritici)

Alabama: Ranged 5-25 on each rose and many camellia blossoms in central and southern areas; some damage.

Tree Insects

PINE BARK APHID

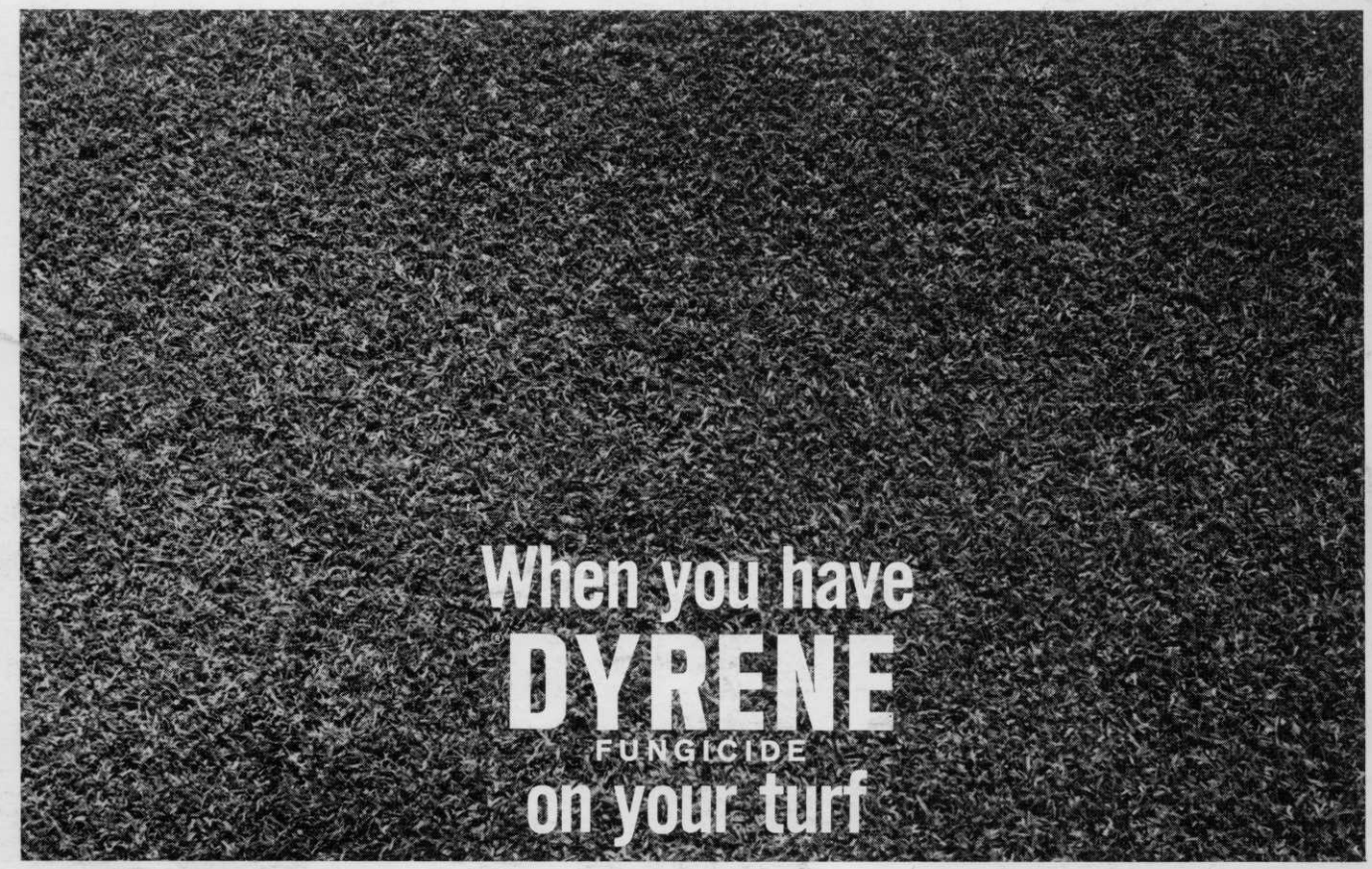
(Pineus strobi)

Maryland: Moderate on large windbreak planting of white pine at Lanham, Prince Georges County.

ARMORED SCALES

Maryland: *Lepidosaphes ulmi* heavy on several red maples on property at Lanham, Prince Georges County. **California:** *Parlatoria oleae* heavy on elm in parking strip at Fresno, Fresno County.

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



you don't have

Helminthosporium Diseases
(blight, leaf spot, melting-out)
Copper Spot
Rust
Sclerotinia Dollar Spot
Brown Patch
Snow Mold (Typhula)

®DYRENE fungicide controls all major turf diseases. Because of its unique properties, fungicidal effectiveness and long-lasting power, DYRENE fungicide makes a preventive program completely practical. If you use this one material all season long on a schedule, you can prevent fungus diseases at a low cost per season.

DYRENE fungicide is dyed green to blend with the turf and thereby eliminate the unsightly appearance of spray deposits on treated areas (and once it has dried, the dye does not stain shoes or fabrics).

DYRENE fungicide may be used in all common types of spray equipment. It is a 50% wettable powder that provides a good suspension in water . . . won't harm the spray equipment, clog nozzles or corrode metal parts.

For broad spectrum fungus control, ask your dealer for DYRENE wettable powder . . . another quality Blue Bullseye product from Chemagro. 3552 A

Chemagro®
CHEMAGRO CORPORATION
KANSAS CITY, MISSOURI 64120

PRINTED IN U.S.A.