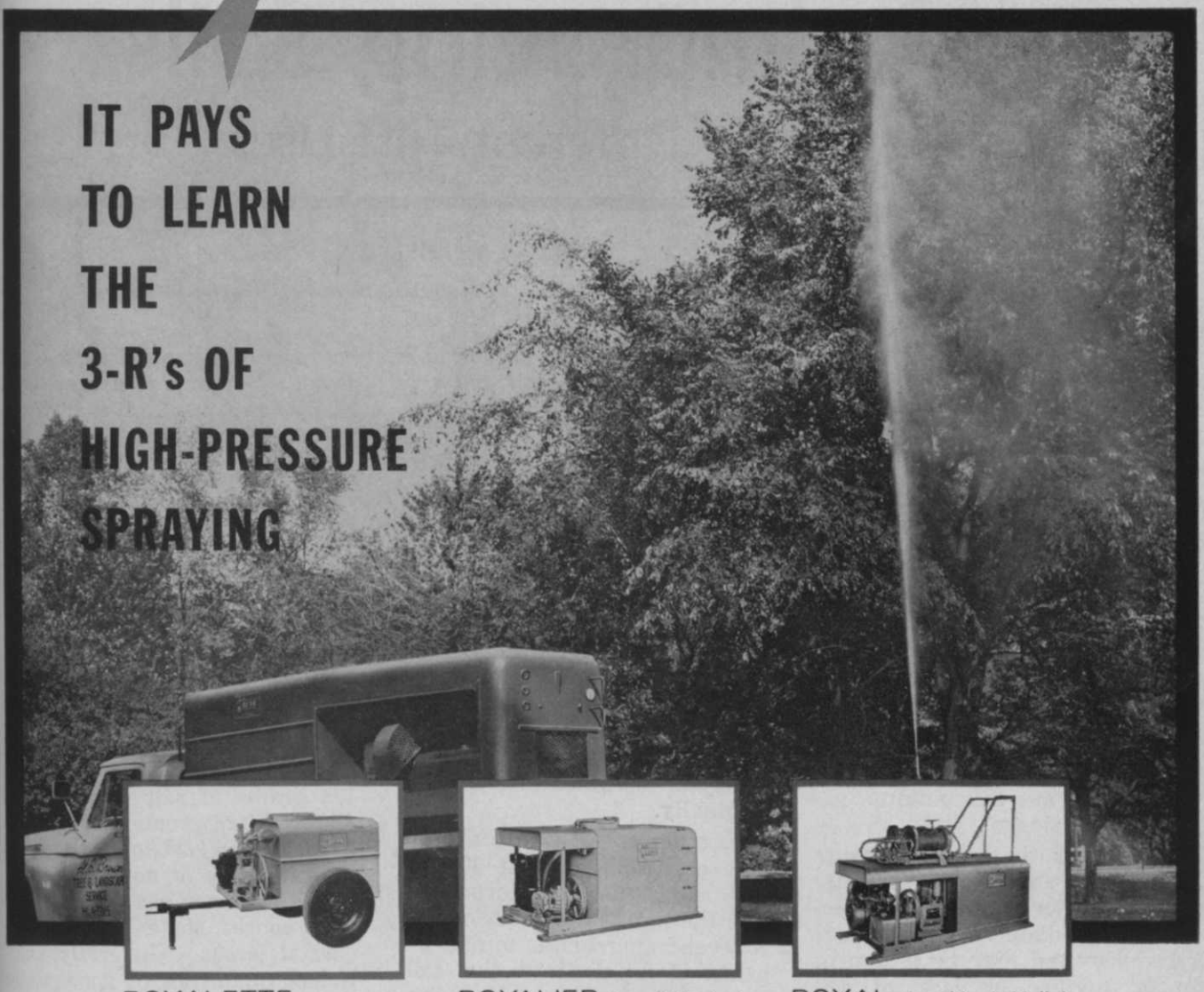
leadership **engineering** *pushes performance up - prices down*

IT PAYS TO LEARN THE 3-R's OF HIGH-PRESSURE SPRAYING



ROYALETTE the leader for all-purpose versatility. 5 or 10 GPM @ 400 psi. (500 psi with the Model R-10) 14 separate models to meet your needs exactly.

ROYALIER the middle-sized "R" delivering 20 GPM @ 400 psi with new velva-flo Royalier 4-piston pump. Pick from 15 models.

ROYAL the "big daddy" in 25, 35 and 60 GPM capacities @ pressures to 800 psi. Proven by years and years of service. 12 models.

It pays to learn the 3-R's, because the knowledge can help you save time and money, do more profit-making jobs, and help you get your jobs done better and sooner. What jobs? Ah, there's the key! Jobs like shade tree spraying, brush and weed control, dust abatement. Close to the soil tasks like liquid fertilizing, lawn insect and turf disease control, root feeding. Clean-up jobs like sanitation spraying, mosquito and insect control. Fringe benefits like equipment cleaning, water-soluble paint spraying, many more. With John Bean High-Pressure Sprayers, you have the power to do the jobs thoroughly and quick. You have Bean-Bond corrosion-resistant tanks, ceramic pump cylinders, and many other Leadership-Engineered features to insure durability and dependability. Now, go back and add up the models. Forty-one (and we didn't even count several engine options)! That makes it as simple as ABC to look through the 3-R's and pick the one that's exactly right for you. May we help you pick?

LEARN THE 3-R's. First lesson is writing for catalogs on the models that interest you most. Just clip this coupon to your letterhead and mail.

- ☐ ROYALETTE all-purpose sprayers
- ☐ ROYALIER high-pressure sprayers
- ☐ ROYAL heavy-duty, high-pressure sprayers

fmc CORPORATION ®

JOHN BEAN DIVISION

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

Improving Soils
for Different Turf Uses

By ROYLYN L. VOSS

Specialist in Soil Management, University of Hawaii, Honolulu

IMPROVEMENT of soils for turf depends on early anticipation of problems and diagnosis of a condition before it starts, with economic considerations. Unfortunate for the turf grower, soils do not often cooperate and give the conditions that are optimum for turf production. Beautiful turf is expected from every piece of land regardless of its composition. The following conditions are commonly found in soils used for growing turf, but they are not in any specific order.

1. High acidity and poor fertility
2. Compaction
3. Droughtiness
4. Poor texture and structure
5. Low organic matter contents
6. Salinity and salt buildup
7. Poor drainage

Problems that result because of these factors do necessarily overlap. For example, compaction immediately includes poor drainage and may be a sign of poor texture or lack of soil structure.

Compaction is Typical in Cultured Turfgrass

Under turf culture, soils are quite susceptible to compaction. What can be done with a soil to reduce this condition before it starts? In golf course green construction, compaction is minimized by using a sandy-loam soil. Normal programs call for making soil with mixtures of from 4 to 5 parts sand to 1 part of soil. Sometimes organic materials, such as peat moss, are mixed into the top few inches or incorporated into the total mixture. In a few cases, golf green construction is enhanced by having naturally occurring, sandy-loam soils already on the location.

About the only practical method of avoiding unfavorable soil conditions in golf fairway, park, and playground construction is to choose and limit the type of soil materials brought in.

Lawn Topsoil Diverse

The home lawn is our intermediate consideration. Total remaking of the soil is usually not practical, but something more than just the control of soils brought in is desired. The diversity of topsoil materials is so great that the homeowner sometimes ends up with a less favorable material than he had originally.

In order to alter an unfavorable clay soil, at least 30% to 50% sand must be incorporated into the top 4 to 6 inches of soil. A second approach is to mix organic materials into the soil. Wood shavings, sawdust, bagasse, mill ash, manure, or compost all alter the nature of clay. A minimum of a 1-inch layer cut into 4 to 5 inches of soil is necessary to show any improvement. With the exception of compost and manure, additional nitrogen must be added to soil to compensate for nitrogen used in the decomposition of organic material.

Droughtiness is most commonly found in sandy soils. Here, added organic material increases the water-holding capacity and promotes soil structure development. Golf green construction and irrigation control minimizes this problem.

In both sandy soils and heavy clay soils, the addition of organic material offers the most convenient method of improvement. Poor texture, poor structure, compaction, droughtiness, low levels of organic matter, and in many cases poor internal drainage are minimized.

Prevent Salt Buildup

Salt problems may occur because of brackish irrigation water, sea water intrusion, and from fertilizer salts in a few cases.

If salty water is used for irrigation, enough water movement through the soil must be provided to prevent a salt buildup. Some bermudagrass varieties may tolerate as many as 120 to 175 grains of salt in irrigation water. Plant ground covers such as dichondra *(Dichondra repens)* tolerate little or no salt.

Subterranean sea water intrusion causes some problems in coastal areas. Generally, sufficient quantities of good water supplied to keep the salt from percolating up through the soil helps in porous soils. In extreme cases, excavation and the construction of a coarse coral underlayer is necessary. When new soil is placed over this barrier the capillary rise of salty water is prevented, and the soil is flushed free of salt.

Poor drainage can be helped by altering the soil with sand or organic matter as described earlier. In many cases, layering of different types of soil may cause poor drainage. This frequently results from the topdressing procedures used in turf production.

Soil improvement for turfgrass production can be achieved, but the underlying problems must be anticipated and diagnosed before a profitable operation can become reality.

Cold facts about a hot new line of weed killers!

Admittedly Ansul has more than an academic interest in telling you about its new ANSAR and PHYTAR herbicides . . . but if you're a grower, dealer, sprayer, formulator, educator or consultant in the field of agricultural science, we think you should know that:

ANSAR 529 is the first weed killer that has been able to effectively control Johnson Grass! It's approved and proven for use in cotton. It's easy to apply, economical and won't harm the cotton. It's also highly effective on puncture vine, morning glory, nutsedge, cocklebur and a host of other weeds.

PHYTAR 560, a non-selective, general herbicide, is a practical new substitute for old-fashioned weed oil. It eliminates weeds along roadways, ditches, around buildings and storage areas and in other non-crop locations. There is no residual toxicity. Unlike weed oil, it won't stain, won't corrode spraying equipment and solves the storage problem (one gallon of PHYTAR mixed with water when you're ready to apply it is equivalent to 50 gallons of weed oil). In the final analysis it's cheaper and more effective.

As you get ready to face another weed season, tuck these ideas away. They may save you a lot of time and trouble . . . and might make you a lot of money.

Maybe you can get cheaper mowing or faster mowing. But not both in one package.

International Cub Lo-Boy® and Cub Cadet® tractors

Hand mowers, power mowers and riding mowers all cost less than the smallest mowing tractors. Grazing goats cost even less. But they're all too slow, of course, if you have any sizable expanse of grass to keep neat.

In general, the more power you buy, the more mowing capacity you get. That's just as basic as the fact that the price goes up, too.

Many people with big grass to take care of have found an excellent compromise in a pair of midget workhorses of the International power line.

A quarter of a million of them have bought the 13 hp Cub Lo-Boy, for instance. With 42″ rotary mower it fine-clips up to 10 acres a day. With 60″ mower it handles up to 15.

And that's on less than a gallon of gas an hour. The Cub Lo-Boy works with reel mowers, too, of course. Plus dozens of other attachments. It has big model hydraulics and engine-driven power take-off.

Still more compact—and unmatched for working skin-tight to trees, curbs and other obstacles—are the new 7, 10 and 12 hp International Cub Cadet tractors.

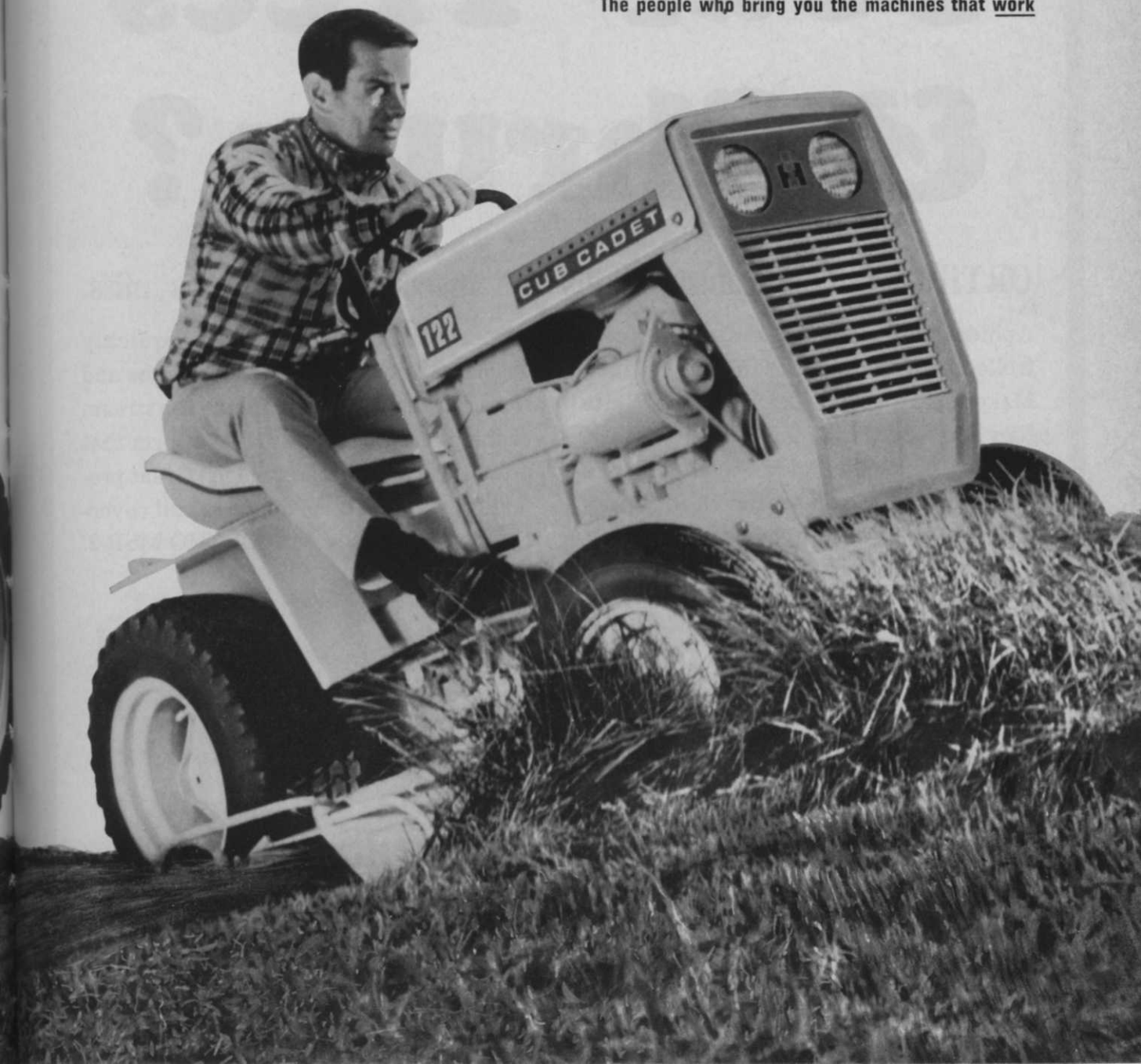
Economy and deluxe models handle rotary mowers up to 48″ or 3-gang reels. They have direct, no-belt drive. Enclosed, two-wheel disc brakes. Sports car steering. The same warranty as bigger IH tractors. A Cadet's no toy. It's a tractor!

How sturdy? Five-year-old Cadets today are still worth up to ⅔ their original value!

Either or both of these Internationals—Cub Lo-Boy or Cub Cadet—could be the answer to your mowing problems. Look them over at your IH dealer. He'll give you a good deal in pairs or in singles. Or by the dozen.

INTERNATIONAL HARVESTER COMPANY

The people who bring you the machines that work



Entrance to Summit Hall's town farm in Gaithersburg, Md., as seen from Route 355. Body of water in front is a small spring-fed lake which provides a source of irrigation for part of the farm. Two other similar-sized lakes are located at other spots on the property.

Summit Hall Turf Farm Situated Amidst Megalopolis of 30 Million

By GERALD T. BRADY

THE mid-Atlantic region of Maryland, northern Virginia, Delaware, eastern Pennsylvania and New Jersey makes up a major portion of what is referred to as a megalopolis. Compressed into this seaboard corridor are nearly 30 million people, 15% of our total population. This is the spawning ground of suburbia in its most flourishing form. It is also the reason why Summit Hall Turf Farm in Gaithersburg, Md., could keep crews busy 12 months a year if the weather cooperated.

From the time of the first hearty crocuses in March until hard frost takes over in early January, Summit Hall helps keep the megalopolis green. More than 1,000 acres are under cultivation at the firm's two Maryland locations. The original 55-acre plant at Gaithersburg used to be picturesquely rural. Within the past four years, suburbia has sprung up on all sides and caused manager/founder, 40-year-old Bill Wilmot, to find expansion room elsewhere. Three years ago, the 1000-acre Potomac Valley Farm was established to keep pace with increased consumer demand for quality turf grasses. The new farm is 18 miles "upstream" from Gaithersburg, and both locations operate on a capacity schedule ten months a year.

Summit Hall's main products are Meyer Zoysia, Merion Bluegrass, Scott's Windsor and some special-purpose grasses like U-3 Bermudagrass and others.

Double Production, Same Size Crew

Today the Farm utilizes no more manual labor than it did five years ago, but production volume has more than doubled during that same period. Like so many other agricultural businesses, Summit Hall was almost forced into mechanization due to a shortage of field labor. The shortage has been a proverbial blessing in disguise. Once underway, the mechanization program never stopped, hasn't stopped yet, and probably will go on as long as Bill Wilmot can find a new way to produce more, at less cost, for more profit.

The Farm's rolling stock includes a fleet of Ford F600 flatbed trucks; a half dozen tractors including a Ford 6000 model, newest and largest in the Ford tractor line; 3 sales and service vehicles; several small utility trucks including Jeeps and pickups; several Ryan sodcutters; and a whole field full of mowers, vacuum sweepers, sprayers, seeders, plows, harrows, hydraulic land leveler and other maintenance equipment.

Summit Hall also has auto-

Summit Hall's founder and manager, Bill Wilmot, is surrounded by blue ribbons and trophies won by the Farm's flower show exhibits.

matic zoysia plugging machines which were designed and patented by the Farm. With these machines, one operator can harvest the equivalent of a dozen men working at top speed.

Machine Is Unique

Summit Hall's zoysia plugging machines are unique and unduplicated in the sod industry. They are for the most part completely automatic with the operator's job being simply to guide the machine along a given direction. Two pneumatic-driven cutting shafts alternately plunge into the sod scoring out a 2" diameter cylindrical plug with each thrust. On the upward cycle the plug is ejected from the cutting shaft and deposited into a loading crate positioned at the front of the machine. As the crate becomes filled up, it is manually removed to a nearly portable conveyor track and sent along to a flat-bed trailer.

The very unique feature of these plugging machines is the fact that they cut a cylindrical plug. Most growers harvest zoysia in regular sod strips and then dice the strips into square patches. Summit Hall, to the best of our knowledge, is the only commercial grower with mechanical harvesters that cut round plugs according to USGA recommendations. Each plug contains more than 3 square inches of sod, root and earth, cut cleanly and compactly to help prevent drying out in shipment.

The entire organization is knitted together by two-way radio. Trucks, sales vehicles, and even field tractors are radio-equipped. From the base at Gaithersburg, Wilmot can keep constant control of field operations, direct salesmen to calls which require immediate attention, and schedule sod installation crews from one job to the next. The radio network is another one of those improvements that he sometimes wonders how they ever got along without.

Workmen prepare to lower a section of eight-inch aluminum water main, which is part of Summit Hall's permanent irrigation system. When completed, the system will be one of the largest of its kind in the country.

12 Miles of Aluminum Pipe

The Farm's new irrigation system, under construction now at the Potomac Valley location, will comprise almost 12 miles of aluminum piping. Two and a half miles of 8" pipe will run underground along the edge of the grass fields, with hydrants spaced every 60 ft. along the line. Power-roll surface lines will run off the main and stretch laterally a half mile across the fields. The first phase of the system was installed during the 1965 growing season, in a year that saw extreme drought conditions in the east. Yet Summit Hall had its finest looking crops last year and credits the new irrigation system with the difference. Or, as Bill Wilmot put it, "No matter how scientific we get, let's

The Farm's radio communications network keeps all vehicles in touch with the home office. Frances Williams, one of the office personnel, is at the controls here.

The Farm's Mobile Tanker delivers fuel to field equipment. Many of the Farm's tractors, compressors, etc., are being switched to diesel for higher economy.

face it—none of it means a thing without plain ordinary water . . . and plenty of it."

Serves Three Markets

The Farm sells to three distinct markets: (1) do-it-yourself homeowners for zoysia plugs, (2) custom installation, and (3) wholesale buyers. The do-it-yourself market is reached by a heavily promoted preseason sale between the first week in March and the middle of April. After that, plug sales are handled by the Hechinger Co., a local chain-operated haven for all kinds of do-it-yourself products.

Hechinger's handle both zoysia plugs and Merion Bluegrass sod. Plugs have been in the stores regularly for the past several years, but sod was tried on an experimental basis only two years ago. It turned out to be an instant success, particularly attractive to the homeowner who needed just a few yards for repair work. Summit Hall stocks the chain's 8 Washington area stores on consignment every Thursday, and picks up unsold material the following Tuesday. Returns are sold at reduced prices to a waiting list of customers who have registered their names with the Farm. Generally, there is little or no return material during the height of the spring planting season except for an occasional weekend of inclement weather. In that case, the Farm's office staff starts telephoning the waiting list and within a few hours everything is gone.

Automatic zoysia plugging machine does the work of 12 men.

Sells Zoysia By Mail

Outside of the Washington area, Summit Hall conducts a large-scale mail-order business for zoysia plugs. Promoting their plugs through the garden pages of metropolitan daily newspapers brings orders in from every corner of the country. During the most active season between March and June, the Farm harvests, packs and ships on an assembly line basis. Local housewives are used to help out in the packing shed, processing the several million plugs sold each season.

Besides the do-it-yourselfer, Summit Hall does a brisk business in custom sod (and plug) installation. Local newspaper ads bring in requests for estimates which are handled by two full-time salesmen. The conversion ratio of inquiry-to-sale runs better than 50%, thus keeping a three- to six-week backlog going between March and December.

Wholesale buyers, contractors

and nurserymen quite often buy by the acre for a better price break. Others either send their own trucks to the Farm or have Summit Hall deliver a few hundred yards of sod for the job underway.

Jan., Feb., "Down" Months

All of this activity goes on between March and December. January and February are down months, with the Farm usually settled under a blanket of snow. As work tails off towards the end of December, temporary help is gradually reduced, with the best of the men retained as long as possible. Foremen and supervisors are permanent employees and usually each year a few of the more promising temporary hands are added to the full-time staff. During January and February this crew of 15 men overhaul equipment; paint, repair, or improve apparatus in the Farm's maintenance shop.

Labor Shortage Increasing

As soon as the snow starts melting in early March, the call goes out to last year's temporary employees. Most have taken interim jobs as store clerks and gas station attendants, but are generally available when the season gets underway. College students are added towards the end of May. The cycle is perpetual and, Wilmot admits, the roughest part of the business. Each year, according to the manager, it gets harder and harder to find enough field help to keep production rolling as sales volume increases. "We have a corps of men who keep coming back year after year," he said, "but only those who enjoy outdoor work." The alternative, of course, is mechanization and the Farm has done a great deal of it.

However, machine operators, truck drivers, packers and a certain number of laborers will always be needed. Summit Hall's problem is not unique; labor shortage plagues the entire agricultural industry. It is highly unlikely though that the Farm, which has grown from small beginnings into a multi-million-dollar operation in 18 years, will be stymied by this problem.

Maryland Sod Producers Unite; Form Sod Growers Assn.

"Better sod and a better sod industry," are goals set by recently formed Maryland Sod Producers Association.

Turfgrass producers in Maryland formed the association at a meeting in College Park, Md., April 19, as the result of discussion during a Maryland Sod Producers Conference, March 2.

Acting president of the new association is Parker Shirling, manager of Princeton Turf Farm, Centerville, Md. Other temporary officers elected by about 65 persons at the organization's first meeting include: vice president, Winton Osborne, Harford Sod Co., Fallston; secretary, Dr. Elwyn Deal, turfgrass specialist, University of Maryland, College of Agriculture; and treasurer, Emory R. Patton of R. P. Patton and Sons, Silver Spring. Edward F. Mayne, Olney, Md., along with the temporary officers, made up the committee to study MPS formation.

Temporary officers conducted a scheduled meeting May 17, where a proposed constitution and bylaws were presented.

Aims of the MSPA are to cooperate with the University of Maryland in an education program, and to develop close working relationship with the building industry in Maryland, and with turfgrass associations in other states.

Salt-Tolerant Grasses Eyed for Roadside Use

Three coarse-textured grasses show considerable promise for roadside use where stand establishment is made difficult by high salt concentrations in the soil, reports a turfgrass specialist from Iowa State University.

Grass specialist Eliot Roberts says Kentucky 31 fescue, sand lovegrass, and blue grama have been most tolerant of high salt concentrations. Six other coarse-textured grasses also show promise for establishing cover quickly on salt-contaminated soil, Roberts adds. They are intermediate wheatgrass, Russian wildrye, slender wheatgrass, tall wheatgrass, western wheatgrass and reed canarygrass.

Roberts explains that failure to establish grass stands along roadsides is becoming a serious economic problem. Lack of adequate cover leads to erosion and causes undermining of highway medians and underslopes.

In most cases, the grass is killed by high amounts of salt carried from highways by runoff water. The salt then becomes concentrated in the soil. During the past two winters, Roberts notes, as much as 50,000 lbs. of salt have been used per mile on some sections of 4-lane highways in Iowa. He points out that road beautification suffers as a result.

As a part of a study sponsored by the Iowa Highway Commission, Roberts is testing 23 more varieties of coarse- and fine-textured grasses for salt tolerance. Co-operating in the project is Edward Zybura, agronomy graduate assistant at Iowa State University.

N. M. Horticulturist Says Clip Often for Hearty Turf

An important part of any good lawn maintenance program is the decision to mow frequently, reminds Douglas Bryant, horticulturist with New Mexico State University Cooperative Extension Service.

Infrequent clipping, he says, allows grass to grow so much that any later mowing removes too much leaf surface. Bryant suggests that never more than 1/4 to 1/3 of the total leaf surface should be removed at one mowing.

To cut larger amounts of leaf surface results in physiological shock to grass plants. Bryant points out, "this causes excessive graying or browning of leaf tips and reduces the photosynthetic production of food and depletion of root reserves."

Another reminder Bryant advances to lawn care specialists concerns the value of prompt clippings removal. "Clippings left on a mowed lawn give disease organisms and insects an opportunity to attack," he explains.