

SEPTEMBER, 1969

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Special for This Issue

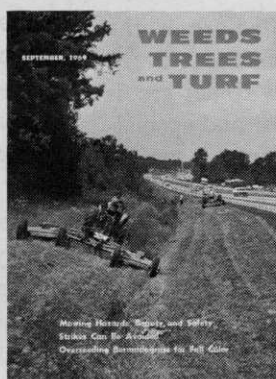
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The Cover

Highways 41 and 19 going south out of Atlanta have a rush hour that lasts all day long. Nearly every conceivable moving vehicle passed on a recent Wednesday, including a transport trailer with a load of boats and another with a four-room house on it. Still, highway mowing has to go on. James Collier of the Georgia Highway Department worked his Woods "Batwing" over some pretty steep and rugged terrain along this stretch. He got the job done despite the traffic and despite the obstacles that beauty and safety present. Read about the problem of roadside vegetation maintenance beginning on page 6.



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Member Business Publications Audit



A "Best Buy"

Prices are up on about everything today—except for the "best buy" of them all. That "best buy" just happens to be your association membership. Dues have pretty much held the line during this prolonged cycle of inflation. Yet association memberships in a number of organizations we work closely with are not growing. This just doesn't make sense.

Your association membership will consistently be the best investment you can make. Right now I'm thinking of the sod producers. Having just attended a national field day at Princeton Turf Farms in New Jersey—and noted the big crowd and the sophisticated field day performance of equipment—I find it difficult to conceive of a grower passing up the opportunity to belong to this group. There is absolutely no way possible that a grower could see as much sod machinery on display and in action as at this field day—unless he were ready to travel from coast to coast with a number of intermittent stops along the way.

The field day alone is worth the \$50 membership fee. But the field day is by no means the only benefit. There are many others. The chance to meet and visit and make friends with others in the same business is even more important. At many association meetings in other fields, members point out that they gain as much from their so-called "bull sessions" with others in the business as they do from the formal educational program.

The American Sod Producers Association members are right now planning a 3-day field day and meeting session for next summer. If you are a grower and a businessman, you no doubt realize that you can benefit from an association with this group. They need you and you need to take advantage of this "best buy" in dues to be found.

All you have to do is see the ASPA ad on page 29 and circle the READER SERVICE CARD number in this issue of WEEDS TREES AND TURF. We pay the postage and get your name promptly to Henry Indyk who is executive secretary. Or, if you wish, write him direct at the College of Agriculture, Rutgers, New Brunswick, N.J. 08903.

A.E.



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How to take care of 579 acres of race track, golf course and motel at the Indy "500"

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between the crush of crowds numbering over 250,000 to make the facilities ready for the next day.



Cagle directs operation clean-up.

These race-track Wheel Horses labor through blistering heat that cripples many a race car. Speed is of the essence here too. Cagle's maintenance staff must work fast



Keeping fairways, greens manicured on 27-hole course.

There's a lot of shrubbery and sod to be looked after on the 27-hole golf course and around the 96 room motel, for the "500" Festival's \$100,000 tournament, and through the golf season. When winter comes, on go the snow dozer blades. Sometimes, they work up to 17 hours at a crack ... keeping motel parking lot, walks, and breezeways clear of snow.

If you have a lot of ground to cover, and you have to cover it quickly, and keep it looking nice, try Wheel Horse ... the choice of the pros at Indy, where speed and performance set the pace.



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How States Are Working Around

Mowing Hazards: Safety and Beauty

FOREMAN Paul Skelton's men work near the Lawrenceville-Buford Interchange on Interstate 85 northeast of Atlanta. They're mowing part of the 400,000-acre "pasture" the Georgia Highway Department maintains. Inset below is James D. McGee, assistant maintenance engineer, who discusses some of the problems of vegetation management.

VEGETATION management specialists are going to have to become full partners in the designing of highways. Otherwise, it will take a savvy press relations specialist to explain to taxpayers why vegetation maintenance costs are rising rapidly.

There is much emphasis right now on highway safety and beauty. Yet every tree and bush planted, every guard rail and highway marker implanted represent added maintenance costs.

"From the standpoint of maintenance, safety and beauty are a scourge," says James D. McGee, assistant maintenance engineer for the Georgia State Highway Department.

"Don't misunderstand," he added quickly. "We're all for safety and



beauty. It's just that the public must come to understand that every service has its cost."

Georgia, the largest state east of the Mississippi River, is taking a lead in recognizing the importance of vegetation management in highway planning.

State highway chief H. H. Huckeba, since his appointment two years ago, has set up as a part of his operating technique a committee that reviews all new highway plans. McGee, as maintenance specialist, sits on that committee.

McGee sums up the major problems of roadside maintenance in three closely related categories:

- 1) labor;
- 2) litter; and
- 3) physical obstructions by de-

sign (to include those that achieve safety and beauty).

The problem with labor is a shortage of skilled help. Highway engineers know what we mean by "skilled" help. A way for anyone else to understand is to watch an operator maneuver a tractor with a sickle bar around a utility pole and guy wire, two or three town and mileage markers and five or six shoulder reflector markers, perhaps all within 50 yards of each other.

Another way would be to step inside a maintenance shop and watch a mechanic work on practically every brand and model of tractor, truck, and mowing unit manufactured.

If the variety of equipment

wouldn't stagger the public, the quantity would. Georgia, for example, in mowing equipment alone, counts 772 rotaries and 471 sickle and other type mowers.

"A big help would be to have all the equipment the same for a given maintenance section," suggested C. S. Furney, equipment engineer. "That way, a mechanic could specialize. The way it is, our men have to be familiar with a number of machines. Mechanics we have, though, are more versatile than ones you find in a dealer's shop."

The hang-up, of course, is that equipment is bought by bid and other considerations aside from maintenance.

Georgia experiences a 10% to 15% annual turnover in mowing equipment at a cost of around \$100,000.

Natives Are the Litter Bugs

A public that litters beyond imagination yet demands highway beauty stages perhaps the most frustrating problem for highway departments, Georgia's included.

"We've found the biggest offenders are local people," said McGee. "The transients do a much better job of hitting the waste cans at the rest areas."

Mowers are set at five inches to avoid as many cans and bottles as possible, McGee said. Various methods have been tried to collect litter. A machine called a "can gobbler" was worn out in six months, Furney added.

McGee expects the litter problem to be solved with a type of mechanical finger-raking and vacuum device.

"If anybody comes up with one, we're sure interested."

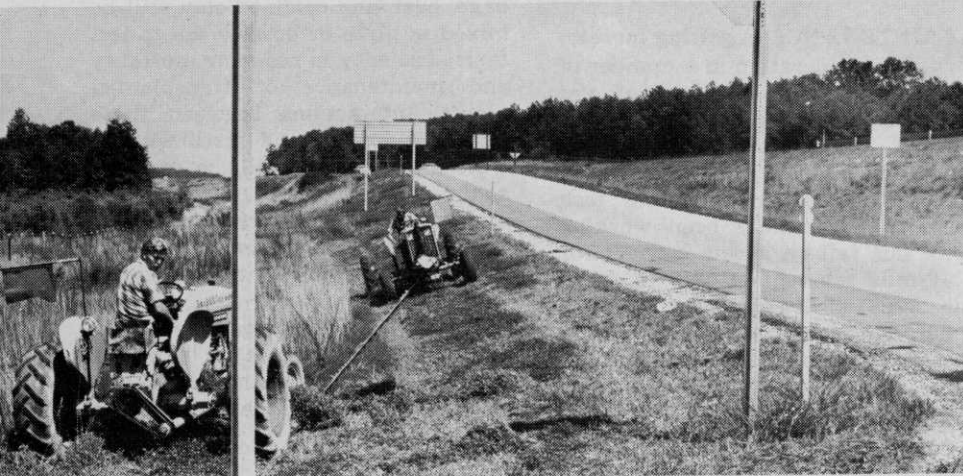
In the meantime, as an additional safeguard a five-inch belting has been added outside of the chain guards on mowers to stop debris struck by mower blades. "The belting does a much better job than the chain alone," McGee said.

"We use flail-type mowers on especially rocky sections," he continued. This type of mower seems to throw an object vertically, while a rotary hurls it horizontally, he explained.

Herbicide Use Will Grow

Concerning physical obstructions, "specialty equipment and herbicides are going to help on maintenance a lot," said McGee. He mentioned the Slope-Runner mower and guard-rail mower as specific equipment examples.

Georgia has about a dozen experi-



COUNT THE STEEL POSTS that hold various highway markers and you begin to understand one problem of roadway mowing. Increasing emphasis on beauty and safety is requiring more skilled help and special equipment, such as the guard rail mower below.





MANY STATES are experimenting with chemicals to stimulate growth, retard growth, and selectively kill. The Kansas Highway Department demonstration above shows weed control obtained in pfitzer with Casoron G-4.

ments in progress with chemicals, with regard to weed control, growth stimulation, growth retardation, and soil sterilization.

Even with 400,000 acres to mow along 17,500 miles of highways, Georgia's (as are many other states') highway maintenance department is very much involved in planting grass and harvesting a hay and seed crop.

"Grass-growing is erosion control first and beauty second," McGee reminded.

Bahiagrass, Clemson Clover, Bermudagrass, Fescue and Lespedeza are the varieties for Georgia. Some 10,000 bales of hay are harvested for mulch. The cost is 15¢ per bale, a third of a purchased bale. Although there's also a considerable saving in raising seed, only about 10% of the department's total need is harvested.

One limiting factor is again that emphasis on beauty. Folks traveling down the highway like to see neatly manicured rights-of-way. But what it means to the Georgia Highway Department is mowing 400,000

acres from four to eight times between May and November.

MAINTENANCE is getting increasing consideration in a number of other states, with examples of cost reduction methods reported from Florida, Pennsylvania, Kansas, and Kentucky.

A joint highway planning task force in Florida has been working since last fall on a new concept for a 16-mile segment of I-10 in Jackson and Gadsden counties.

Safety, beauty and conservation are the announced highlights of the project. But maintenance thinking is reflected.

The task force is composed of designers from the Florida State Road Department, the U.S. Bureau of Public Roads, the Institute of Food and Agricultural Sciences and the College of Architecture and Fine Arts of the University of Florida.

Natural Conservation or Revegetation

A University research report describes the project this way:

"The project will consider short and long range costs and effective-

ness of natural conservation and regeneration as opposed to artificial revegetation along interstate highways.

"Treatments along this line will include (1) sections in which the rights-of-way will be completely cleared and replanted, (2) sections that will be predominantly cleared and areas marked for natural regeneration with key trees and plant groups marked for preservation, and (3) sections that will be selectively cleared with large areas marked for conservation of materials and preservation of visual qualities of the landscape.

"Cost accounting studies will be made for the various areas to consider initial cost and maintenance for at least a five-year period.

"Soil amendments such as shredded pine bark, processed garbage, peat, and calcined clay will be mixed in place or borrow soil to test their efficiency in reducing mortality and maintenance of transplanted plants. Interactions between these soil amendments and fertilizer and watering regimes will be studied, again with the idea of reducing maintenance and mortality."

"Anti-transpirant chemicals will be tested during transplanting to reduce water loss until new root systems are developed. These and anti-scald paints will be tried in an effort to reduce mortality among trees remaining on the periphery of cleared areas."

Low-Maintenance Vegetation

Low-maintenance vegetation covers are gaining acceptance, notably in Pennsylvania. The state's highway department has planted some 18,000 acres of crownvetch. This flowering plant offers almost the utopian solution to the beauty/maintenance conflict.

Miles of bright lavender, pink and white blossoms are pleasing to motorists and a delight to highway officials and, with good reason, the state's taxpayers. Department officials estimate that crownvetch represents a maintenance saving of more than \$100,000 annually.

Kentucky Weed/Brush Control

Chemical weed and brush control are getting special attention in Kentucky.

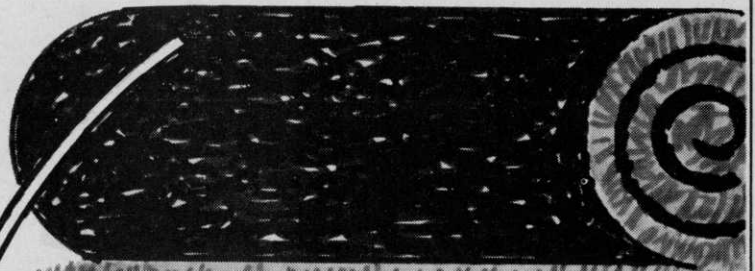
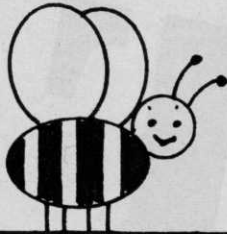
"It is by use of modern chemicals that great strides have been made in the management of today's highway acreage," K. C. Arnold has said. Arnold is director of the roadside development program for the Kentucky Highway Department.

(Continued on page 10)

A SIMILAR Kansas demonstration, using Casoron G-10, manufactured by Thompson-Hayward Co., Kansas City, shows weed control in fence rows and around trees, areas where mechanical mowers cannot reach.



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Mowing Hazards

(Continued from Page 8)

An article in a Dow Chemical Company publication reports that the department began an extensive chemical control program well aware of but well prepared for potential problems.

Spray crews are trained and guided by agronomists as to legal problems involved, the article stated. Crews make a point of telling land-owners what is being done and why it is being done.

They keep a log showing when and what areas are sprayed, what materials were used, wind direction and velocity, and other pertinent details for future reference.

Test Plots in Kansas

Kansas offers an example of one kind of chemical weed control tests that are going on to reduce rights-of-way maintenance.

Thompson-Hayward Company of Kansas City, set up a dozen test plots, using Casoron, a dichlobenil weed killer. Typical problems areas were selected — interchanges, overpasses, in medians and along fence rows. The tests were started in the winter of '67 and checked last summer.

Two formulations of Casoron weed killer were used. The first, Casoron G-4 (4% active ingredient) was applied to shrubs and trees at the rate of 150 pounds per acre. The second formulation, Casoron G-10 (10% active ingredient) was applied under rights-of-way fences at 200 pounds per acre.

Casoron is a pre-emergent weed killer and is applied during the winter when weeds are dormant. Applied with a hand spreader, Casoron G-4 and G-10 are granular formulations.

Plantings in the test plots included winged eunonymus, pinus sylvestris, maple, pyracantha, honeysuckle and pfitzer, andorra and upright juniper.

A June inspection by Kansas Highway and Thompson-Hayward officials found 11 test plots to be weed free and one with about 85% effective control. There was no evidence of damage to plants treated.

Jack Miller, landscape foreman for the area, commented, "that he was extremely pleased with the results. Good weed control," he added, "has been demonstrated in both ornamental plantings and in fence rows.

"This should mean a savings over hand labor, which is expensive and hard to find."

Listen . . .

STRIKE

By A. A. IMBERMAN
Imberman and DeForest
Consultants to Management
Chicago, Ill.

CAN STRIKES be avoided? Not all, but many could be. In my experience as consultant and college teacher, three common management policies often make labor difficulties inevitable.

First, managements assume that the proper policy to follow in personnel and industrial relations is to stick to the letter of the contract—no more, no less.

Second, most top executives believe that the most prudent policy to follow whenever improved methods or new equipment or new rates are introduced is to make no special and extensive explanation to union officials or work force.

Third, management policy usually assumes that union leaders and negotiators accurately reflect the sentiments and demands of union workers.

Legalistic Approach

Consider the first—that a legalistic approach to labor relations is the soundest policy. For example, executives wait for stewards to file grievances which are then minutely checked against the contract. Past practice (i.e., precedent) becomes a key factor.

Too many of these executives do not understand that a union contract is not the same as a contract to buy so many lawn mowers or sprayers,

or bags of insecticides or truckloads of sod. Goodwill is more important than the letter of the contract.

But the legalistic approach recognizes only the letter of the contract since this requires no attention from the head of the company and can be delegated to other people in industrial relations. These latter people usually have no leeway outside the explicit written agreement.

Unfortunately, this conduct leads to continual irritation of union stewards, members and local officials, since union contracts do not cover all contingencies. This conduct also leads to excessive use of arbitration, which arouses such animosity among union members that they often welcome a chance to strike back at management when the opportunity arises at contract renewal time.

No Explanations

A *second* management policy that leads to strike activity is to introduce improved methods and new machinery in order to boost productivity—but not to make any explanation for these moves.

In the absence of advance explanation that the new elements are all being introduced in order to protect the company's future and thus the employees' jobs, the new methods and new equipment are regarded as the forerunners of over-publicized automation and eventual job loss. Under these circumstances, the new equipment reinforces the theory that the interests of management and employees conflict.

LIKES

... Can Be Avoided

Employee Desires

A third management policy that aids and abets strikes is for management to believe that what the union officials demand for their members is identical with what the rank-and-file employees really want. Very little is actually known by most managements about what the rank-and-file employees really want in the new contract. But do the union leaders know?

Labor leaders say they know. But research indicates that union officer preferences often do not coincide with member preferences.

Professors E. E. Lawler and E. Levin reported in one study (*Industrial and Labor Relations Review*, July, 1968) that "the officers (of unions) tend to greatly overestimate members' desire for additional cash. . . . Part of this overestimation can be attributed to the officers' own high preferences for cash, causing the officers to raise their estimate of the members' desire for cash."

Specifically, as the study indicates, in Company A, union officers far overestimated members' desire for higher pay, seriously underestimated hopes of members for longer vacations in proportion to service, and missed completely members' wishes for early retirement privileges.

In Company B, union officers overestimated members' preference for shorter work week and for more money, and underestimated the desire for sick pay and disability pay. Union officers believed that mem-

bers would be wholeheartedly behind a major push for more money, when the members were actually lukewarm on this point and more avid for different benefits.

It is inevitable that any list of union demands will not fit the needs of all members of a union, but as is common, when business agents or union negotiators come from the outside, the chance that they will not adequately reflect the members' wishes is enhanced. The outcome? Rejection by the local members of the contract that is prepared (and often recommended) by the union officers.

Within a two-year period, 1966-67, this has occurred in 1,937 instances, according to the Federal Mediation and Conciliation Service—and 20 percent of them were followed by a strike.

Members' increasing rejection of contracts and subsequent strikes may be attributed more and more to this union neglect of members' opinions. By the same token, the rejection of contracts may also be attributed to company ignorance of employee thinking.

New Methods

What can be done about these three misguided management policies? A large California wholesale nursery had had a steady sag in profits for no discernible reason. Came time for negotiation of the new contract, the members rejected the recommended settlement and a three-week strike ensued.

A new contract was offered involving a rearrangement of the package (which added 1¢ to the cost). This was grudgingly and only narrowly accepted, and the employees returned to work. Productivity still was lamentable; grievances increased to a high level; arbitration became more costly; and waste, spoilage and customer complaints increased.

A year's project was started under the aegis of a consultant employing the "listen to the employee" technique. This involved systematic interviewing of all 180 employees throughout the nursery with union approval. Within the first six months some interesting facts emerged.

Within the past two years, the nursery had added about 35 employees in order to meet the needs of the expanding economy. These people were added without proper indoctrination or proper training.

The employees said the foremen screamed at them to increase their output to a speed that their equipment was not capable of maintaining. They also said that even if the machines could be run that fast, it would be impossible to do so without a great deal of spoilage.

Older Employees

Older employees resented the wage scales at which the new (and often younger) people were hired, since it gave no extra recognition to the older workers. After a 90-day probationary period, the newcomers received almost the same scale as the old-timers. This was the only way

A Tree Grows in the Darndest Places

This five-foot aspen undoubtedly was the tallest tree in Greensburg, Ind., when this picture was taken!

It adorns the tower of the Decatur County courthouse.

Grover Brinkman, a freelance writer and photographer, took this picture some months ago. He noted that the tree "had been there for a long time."

Some proof of what he says can be obtained from the 1966 edition (and perhaps earlier and later ones) of the Rand McNally Road Atlas, which notes in red above the town of Greensburg: "Tree Growing in Courthouse Tower."

Brinkman was told that the tree has been chopped back on occasion, but the roots are so firmly wedged that the tree hasn't died.



avoid layoffs) was alleviated by setting up a rotation system, so that all employees took their turns. Resentment died away. In addition to all this, a host of petty gripes and grievances were cleaned up—e.g., locker room, better maintenance of their equipment, and so on.

The steady climb of productivity, the fall in waste and spoilage, even the decreased labor absenteeism and turnover—all showed the effects of "listening to the employee" and acting promptly and open-mindedly on that information. A custom-tailored supervisory training course was later introduced to instruct foremen on how to handle such problems in their departments.

Nobody Listens

Many of the common problems of employee morale—some of which erupt into costly strikes disguised as demands for more money—are directly traceable to management unawareness of such multitudinous employee discontents.

The larger the nursery or the wider the area a contract applicator or tree company serves, the more an individual worker feels left out of the picture, the more he feels a need for some method of being able to communicate with someone in management, of someone to *listen* to him.

Trite as this may seem, this observation flows from 25 years of listening to employees in every industry in every area of the country. This is set out in greater detail in an earlier article, "Labor Relations: Dealing with the Rank-and-File Rebellion" by A. A. Imberman, Personnel Magazine, Nov./Dec. 1967. (Single copies are available free by writing to the author care of WEEDS TREES and TURF.)

The First Line

Most managements believe they receive reliable reports about employee morale from foremen. But foremen are kept busy checking and judging the work in their departments, maintaining discipline, enforcing company policies and safety regulations, and dealing with union stewards.

Supervisors must be retrained to become the humanizing influence that has been lost between worker and management. Unfortunately, most managements have turned the supervisors into traffic cops — to push production as their sole duty—with the result that they have no time for anything else.

I recall one Illinois contract applicator that had gone through a

the company could hold the newer employees in a tight labor market.

On occasion, whenever work was slow in any one department, the employees would be "farmed out" to other fields which were busy. This, of course, was a method the company used to avoid layoffs, and hence, the manager believed, would be appreciated by the employees.

However, the employees resented being transferred to unfamiliar work in which they were not adept. As a result, they were constantly upbraided by the foremen. Sometimes younger employees were kept in their original field while some of the older people were forced to move.

From this total situation, festering in most of the employees, came the decline in productivity, and the carelessness that upped waste and spoilage, and so on.

The continuous flow of such information which came from the employees through the specialist interviewer led to some immediate changes.

All new employees, and employees with less than six months' service, were put through a training routine which they should have had at the beginning. They were instructed at their equipment—sprayers, tractors, etc., as if they had never seen them before, their questions were patiently answered, they were taken on a tour of the whole nursery—including the offices—to see how their work fitted into the whole operation.

Recognition

Vacations were lengthened (with the consent of the union) to reflect years of service, so that the older workers no longer felt like the older child when the new baby arrives and gets all the attention.

In addition, service clubs for five, ten and more years of service were started, to give recognition to the old-timers. A modest house organ was started to instill a pride of company.

The problem of temporary transfer from one field to another (to

two-week wildcat strike, led by one obstreperous local union leader. One supervisor, on his own time, sat down with this wildcat leader, and calmly discussed their problem. The story the supervisor received was simple.

The local leader had come from a farm, lived on a farm, loved the farm, came to the city so that he could earn enough to move back to the farm. His mother had died. His father had been on the farm alone, corn dried up, no hired help available, nobody to talk to about it. He was frustrated, and furious with the world. A vast accumulation of trivial employee gripes and grievances without any apparent response from company officials and union officials had triggered his frustrations; his anger at the company and union boiled over.

Upon the wildcat's end, the company sent him home for four weeks to straighten out the old man's affairs. He returned to become one of the applicator's finest men. Had this supervisor had the training and time to listen to the men in his crew as part of his regular duties, this, and perhaps other disputes, may have been dissipated in thin air.

Throughout the country are skilled consultants who specialize in guiding managements in installing such labor-management communications systems. Usually, these men are connected with a college or university. (Interested company executives may secure a list of recommended names by writing to the author care of this magazine.)

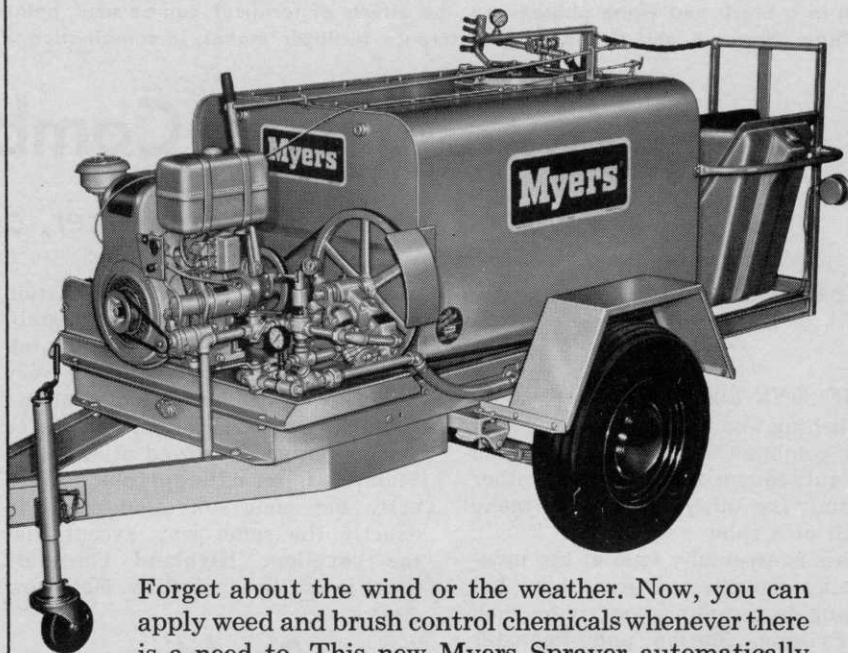
Other Effects

Of course, worker dissatisfaction and dislike of the company do not always find an outlet in dramatic walkouts or strikes. *Dissatisfaction more often is reflected in high spoilage or waste, low productivity, high absenteeism, or high turnover*—and this state of affairs can drag on for years without an outburst. In these circumstances, it is vital for management to listen systematically to employees in an attempt to discover what is really breeding worker discontent.

In brief, a company, large or small, can have good employee relations only if there is a good *two-way* communications system. However, even in managements persuaded of the soundness of starting such a system, there is always a disposition to wait until trouble arrives at the gates. By that time, the situation is too far gone. The time to listen to employees is while goodwill prevails. The trick is to keep it that way.

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Even in a black and white photograph, the effects of fertilizer can be seen, points out Dr. Robert Schery, director of the Lawn Institute. Photos B and C show the difference fertilizer makes, in combination with quality seed, in getting turf established.

Winning Turf Combination:

Good Seed, Good Fertilizer, and . . .

By DR. ROBERT W. SCHERY, Director
The Lawn Institute

THE ONE-TWO punch for establishing and maintaining fine turf is a combination of good lawnseed and subsequent fertilization. Neither without the other is going to make much of a show.

This is especially true of the newer elite varieties of grass now becoming so popular, — cultivars such as Fylking, Merion and Pennstar among the Kentucky bluegrasses, all bentgrasses, and even the newer fine-leaf perennial ryegrasses such as Manhattan, Pelo and NK-100.

True, those attractive fine fescues such as Cascade Chewings, Highlight, Illahee and Pennlawn do well with only moderate fertilization, being noteworthy for their persistence in shade, on poor soil and where subject to drought. But even the fescues respond well to autumn feeding, especially under trees where almost alone they often constitute the turf. Their color and density is improved by autumn fertilization, at a time of year when deciduous trees are about to shed their leaves, thus allowing more sunlight to reach the sod.

As to the affects of fertilization once these good grasses are established, the pictures pretty well tell the story. Photo A points to a very thin turf on the check plot that has received no fertilization for three years (bentgrass mowed at ½ inch). Photo B is an adjacent plot on exactly the same soil, maintained in exactly the same way except that the excellent Highland bentgrass there is fertilized monthly. Note how

much denser and more serviceable is the turf.

At the Lawn Institute we find that the exact formulation of the fertilizer is not so important as its regular usage. Properly used almost all fertilizers do a good job, the soluble types requiring judicious application in hot weather, the "slow-release" types generally requiring stepped-up application in order to equal the response from the solubles.

In fact, on the heavy soils of the Lawn Institute grounds, adequately fortified with phosphorus and potassium from previous feedings, high-nitrogen products utilizing urea and other immediately-available nitrogenous sources (viz. Nutro 30-5-8 or 24-6-6) have been among the most responsive types and more economical than the ureaforms or natural organics.

Photograph C shows what a difference an autumn feeding can make on an established Kentucky bluegrass turf. Even in this black-white photograph it is obvious how improved the color and density is on the fertilized area where the author stands. The photo was taken in early November, after a mid-October treatment with a weed-and-

Dandelion Control



feed product supplying about 1½ lbs. of elemental nitrogen to each 1,000 sq. ft.

There may have been some slight supplementary stimulation from the 2,4-D, although the more obvious response from the 2,4-D was nearly complete elimination of dandelions in the fertilized area come the following spring.

AT THE LAWN INSTITUTE, we've noticed that dandelions really get their start from early September until freeze up, says Director Dr. Robert W. Schery. Summer applications of weed-and-feed control the pests at that time, but the dandelion population spreads when those light, air-borne seeds are wafted many miles in the breeze by their feathery parachutes. Settled on the lawn, most seem to strike root through autumn.

"This is proved because best dandelion control comes from October applications," says Dr. Schery, "even though the weeding weather would seem more suitable when it was warmer. Earlier weed-and-feed treatments always seem to miss at least a few late starters* (See Table I). Of course, September weeding in the latitude of Ohio is good, but October is superlative. We are talking about weed-and-feed products that contain both Dicamba (Banvel D) and 2,4-D."

Nutro Weed & Feed, made by Borden, is the product used in the tests.

"Our best turf in spring has been consistently that receiving "strong" weed-and-feed treatments. By strong, I mean one-and-a-half to double the rate recommended on the bag," he continues. Even in warm weather, a good weed-and-feed is unlikely to bother bluegrass or fine fescue used at double strength. In the cool of autumn there is hardly any danger. And is the time of year bluegrasses and fescues gain greatest advantage from the fertilizer as well as the weed control. Nor is there danger to nearby ornamentals in autumn, such as there might be to newly budding trees and shrubs in spring. It's a great time of the year to get after the weeds, and boost the grass.

In Table I, Dr. Schery shows the advantage of an autumn weeding-and-feeding. Nutro Weed & Feed saves labor anytime of the year, he says, but if there is one time when you most "get your money's worth," it is autumn. He recommends a full strength weed-and-feed application yet this year, rather than waiting until spring. Results should be more

TABLE I. Results from autumn applications of Weed & Feed at the Lawn Institute as measured by spring dandelion frequency. Counts are an average from at least two test areas.

Treatment	Number of dandelions May 5, 1969 per 1,000 sq. ft.
Fertilizer without herbicide	(about) 600
Sept. 14	
Weed & Feed, Standard rate	60
Weed & Feed, 1½ x	35
Weed & Feed, double rate	35
Oct. 12	
Weed & Feed, 1½ x	2
Weed & Feed, double rate	3

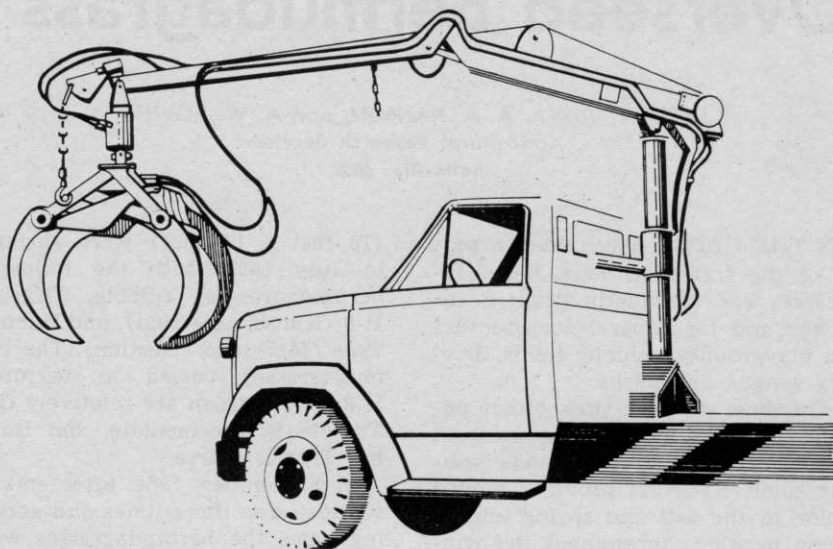
decisive. A bag meant for 5,000 sq. ft. used on only 3,000 sq. ft. really

puts muscle into the product and is recommended for fall.

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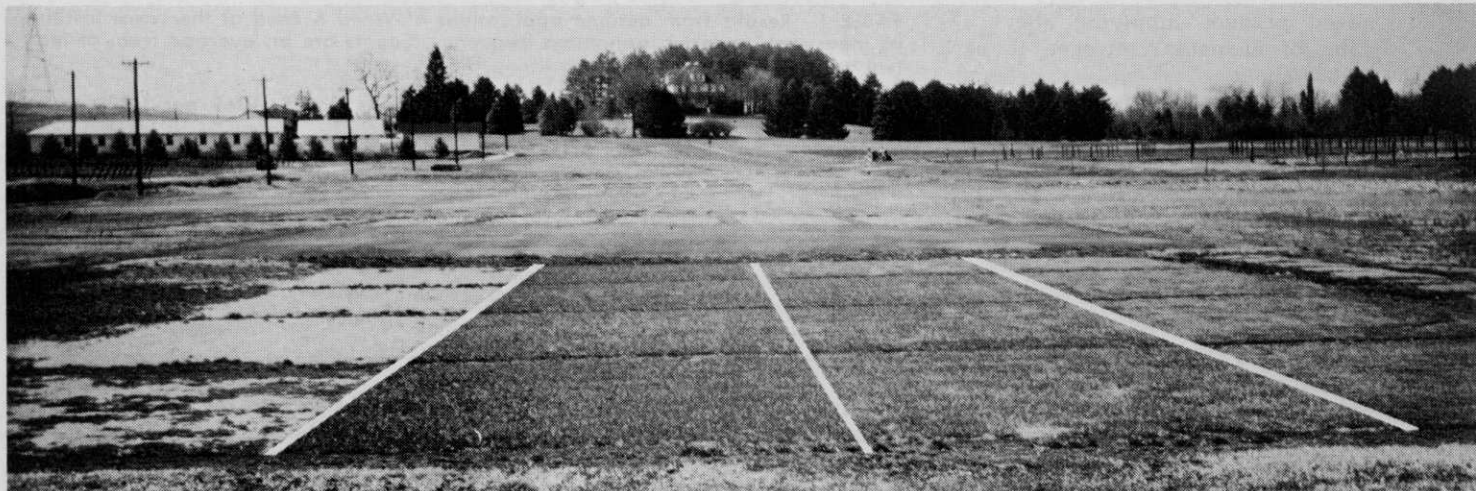


FIG. 1. Bermudagrasses overseeded with cool-season grasses, from left to right, not overseeded, Kentucky 31 tall fescue, ryegrass, and Merion Kentucky bluegrass. The ryegrass has been overseeded a second time.

For Winter Color, Overseed Bermudagrass

By F. V. JUSKA, A. A. HANSON, and A. W. HOVIN*
Agricultural Research Service
Beltsville, Md.

IN THE UPPER South, and in part of the transition zone, bermudagrasses are frequently planted for lawns and for general-purpose turf on playgrounds, athletic fields, driving ranges, and parks.

On some of these sites, either annual or perennial ryegrass has been seeded in the fall to provide winter color. Ryegrass provides winter color in the fall and spring and at some locations throughout the winter months. In late spring ryegrass disappears and the lawn must be overseeded the following fall.

Maintenance costs would be reduced if ryegrass could be replaced with a perennial cool-season turfgrass that would persist when grown with bermudagrass. Information obtained in growing various cool-season grasses, in association with bermudagrass, is reported as a guide to turf managers who are interested in overseeding or in management of combination cool-season and warm-season turf.

Grasses and Seeding Rates:

At Beltsville, Md., duplicate plots

* Research Agronomist, Agricultural Administrator, and Research Agronomist, respectively, Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Md.

(18 feet x 60 feet) were sprigged in July 1962, with the following bermudagrasses: Tufcote, Tifgreen, H-8 (Kansas selection), and Burning Tree (Maryland selection). The bermudagrasses varied in texture—H-8 and Tifgreen are relatively fine, Tufcote is intermediate, and Burning Tree is coarse.

In September, 1964, after spiking the test area three times and aerifying once, the bermudagrasses were overseeded with cool-season grasses.

Each bermudagrass plot was divided into six subplots (18 feet long x 10 feet wide) and seeded as follows: 1) Check—no overseeding; 2) perennial ryegrass—6 pounds; 3) Pennlawn red fescue—5 pounds; 4) *Poa annua*—3 pounds; 5) Merion Kentucky bluegrass—4 pounds; and 6) Kentucky 31 tall fescue—6 pounds.

Rates for all grasses are shown as pounds per 1,000 square feet. The overseeding treatments were randomized with each of the two bermudagrass replications.

Management Practices:

The grasses were mowed weekly during the growing season at a height of one inch and clippings removed. Phosphorus, potassium, and

lime levels were maintained for optimum growth as indicated by soil tests.

During 1964 and 1965, one-pound increments of elemental N were applied during the season until 5 pounds of N as urea were applied.

Split applications of N fertilizer were applied in 1966 and 1967; one-half of the plot received 3 pounds of N and the other one-half 6 pounds of N for the growing season. Thatch was not removed from the bermuda plots during the period of this trial.

In September, 1965, it was necessary to reseed both the ryegrass and *Poa annua* plots. Seedbed preparation and seeding rates were the same as those used in September 1964.

Visual observations on cool-season grass cover in bermudagrass selections were taken twice in late fall and twice in early spring of 1965 and 1966. Single ratings were made in late fall and early spring of 1967.

Results:

Fertility levels had little effect on the percent cover of the cool-season grasses, although red fescue, *Poa annua*, and perennial ryegrass thinned out more rapidly at the higher than at the lower fertility level. There was a significant reduction in red fescue stands at the 6-pound N level.

The average percent stand for the five cool-season grasses over the 3-year period for each of the bermudagrasses is given in Table 1. Merion Kentucky bluegrass ranked first with 71% cover for the 3-year period.

Both tall fescue and red fescue received almost identical average

TABLE 1. Cool-season grass cover in bermudagrasses. Average percent for 3 years (1965-67.

Cool-season grasses	Bermudagrasses				Aver.	Rank
	Tufcote	Tifgreen	H-8 (Kansas)	Burning Tree		
Check	0.0	0.0	0.0	0.0	0.0	
Ryegrass	23.3	24.4	20.7	29.1	24.4	4
Red fescue	45.1	49.5	54.3	61.3	52.6	3
Poa annua	13.1	16.2	13.2	16.8	14.8	5
Merion	65.7	78.1	64.8	75.4	71.0	1
Tall fescue	50.4	42.3	57.3	61.0	52.8	2
Average	39.5	42.1	42.1	48.7		

scores. Under the conditions of this experiment, perennial ryegrass and *Poa annua* did not furnish satisfactory cover.

Merion produced the densest cover; however, in 1966 and 1967 parts of the Merion plots were injured by a fungus disease. In 1968, the disease caused rather large brown areas that detracted from the appearance of the Merion even though this grass rated first in total cover. The bermudagrasses in the browned-out areas of Merion recovered very slowly.

Red fescue provided uniform cover at the 3-pound N level. Thinning of red fescue was very pronounced in 1968 at both N levels, and bermudagrass recovered very slowly after the red fescue disappeared.

Tall fescue cover was rather sparse but uniform in the plots. The sparser distribution of tall fescue in the bermuda plots can be attributed to the low seeding rate (6 pounds per 1,000 square feet) used in this study. Because of the large size of tall fescue seed, this species should be overseeded in bermudagrasses at 12 to 20 pounds per 1,000 square feet.

Thus far, disease has not been a problem in the tall fescue plots. Tall fescue stands were not affected by the one-inch cutting height. Results suggest that tall fescue overseeded in bermudagrass may provide a combination turf for several years; however, it may be necessary to dethatch periodically.

In this study *Poa annua* did not reseed itself as is normally expected. This might be attributed to the heavy thatch accumulation in the bermudagrass plots. The comparatively poor perennial ryegrass cover can be explained by the low seeding rate and poor persistence of this species.

The overall cool-season grass cover was somewhat higher for the Burning Tree strain than for the other three bermudagrasses. There was no appreciable difference in cool-season grass cover among Tufcote, Tifgreen, and H-8.

In general, overseeding with perennial ryegrass will require annual seedings at a rate of 12 to 20 pounds per 1,000 square feet. In 1968, ryegrass and *Poa annua* had disappeared almost entirely.

Summary:

The results of overseeding four different bermudagrasses with five cool-season grasses is reported. Merion bluegrass provided the best combination bermudagrass turf for the first 3 years; after that an unidentified fungus disease killed large areas, leaving bare spots.

A combination of tall fescue with bermudagrass produced the most pleasing uniform turf, even though the tall fescue was sparser than Merion. The sparser tall fescue turf can be explained by the comparatively low seeding rate used in this experiment.

Tall fescue withstood mowing at one inch and was not infested by any fungus diseases. Red fescue provided good cover for the first 2 years, then it began to thin out rapidly. Perennial ryegrass and *Poa annua* were the poorest cool-season grasses used in this test.

Under the conditions of this study, tall fescue produced the best combination turf with bermuda. Tall fescue, where adapted in the transition zone and upper South, may provide a good combination turf for several years. It could be particularly useful in overseeding parks, lawns, and play areas that are planted to bermudagrass.

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For 20 years, Cutrine Keeps Trout Farm's Spring Water Clean, Safe

A SPRING-FED stream would seem to be the perfect resource for a trout farm. Yet the waters of one near Castalia, O., have required chemical treatment for the past 22 years to keep the fish alive and healthy.

Castalia Trout Farm is fed by two springs. One is the famous Blue Hole, a tourist attraction; the other is "Castalia's own Blue Hole," as Walter Gysan calls it. Gysan has worked at the farm more than 30 years and has been manager for the past decade.

Begun in the mid-30s by about 45 sportsmen and called the Castalia Trout Club, the farm has served both as a peaceful retreat and a commercial venture for its owners.

Its current owner is the huge in-

dustrial firm, Owens-Illinois, Inc., a leading manufacturer of glass, plastic, paper, and ceramic containers and maker of a host of other products.

Owens-Illinois uses the farm—it looks more like a sprawling country

estate with more than one main house—for gatherings of various kinds, to include business conferences. There's another use: to raise and sell some 200,000 trout a year.

No Free Oxygen in Spring

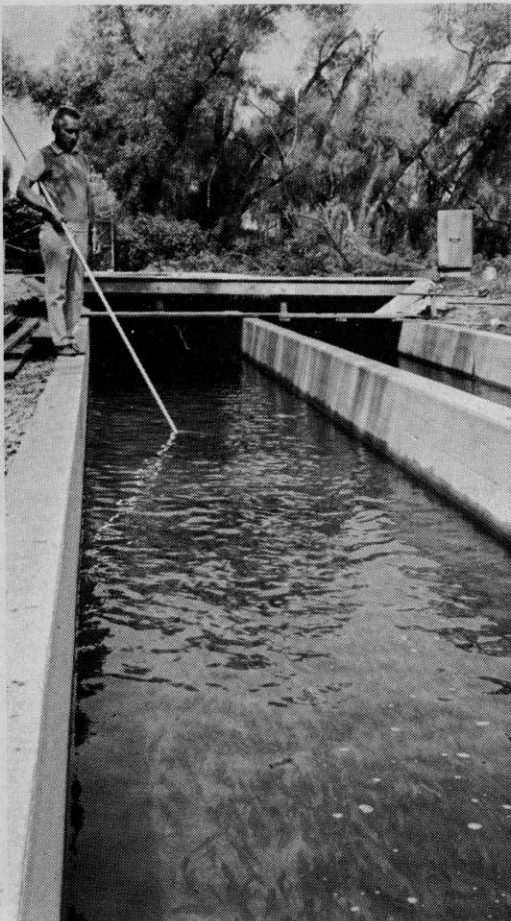
A peculiar characteristic of the springs is that the water contains no free oxygen and, therefore, it will not support any life forms. It must be aerated, either naturally or artificially. Waters from Blue Hole become aerated in the six-mile flow before reaching the farm. Waters that swell out of Castalia's Blue Hole (not more than 25x60 yards but 40 to 60 feet deep) at the rate of from 1800 to 2700 gallons per minute are aerated by two huge city disposal type airifiers.

Table I

**Chemical Analyses of Trout Stream
Entering Castalia Trout Farms.
(As of September, 1954)**

	In Terms of P.P.M.
Total Alkalinity	230.0
Total Hardness	1148.0
Carbonate Hardness	230.0
Non-carbonate Hardness	918.0
Chlorides	22.0
Nitrates	trace
Nitrites	0.001
pH Value	7.0

You can easily see that the waters of the Castalia Trout Farm, Castalia, Ohio, are free of aquatic weeds from the use of Cutrine algaecide. If you look closely, you can see in the picture below thousands of fingerling trout, kept healthy in part by Cutrine's effectiveness, also, in preventing a buildup of toxic hydrogen sulphide.



Another characteristic of the water is its unusually high carbonate content (See Table 1) which complicated an algae problem that developed in the mid-40s.

Several miles of this continuous trout stream became clogged with long filamentous algae, floating chiefly on the surface water. It hindered trout fishing and the efficient management of the trout farm.

Because of the high carbonate content, the use of copper sulphate as the algaecide would cause a heavy copper carbonate precipitate in the water and cause trouble with the fish and develop toxic copper accumulations in the bottom muds, resulting in the reduction of fish food organisms.

Furthermore, high doses of copper

sulphate would be needed so that after the copper carbonate formation is satisfied there would still be some ionic copper left in the stream to kill the excessive algae growth.

Citrine Use Begun in 1949

Dr. B. Domogalla, President and Director of Research, Applied Biochemists and Associates, recommended a then new organic copper algaecide compound, Cutrine.

Unlike copper sulphate, the copper ions in Cutrine are all available to kill the excessive algae growths. They stay in clear solution in the trout stream and do not react or form a precipitate with the carbonates in the water.

Dr. A. S. Hazzard, Assistant Director of the Pennsylvania Conservation Commission, had been doing consulting work for the farm and gave this report after the initial treatment in 1949:

"After the addition of 3,700 lbs. of dry Cutrine algaecide, we found no nuisance algae growth present; the water cress was growing luxuriantly and we found throughout the stream an abundance of sow bugs, snails, shrimp, caddis and black flies. All trout caught were found to be in good condition."

So Cutrine has been used at Castalia Trout farms ever since. Its use is multiple—to kill algae, bacteria and to control certain fish diseases.

The recurring problem, says Gysan, is that with algae present, fecal matter is trapped; and in the decaying process hydrogen sulfide gas, highly toxic to fish, is formed.

Keeping the raceways clean enables the fecal matter to move downstream.

Method of Application

"You have to introduce the Cutrine solution carefully and slowly," cautioned Gysan, "otherwise it will drive the fish downstream and into bunches. Then you have another problem."

Gysan begins with a ¼ p.p.m. He fashioned a 50-gallon drip tank that controls the flow as accurately as possible. The tank is filled with 4% Cutrine.

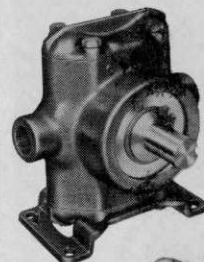
To compensate for the variations in the weight of the solution during the hours of dripping (the more weight, the faster it would flow), Gysan added a feeding box to the tank outlet that contains a simple float.

Once the Cutrine feeding rate is calculated to the volume and flow

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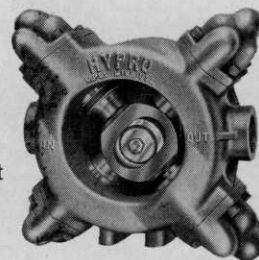
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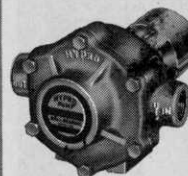
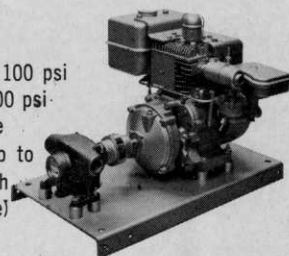
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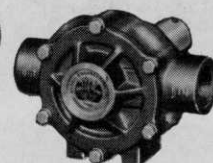


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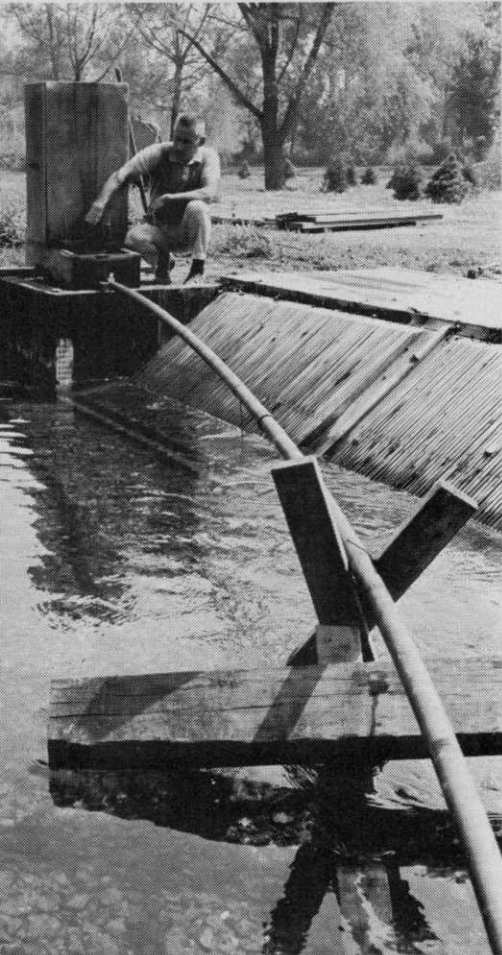


Table No. 2

Soluble Copper Content of Main Stream, Castalia Farms, (May 2, 1953)

Grab samples taken at different stations along Main Stream after we started dripping dilute Cutrine at head end of stream ($\frac{1}{4}$ P.P.M. rate of drip).

	P.P.M. Sol. copper One Hour after treatment	P.P.M. Sol. copper 8 Hours started
Main Stream upon entering Castalia Farms sampled just before the Cutrine drip	0.0	0.0
Grab sample taken below the Cutrine drip; at first wooden bridge	0.05	0.20
Grab sample taken at second bridge below entrance of Main Stream	0.0	0.15
Grab sample taken of Main Stream at Guest House	0.0	0.01
Main Stream $\frac{1}{2}$ mile below Guest House (2 miles from Cutrine dripping station)	0.0	0.005

Table 3

Toxic Hydrogen Sulphide Found in the Castalia, Ohio Trout Streams (August 24 to August 30, 1957)

Hydrogen Sulphide Content before Cutrine Treatment:

In the lower nursery muds	20 P.P.M.
In the water above the mud	2 P.P.M.
Total bacteria count in water above the mud	55,000 per c.c. (fungi also found present)

Hydrogen Sulphide Content one week after Cutrine Treatment:

In the lower nursery muds	5 P.P.M.
In the water above the mud	0 P.P.M.
Total bacteria count in water above the mud	5,000 per c.c.

rate of the water and the setup installed, the dripping of the solution is automatic, thereby keeping manual labor to a minimum for this aquatic weed and disease management practice.

After the fingerling trout get use to the Cutrine (it looks like ordinary bluing) the dripping rate is increased to $\frac{1}{2}$ p.p.m.

"We drip for an 8- to 10-hour run three consecutive days about once a month through the summer," Gysan said.

Controls Fin Rot

Citrine has been especially ef-

fective in controlling fin rot. The chemical kills the gyrodactylidae bugs that eat the dorsal fin then enter the body and kill the trout.

"When we take inventory at fingerling size, those fish showing evidence of fin rot are dipped with a wire basket in a solution of one part Cutrine to 100 parts water for two minutes.

"We tried one experiment with a dozen mature trout in which the dorsal fin had been eaten right down to the body. We sponged them with full-strength Cutrine. In 24 hours, two died but the others recovered and had even reestablished a healthy film."

To determine Cutrine's effect on fish food organisms, Dr. Hazzard placed a known number in a "Vibert" plastic hatching box then placed them in various parts of the stream being treated. Though some of the animals escaped, Dr. Hazzard concluded that even at $\frac{1}{2}$ p.p.m., of ionic copper in the water, it was not toxic to small fish food organisms. After subsequent checks, Dr. Hazzard wrote that "the important trout foods such as sowbugs, shrimp and caddis worms appear to be abundant as ever.

Manager Walter Gysan fashioned a simple, but efficient, automatic 'drip tank' to introduce Cutrine into raceways at a calculated rate. The large tank in the top picture flows into the small holding tank shown in the bottom picture. A fitted wooden block float inside an ordinary clay drain tile regulates the flow from the large to small tank. The flow is stopped when a dowel in the center of the float is raised upward into the spigot. Cutrine drips into the stream through holes at intervals in the pipe that extends across the raceway.

Florida To License 'Restricted Pesticide' Applicators

To lessen the likelihood of more accidents involving highly toxic pesticides, Florida's legislature has passed a law to keep these chemicals out of the hands of unauthorized users.

Legislation becomes effective Jan. 1, 1970. Purpose of the bill is to regulate the sale, purchase, use, and possession of certain "restricted pesticides." It will also require dealers and purchasers to have licenses or permits, explains Entomologist James E. Brogdon with the University of Florida's Institute of Food and Agricultural Sciences.

Restricted pesticide, he said, means any material which the Florida Department of Agriculture finds to be hazardous to man and his environment, or to animals or crops, with the exception of the pest or vegetation the

pesticide is supposed to destroy, Brogdon said.

The list of restricted pesticides has not been determined, but a committee has been named to compile a list between now and October.

When it becomes effective, the bill will make it unlawful (1) to sell or distribute restricted pesticides without a license, (2) to purchase, use or possess restricted pesticides without a permit, and (3) to purchase, use or dispose of restricted pesticides or their containers in a manner other than that stated on the purchase permit or on the label.

Furthermore, Brogdon explained, restricted pesticides may only be purchased or used under an annual permit from the Department of Agriculture, or by a license. Such permits will be issued by the Commissioner on a

form supplied by him. Authorization for a permit to purchase or use these highly toxic chemicals shall be based on a certificate issued by the County Agricultural Extension Agent, or any other person designated by the Commissioner.

Persons wishing to obtain such a permit must be certified as bona-fide users of restricted pesticides necessary for the operation of agricultural businesses.

Similarly, each person holding or offering for sale such restricted pesticides must obtain a license from the Commissioner. All licenses and permits will have to be renewed each year on July 1.

Finally, Brogdon said, the Commissioner may refuse, revoke, or suspend the permit or license of anyone who has violated any law or rule upon which these authorizations were issued.

**PETERS
SPECIAL**

**SOLUBLE
FERTILIZERS**

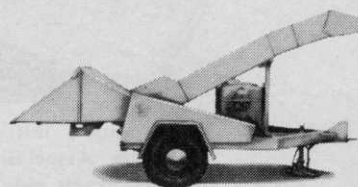
Completely chelated all purpose feeds
Contain all necessary trace elements in a completely available form. -- Contain very effective color tracers -- Contain effective penetrating agents. --

Ideal for all types of foliar, turf and root feeding.
Compatible with all commonly used spray materials.
The finest soluble fertilizers ever made! Try them and see!
Inquire from your jobber or write direct to us
for further information.

ROBERT B. PETERS CO., INC.
2833 PENNSYLVANIA ST. ALLENTOWN, PA.

For More Details Circle (123) on Reply Card

**The chipper was conceived,
researched, designed and field-
proven by Asplundh, the world's
largest tree expert company...**



... but, unfortunately, not all chippers are Asplundh Chippers.

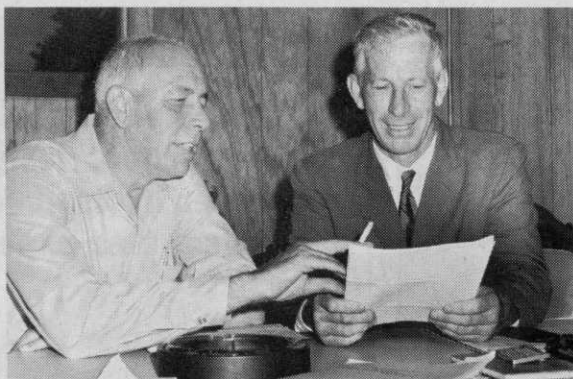
In other words, don't settle for less than an Asplundh. Your comparison of our Model J 16" Trailer Chipper with anything else on the market will prove it at least eight ways better.

Let us prove it. Just ask for a free, no-obligation demonstration when you write for the illustrated specifications brochure "Asplundh Chippers to Fit Your Need".

ASPLUNDH

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

For More Details Circle (102) on Reply Card



Wiley Miner, left, president of the American Sod Producers Association, discusses the program with Joe McDermott, new ASPA director.

Trim, Sweep, Cut, Roll, Lift

All in a Sod Field Days' Work

THE AMERICAN Sod Producers Association continued its winning ways with an excellent field day this last month. Held at Princeton Turf Farms, Cranbury, N.J., the event was the third major demonstration in as many years for this young organization.

Popularity of the production and harvesting equipment on display is the fact that growers come from every section of the country to see equipment in action and to talk the business. At this field day—and the same was true last year at Shamrock Turf Nurseries—growers attended from 28 states. They also came from Canada, South Africa, and Puerto Rico. A mid-morning count of people on the grounds exceeded 350. Twenty-one companies were on hand with demonstration equipment.

Field day demonstrations included all types of mowers—even the new English Allett with opposed spiral reel; sweepers; booms; fork lifts; sod cutters; harvesters; rollers; and even a new type sod-laying machine plus a variety of miscellaneous equipment.

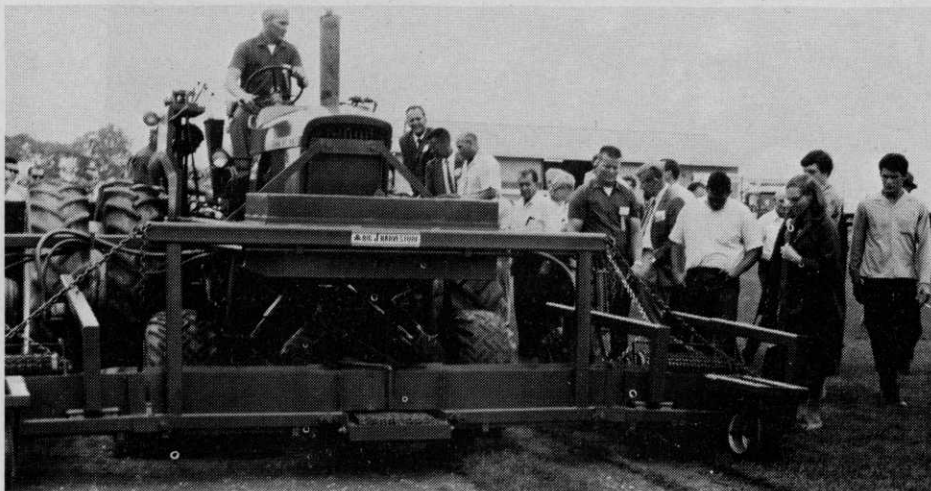
Wiley Miner, president of Princeton Turf and of ASPA, served as host at his headquarters farm. His entire producer staff headed by General Manager Elwood Tantum and Field Foreman Vince Grubb assisted. Dr. Henry Indyk, executive



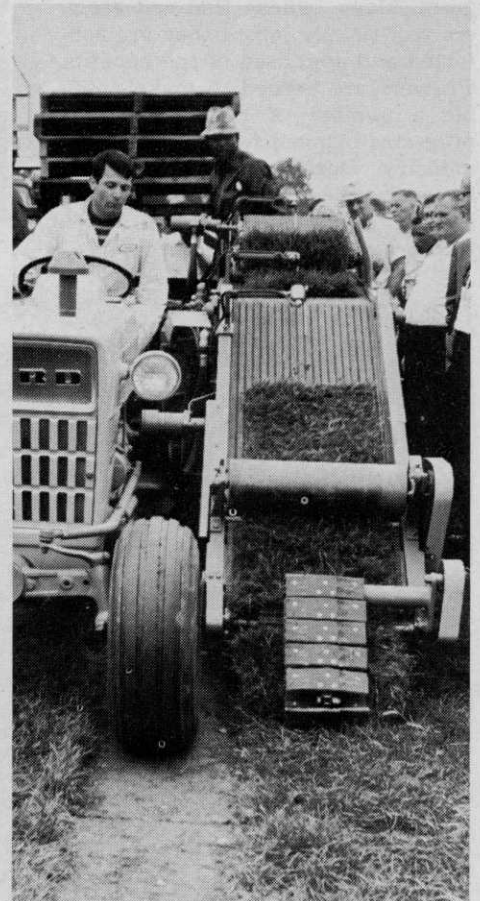
A crowd of 350 persons attended the action-type field day. Despite light showers and the threat of heavier rain, visitors spent the entire day at the Princeton Turf Farm field day site.



Russell Rose, Ryan Equipment Co., talks about sweeper and vacuum models.



Ray Johnson, Shamrock Turf Nurseries, Inc., demonstrates the Big 'J' sod harvester.



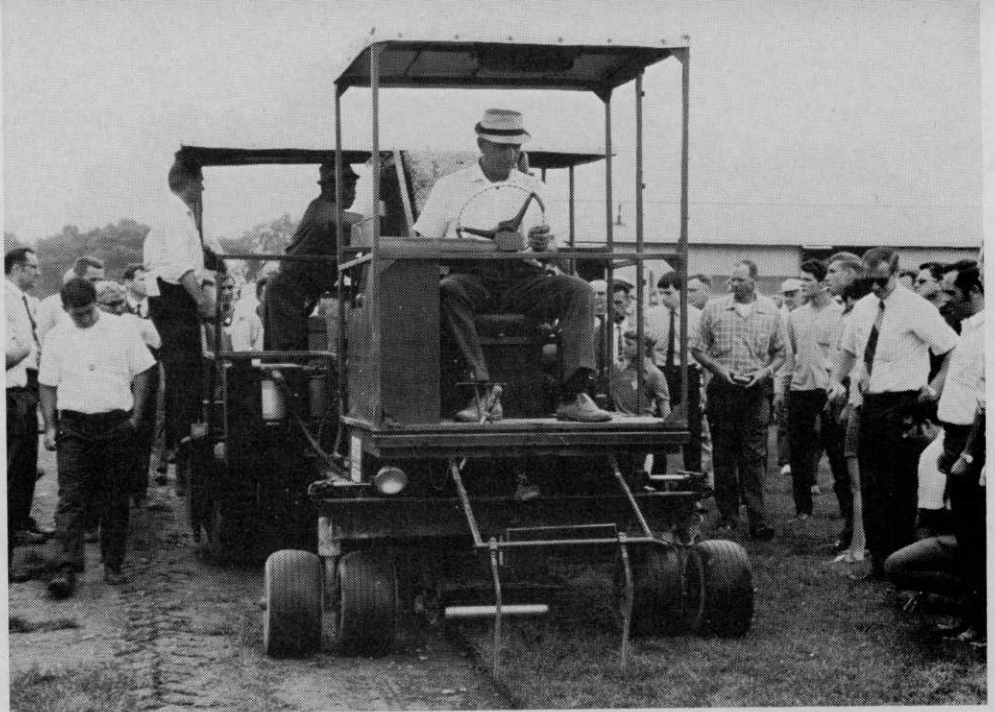
The Nunes sod harvester demonstrated how it could either roll sod or fold it on pallets.

secretary of ASPA, set up a 3-day program. A turfgrass research tour was made August 4 at Rutgers University, New Brunswick, with a banquet and formal meeting during the evening. The field event was held Aug. 5 followed by an optional tour of USDA turf research at Beltsville, Md., on Aug. 6.

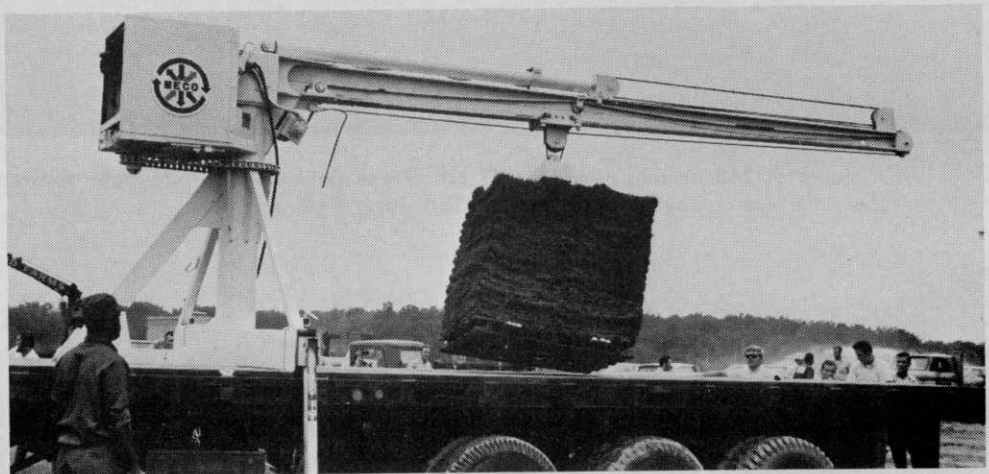
Joe McDermott, Loveland Lawns, Omaha, Neb., was elected a new director. He fills the director's seat vacated by Louis DeLea, Long Island, N.Y., grower. McDermott, a nationally recognized producer, also serves as president of the Midwest Turfgrass Growers Association, a regional group of growers from four midwestern states.

Plans for the coming year were discussed during the formal banquet meeting. A number of growers wish to expand the summer field day to a full 3-day event. This type program is being considered for the Chicago area for 1970. WTT will carry further news as plans are formulated.

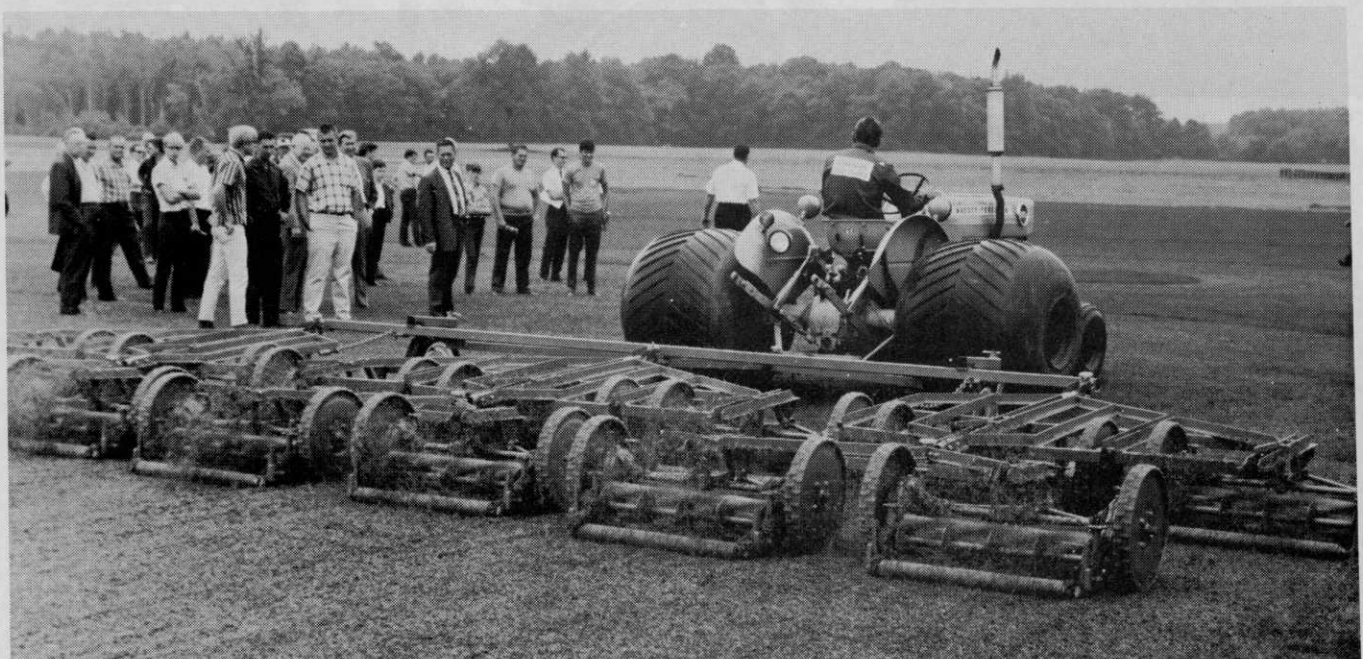
Member growers still face their greatest challenge in recruiting new members for the Association. Interest is greater than ever, as evidenced by the enthusiasm and attendance at the New Jersey program. Many believe that sod growers will readily join if they are contacted and appraised of the benefits. Growers are needed to make possible a number of new Association programs planned for improving the industry. During the coming year, Executive Secretary Indyk will be making additional contacts with growers as will present members.



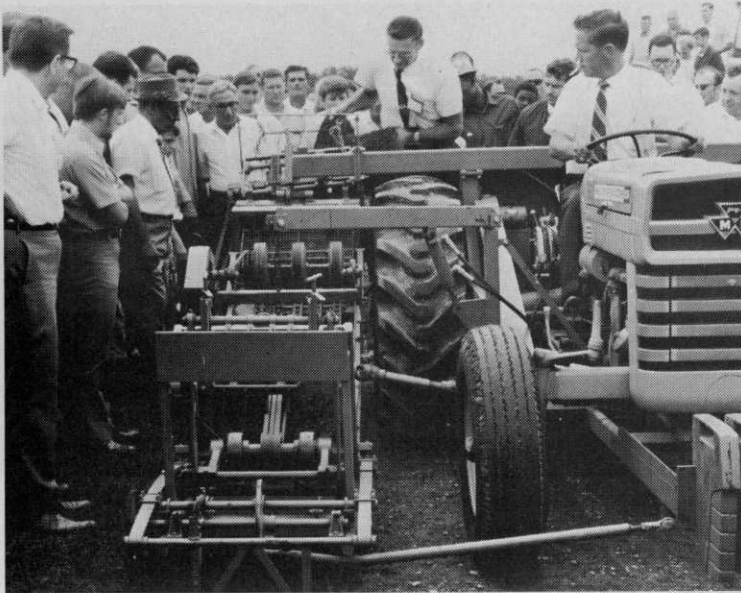
Princeton turf harvester is demonstrated by Vince Grubb, foreman.



A number of booms were in action for handling sod pallets.



Jacobsen equipment, rolling behind tractor with flotation tires, cuts a 28-foot swath.



Ryan demonstrated its complete line of equipment, including this sod harvester.



Turf Vac demonstrated its sweeper.

Lawn, Garden Week Plans Announced

Triumphs of home and community gardeners — and their contributions to a more livable America — will be recognized during National Lawn and Garden Week 1970.

This second annual observance, sponsored by USDA, begins on Mar. 20, the first day of spring, and continues through Mar. 26.

National Lawn and Garden Week will herald a series of "Growing With America" gardening events throughout the nation during the spring months.

The theme of the springtime observances will be developed in three stages:

1) Plan to Grow (March) — a time to celebrate National Lawn and Garden Week and

to announce local programs for the spring months;

2) Plant for Proper Growth (April) — the occasion to conduct or sponsor garden clinics in local communities; and

3) Pick a Growing Project (May) — awards for home and community projects that add most to more attractive homes, suburbs, schools, or city parks.

W. Atlee Burpee III, representing industry and non-government groups, will serve as co-chairman of the garden week committee with Harold R. Lewis, director of information, USDA. Committee members represent USDA, local government groups, interested trade associations, garden clubs, and civic associations.

Meeting Dates



Dates for this column need to reach the editor's desk by the 10th of the month preceding the date of publication.

Virginia Polytechnic Institute Turfgrass Field Days, V.P.I. Experimental Plots, Blacksburg, Va., Sept. 3-4.

Annual Turfgrass Field Day, Michigan State University, East Lansing, Sept. 4.

Lawn and Ornamental Days, The Ohio Agricultural Research and Development Center, Wooster, Sept. 9-10.

Michigan State University Sod Producers' first field day at the Muck Experimental Farm northeast of East Lansing, Sept. 10.

Illinois Turfgrass Foundation, Inc., field day and open house, South Lincoln Avenue turf plots, Urbana, Ill., Sept. 12.

Pacific Northwest Pesticide Applicators, Inc., Spray O Rama '69, Renton Inn, Renton, Wash., Sept. 18-20.

Pacific Northwest Pesticide Applicators Association, Annual Meeting, Renton Inn, Renton, Wash., Sept. 19-20.

Midwest Regional Turf Foundation field day, Purdue University, Lafayette, Ind., Sept. 29.

New York State Federation of Golf Course Superintendents, Annual Turf Conference, Concord Hotel, Kiamesha Lake, N.Y., Oct. 5-7.

Arizona Agricultural Chemicals Association, 22nd Annual Convention, Safari Hotel, Scottsdale, Ariz., Oct. 8-9.

Central Plains Turf Conference, Kansas State University, Ramada Inn, Manhattan, Kan., Oct. 15-17.

Texas A & M University, College of Agriculture, Fourth Annual Industrial Weed Control Conference, College Station, Texas, Oct. 20-22.

North Dakota Nurserymen's Association, Annual Convention and Trade Show, Fargo, N.D., Nov. 7-8.

National Fertilizer Solutions Association, National Convention and Equipment Exhibition, Cincinnati Convention Center, Cincinnati, Ohio, Nov. 9-13.

Ohio Turfgrass Conference and Show, Sheraton-Cleveland Hotel, Cleveland, Ohio, Dec. 1-3.

Oklahoma Turfgrass Research Foundation, Inc., Conference and Show, Oklahoma State University Student Union, Stillwater, Okla., Dec. 3-5.

National Aerial Applicators Association, Third Annual Conference, Roosevelt Hotel, New Orleans, La., Dec. 7-10.



Charles Jensen is having a hard time keeping up with his advertising program, one that's primarily word of mouth, but . . .

Pennsylvanian Finds

Sod More Profitable Than Beef

By PHIL LANCE
Philadelphia, Pa.

SIX YEARS AGO, Charles J. Jensen farmed four acres of sod. Today, he cultivates better than 375 acres and is getting ready to farm more.

"It just grew like topsy," said this Lansdale, Pa., sod producer. "For more than 25 years, my father and I ran a feedlot for cattle and pigs. However, the area's high taxation, labor shortage and housing developments made it more difficult and continually less profitable to remain in the business. So, we looked around for a switch.

"We wanted something we felt had a future, something that was currently needed and would be needed even more with passing time. Since we had been doing a little bit of business all the time selling pasture sod, we decided to try sod growing. That was six years ago, and we are sorry we didn't start sooner."

Jensen's four acres of Eastern States velvet green mixture went quickly. It sold through word-of-mouth. Jensen figured that if four

acres could move without any "selling" on his part, that he was certainly not going to overlook any further opportunities in sod growing.

Currently, his own farm covers 142 acres. His son-in-law's acreage plus additional leased farmland brings it up to 375 acres. To meet the demands of his customers, he cultivates several varieties that have proved popular in the Delaware Valley area.

Jensen's sod business has now become a family enterprise. Charles Jensen is assisted by his son Lars and his wife Ellen, who answers the telephone, does the bookkeeping and handles all the paper work. She claims her husband is too busy growing sod and does not like to handle paper work. This, therefore, has become her job.

Son-in-law Phil Gehret works closely with the family. Other help includes three year-round employees and several more during the season.

"Some customers specify the type of sod they want and others just want something nice," Jensen said. "That is why we have several varieties. Where possible, we ask them to determine the type of sod they already have or to bring us a small sample. We can then match it up with the sod that will blend in with the shade of their grass.

"In general, we have found that our variety, which includes 100% Merion, a mixture of Merion and Kentucky bluegrass, a mixture of Merion, Kentucky bluegrass and Pennlawn, K-31 and our four varieties of Kentucky bluegrass just about covers the needs and requirements of our customers.

"Personally, we are quite partial to Merion because we find that the rolls hold together more firmly.

"We try to produce the highest

quality sod in the varieties that we feature, considering each sale an advertisement for the next."

Expands with Mechanization

After the second year of sod growing, Jensen, realizing he had a good thing going, started irrigating. He drilled a 400-foot well and began filling two ponds. One covering an acre was already on his property, and the other of more than an acre, he dug out. As he discovered that equipment and automation helped him realize a more profitable business, he continued to expand.

"We sold off a few acres of ground for a highway that was coming through and had some money to



Irrigation water comes from two ponds backed up by a 400-ft. well.



... bigger equipment has increased volume — and profits.

work with," Jensen said. "We also began to take an interest in association activities and struck a close relationship with researchers from Penn State University. Everything helped. Like topsy, the business began to boom."

Listings in several telephone directories throughout the Delaware Valley, through word-of-mouth and satisfied users, all increase demand for Jensen's sod. Industrial parks, schools, institutions, etc, supplemented the demand by homeowners and others. A free delivery service proved helpful and Jensen has made deliveries to customers as far as 150 miles away.

Stays Close to Customer

"We still do not have any salesmen and really don't intend to put any on until we expand production," Jensen continued.

"We want to be in as close a contact with our customers as we can. When they know they are doing business with the sod grower himself, they have greater confidence in him and will make repeated purchases.

"Local builders who have purchased from us and are now constructing properties hundreds of miles away are still depending upon us for their sod. When we make deliveries in these areas, others learn about us and this results in subsequent demands for our sod."

While there has been some competition, Jensen has not found this to have affected his business too much. He produces a quality sod, advises and helps his customers as much as possible, and his own enthusiasm about his quality products radiates to his customers.

Jensen's sod is generally between two and three years old before be-

ing sold. The older the sod, the better it holds together. Seeding starts in mid-August and usually continues up to early September.

Other than broadleaf and some clover, Jensen claims that he has been blessed with sod that has a minimum of weeds. He uses Amchem LV-4 and finds that a single application rids him of this problem.

"We simply don't have enough of a broadleaf weed problem to require a post emergence spray," he

said, "and we only fertilize as we find our needs demand. We use a half-ton of 20-10-10 per acre at time of seeding which we get from Agway. A bulk spreader is used for limestone, and we top with nitrogen as needed."

A Ryan sod harvester is Jensen's latest equipment addition. He also has five Ryan sod cutters that roll one foot and 18-inch wide rolls, also three Brillion seeders and a John Beane sprayer. His reel type F-10 Jacobsen mowers cover 50 acres a day and have proved to be extremely versatile.

"Equipment doesn't cost — it pays," claimed the enthusiastic Jensen. "Sure, it may be a little difficult to raise the money to buy this equipment to begin with, but once you acquire it, it pays for itself. One man can seed up to 50 acres of sod per day, the harvester can cut and roll thousands of yards of sod per day, and the gangs that can be lifted hydraulically on our mower has saved a lot of time and effort.

"We are certainly sold on the importance of modern equipment. Because of this, we are continually reinvesting what we are taking out in order to gain more."

AT LAST A MACHINE TO HARVEST SOD



- WILL ELIMINATE UP TO 10 MEN FROM YOUR LABOR FORCE.
- DEPENDABLY PRODUCES 1500 PLUS YARDS OF NEATLY ROLLED AND PALLETIZED SOD PER HOUR.
- THE "HARVESTURF" NEVER TRAVELS ON THE SOD. ALLOWING HARVESTING UNDER MOST WEATHER CONDITIONS, AND NEVER DAMAGING THE TURF.
- ALL POWER IS FURNISHED BY HYDRAULIC MOTORS WHICH ARE FULLY ADJUSTABLE AT ALL SPEEDS.
- THE "HARVESTURF" IS ABLE TO HARVEST SOD AT WIDTHS UP TO 24 INCHES AND LENGTHS TO 82 INCHES.



BIG 'J' PRODUCTS, INC.

A DIVISION OF

**SHAMROCK
TURF NURSERIES, INC.**

HANNA, INDIANA 46340
PHONE: 219-797-2215

For More Details Circle (111) on Reply Card

Revolutionary!

**A major
breakthrough
in labor-saving
mechanization
for the sod
industry—**



the Princeton HARVESTER

- CUTS SOD IN THE FIELD
- GIVES SOD PAD UNIFORM SIZE AND THICKNESS
- REMOVES EXCESS SOIL AND STONES
- STACKS FOLDED SOD ON PALLETS

Now, with the **Princeton Harvester**, you can produce as much as 12,000 sq. ft. of palletized sod per hour!

Operated by only three men, this incredible machine rolls on large flotation tires, thereby eliminating damage to sod fields, even during the most inclement weather.

The **Princeton Harvester** has been proven by extensive field tests to perform superbly, regardless of terrain, weather or type of grass.

Get the fabulous full story!
Call or write today —



**WILEY
MINER**
ASSOCIATES, INC.

P.O. BOX 392, CRANBURY, N.J.

Tel.: 609/655-1526

For More Details Circle (112) on Reply Card
28

Stripe Smut Control Found

A team of scientists headed by Turfgrass Pathologist Dr. Philip M. Halisky at Rutgers University has now shown excellent control of stripe smut with the use of the Dupont systemic chemical benomyl.

Thus, in an amazingly short time, intensive research aided by grants from the Merion Bluegrass Association, E. I. Dupont Co. and Chemagro Corporation, has solved an important disease problem.

In the evaluation trials, three fungicides were utilized: Dupont's benomyl, PCNB ("Scott's FF-2") dry granular mix and B-33172. These were applied in replicated plots of heavily smutted Merion Kentucky Bluegrass turf. The experimental area consisted of 96 plots measuring 5 x 5 feet, clipped at 1½ inches and maintained at a moderate fertility level of 4 lbs. of nitrogen per 1,000 sq. ft. per year.

B-33172 and benomyl, both wettable powders, were mixed with water and applied as drenches at the rate of 50 gallons per 1,000 square ft. of turf per application. PCNB was applied in combination with a granular fertilizer (14-3-3) containing 15.4% active fungicide. This combination was broadcast by hand and watered-in at an equivalent rate of 50 gallons per 1,000 sq. ft.

PCNB was applied in the fall of 1967 and the spring of 1968 while the other two chemicals were spring applied only. Counts of smutted tillers per square feet of sod were made

in the fall of 1968 and the data analyzed.

The highest reduction of stripe smut was achieved with five applications of benomyl at the 6-ounce rate. At the 12-ounce rate, benomyl applied once or twice during the spring months also was highly effective.

At the 32-ounce rate, PCNB (Scott's FF-2) with spring and fall applications resulted in significant disease control. Similar applications at the 16-ounce rate were inadequate in controlling the disease. In general, PCNB is considered phytotoxic to bentgrasses and to fine fescues, and may cause some temporary yellowing in bluegrass during hot, dry weather.

USDA Delays Decision On Pesticide Suspension

A decision on re-instatement of nine so-called "persistent pesticides" still has not been forthcoming from the U. S. Department of Agriculture—at least this was the case as WTT went to press.

A spokesman told WEEDS TREES AND TURF that the matter was being studied by the Federal Committee on Pest Control. The materials—DDT, dieldrin, endrin, aldrin, chlordane, toxaphene, lindane, heptachlor, and BHC—were suspended from use July 9.



Officers for 1969-70 of the American Society of Consulting Arborists are (seated, left to right): Secretary-Treasurer Walter P. Morrow of Sewickley, Pa.; Vice President George W. Goodall, Sr., of Portland, Me.; President-Elect Ray Gustin, Jr., of Silver Spring, Md., and President H. M. Van Wormer of Richmond, Va. Standing (left to right) are: Directors Dr. L. C. Chadwick of Columbus, Ohio; H. N. Engledow of Indianapolis, Ind., and F. L. Dinsmore of St. Louis, Mo., and Director-at-Large Henry Vaughn Eames of Stockton, N. J.



Founders of the International Turfgrass Society are, from the left, Front Row — Dr. W. H. Daniel, Dr. S. W. Bingham, Dr. G. M. Wood, Dr. E. Ebert-Jehle, R. L. Morris, Dr. P. Boeker, B. Langvad, Dr. J. R. Watson, Dr. J. B. Beard, J. R. Escritt, G. J. Ruychaver, Dr. Z. B. Kuninska, Miss M. L. Denecke, W. C. Morgan, G. S. Robinson and W. A. Eschauzier; Second Row — J. P. Shildrick, Dr. P. E. Rieke, H. Vos, Dr. V. I. Stewart, R. W. Palin, D. Soper, Dr. C. E. Wright, D. T. A. Aldrich, J. P. Van der Horst, Dr. H. H. Williams, Dr. R. R. Davis, A. V. Bogdan, J. F. Shoulders, J. L. Kidwell, Dr. R. L. Goss, Dr. W. B. Gilbert, Dr. D. B. White, Dr. T. E. Freeman, Dr. G. C. Horn, and Dr. K. Ehara; Third Row — Dr. R. W.

Schery, E. Helmbring, Dr. J. Troll, K. Potter, J. C. Knolle, G. Akesson, Dr. L. H. J. Korsten, Dr. B. Werminghausen, Dr. E. L. Entrup, Dr. P. R. Henderlong, Dr. W. A. Adams, Dr. A. Pap, Dr. L. E. Moser, M. A. Wood, Dr. J. Stubbs, M. Petersen, G. G. Fisher, M. Kamps, J. L. Dawson and Dr. R. E. Engel; Back Row — Dr. J. H. Madison, Dr. L. E. Janson, Dr. R. W. Miller, Dr. R. A. Keen, P. Bowen, E. W. Schweizer, Dr. C. M. Switzer, Dr. C. W. H. M. Schaeppman, J. Andringa, C. Eisele, C. O'Knefski, Dr. I. Yoshikawa, W. H. Bengueyfield, D. J. Glas, Dr. R. E. Schmidt, J. A. Simmons, Dr. T. Eggers, R. Vijn, Dr. W. W. Huffine and Dr. J. E. Howland. Some who attended were not present for the photograph.

Turf Specialists Form International Society

Eighty-two turfgrass experts from 11 nations, attending the First International Turfgrass Research Conference in July at Harrogate, England, have founded an International Turfgrass Society.

The conference elected a seven-man executive committee headed by Dr. Richard R. Davis, Department of Agronomy, Ohio Agricultural Re-

search and Development Center, at Wooster.

Other committee members include: Dr. William H. Daniel, of Purdue University's Department of Agronomy; Dr. James B. Beard, Department of Crop Science, Michigan State University; John R. Escritt, director of The Sports Turf Research Institute, Bingley, Yorkshire, England; Bjarne Langvad, of the Plant Breeding Institution at Landskrona, Sweden; J. P. van der Horst, of the Netherlands Sports Federation, The Hague; and Dr. Clayton M. Switzer, of Guelph (Ont.), Canada.

Dr. Beard, who headed the organizing committee, the primary objective of the new group, is to provide a forum where turfgrass researchers and educators throughout the world can exchange information

on turfgrass cultural problems, research techniques, research results, and educational approaches.

Eighty-eight papers were presented at the four-day conference, July 14-17, covering the broad areas of turfgrasses, soils and nutrition, turfgrass environment, pests and diseases, education, turfgrass culture and roadsides. Dr. James R. Watson, a member of the organizing committee and director of agronomy for Toro Manufacturing Corporation, Minneapolis, reported that the conference papers will be published in about nine months' time.

Countries represented at the meeting were: Canada, Czechoslovakia, Denmark, Japan, Netherlands, New Zealand, Sweden, Switzerland, West Germany, United Kingdom and the United States.

Merion Bluegrass Seed To Be Priced Higher

The '69 merion bluegrass seed crop is well below 1968 production. As a result, users can expect merion seed to be priced well above last year.

Doyle Jacklin, sales representative of Jacklin Seed Company, Spokane, Wash., reported that he expected merion prices to be double or slightly more than the '68 levels.

Reason for the production decline was bad burns last fall on seed growing land. Extensive rain during the burning season prevented complete burning which is a must for top production.

Growers buying new seed can also expect lightweight seed. Quality, Jacklin says, will be good but lightweight.

Generally, '68 prices for merion seed ranged around the 75 cents per pound mark. This year, up to \$1.50 per pound is expected to be common.

AMERICAN SOD PRODUCERS ASSOCIATION

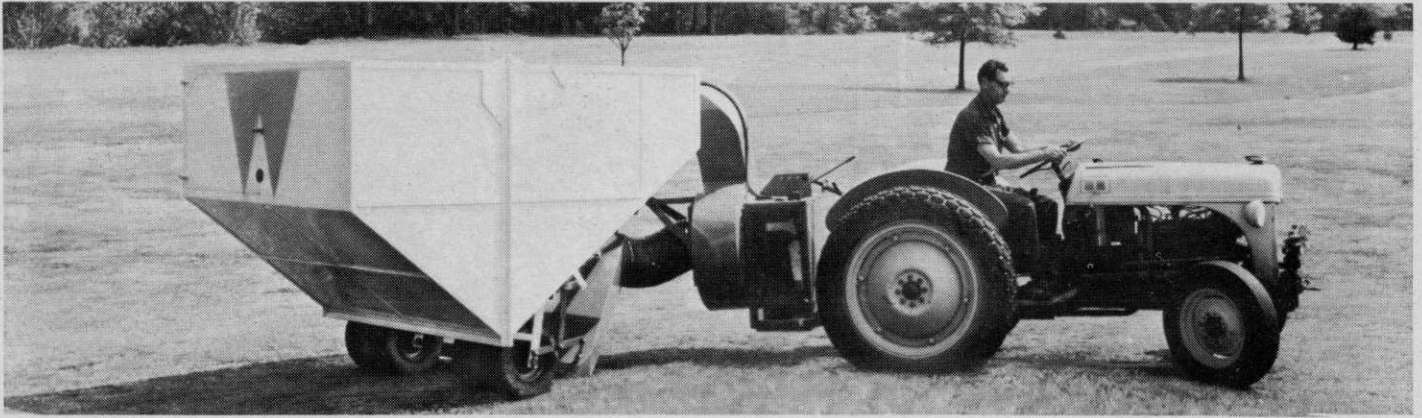
invites your participation

If you are a Sod Grower you should be a member of ASPA.

Keep in touch with progress.

Allied Industries are welcome.

For More Details Circle (101) on Reply Card



West Point Products of Hahn, Inc., Evansville, Ind., offers a 6' wide golf course vacuum for easy grooming of turfgrass, grass clippings, paper, and other debris. Called the Aeri-Vac, the unit also features adjustable height and head openings, a six cubic yard capacity trash hopper with a two-by-three-foot hinged rear-access door for hand-dumping large litter from the driver's seat of the tow vehicle by a hydraulically powered dump control. It is designed to clean and groom up to five

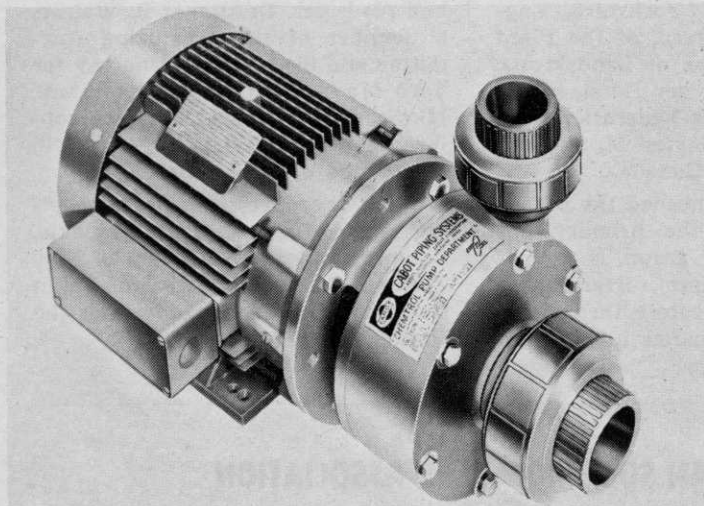
acres per hour, and utilizes a ball-hitch coupling between the blower and catcher assemblies. Manufacturer claims quick, one-man PTO tractor hook-up is accomplished with a three-point hitch and universal drive shaft. The Aeri-Vac weighs approximately 1500 lbs., is also equipped with high flotation tires, and can conveniently operate at up to 10 mph on level surfaces. For more details, circle (701) on reply card.

New Products

Sabre Saw Chain, Inc., Lewistown, N. Y., manufactures Sabre 16, a saw chain designed as a replacement chain for mini-saws such as the Power Mac 6. Available in reels and cut lengths for 12" and 16" guide bars, manufacturer claims it is the first standard replacement saw chain introduced for saws using 1/4" pitch chain. For more details, circle (704) on reply card.



Premier Peat Moss Corporation, New York, N. Y., introduces its Spagmos Three-Way Mulch. Unlike sawdust and wood chips, it does not rob the soil of nitrogen, manufacturer claims. It is said to be free flowing, resilient and porous. Product is 98% organic and contains pH4. Two to four inches is sufficient for gardens; four to five inches around newly planted trees. For more details, circle (705) on reply card.



Cabot Piping Systems, Louisville, Ky., has available a new line of corrosion-resistant centrifugal pumps for handling aggressive liquids. Called Cabot/Chemtrol CP-3000, the close-coupled pumps come in polyvinyl chloride or polypropylene casings in seven models and sizes, ranging from 1" suction with 3/4" discharge and 3" impeller to 3" suction with 2 1/2" discharge and a 6 1/2" impeller. Motor sizes are from 3/4 to 10 HP, and capacities from 35 to 200 gpm. Other features include enclosed fan-cooled integral frame heavy-duty motors, Viton and ceramic-constructed mechanical seals, stainless steel motor shafts and mechanical seal springs. For more details, circle (708) on reply card.



Generac Corporation, Waukesha, Wis., announces its new lawn and garden tractor-mounted alternator. The light-weight unit provides portable AC power for operating power tools, pumps, floodlights and saws, as well as an economical method of obtaining home stand-by electrical power, the manufacturer claims. It comes in two sizes: The 2400-watt, Model 5678 unit provides 115 volts of AC power, and the Model 5679 produces 115/230 volts of AC power. Both are equipped with Generac's revolving field alternator design, and can handle surges 25% above nameplate rating in addition to having high temperature insulation. For more details, circle (709) on reply card.



Bowie Industries, Inc., Bowie, Texas, introduces the Bowie Imperial 2500 Hydromulcher, featuring a 2,500-gal. capacity extra-thorough agitation and central controlled spraying tower. The unit is designed for fast, simultaneous application of seed or sprigs, fertilizer wood fibre and water on steep slope, roadway, public works, reforestation, golf course, park, home lawn, and housing project terrains. It is equipped with the patented Bowie pump. For more details, circle (702) on reply card.

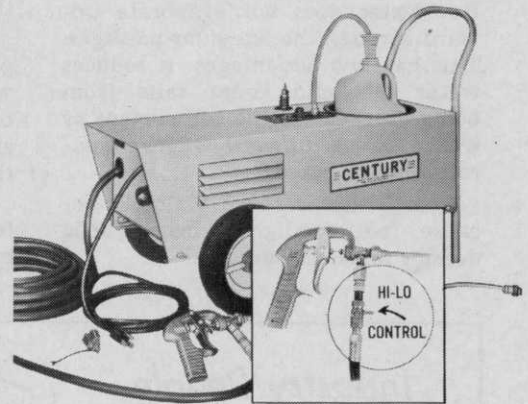


Central Engineering Company, Inc., Milwaukee, Wis., announces a new AUTO-SPREADER, Model A-100. Unit is a self-powered, self-contained, portable chemical and material spreader, holding one cubic yard of material. It can be easily mounted in the cargo area of a small service vehicle, or attached to a tractor three-point hitch. It is equipped with an instant on-off control switch for spot spreading of paved and turfed surfaces. For more details, circle (703) on reply card.

LPS Research Laboratories, Inc., Los Angeles, Calif., produces a micro-thin lubricant-rust inhibitor said to provide two-year outdoor protection for all metals. LPS #3, less than two/10,000ths of an inch thick; can be used as a chain and conveyor lubricant, manufacturer claims. Complies with Mil Spec C-16173D (Grade 2). Harmless to rubber, plastic and paint. Available from 16-oz. aerosols to 55-gal. drums. For more details, circle (706) on reply card.



Century Engineering Corp., Cedar Rapids, Ia., has improved two models of its portable washer by adding a diaphragm valve to the incoming water line to eliminate pressure fluctuation and insure consistent distribution of cleaning concentrates. An exclusive feature is a high-low water pressure control, changing pressure from 500 to 70 lbs. For more details, circle (707) on reply card.



Ideal Crane Division, Bert Parkhurst and Company, Tulsa, Okla., now markets a small, rugged hydraulic truck-crane. It is designed for safe, one-man loading and unloading of engines, drums, tanks, boxes and other equipment—any lifting job too big for one man to handle without strain. A hydraulic jack is the heart of the lifting mechanism. This low-cost crane features 360-degree rotation, and can be mounted on any style truck body or on a loading dock. It replaces a fork-lift truck for many jobs when mounted on a floor dolly. The crane is manufactured in two sizes—1500 lbs. and 2500 lbs. capacities—and comes complete with truck mount and six-foot lifting chain. Available accessories include an appliance strap and a barrel chain to handle drums in either horizontal or upright positions. For more details, circle (710) on reply card.



Pea Gravel 'Block Mulch' Cuts Water Evaporation

The University of California has obtained a patent on a porous block mulch invented by UC Riverside scientist Sterling J. Richards.

Ornamental growers and others will be able to save water, reduce evaporation, eliminate soil compaction, reduce salinity buildup and improve weed control by using such blocks on the soil surface, the inventor believes.

The blocks, made of pea gravel held together by fine sand and a small amount of cement, can be constructed in any shape or thickness. Surrounding or adjacent to plantings, the blocks are placed on top of ground which is to be watered.

Water goes down through the block as easily as through a sieve. But water does not evaporate upward through the irregular passages. This has two advantages: it reduces water loss and keeps salts from being "sucked" to the soil surface as water travels upward when evaporation takes place.

Compaction is reduced simply because foot or light wheel traffic doesn't touch the ground.

Weed control—although not tested by the inventor—would presumably be improved in the same way that any mulch does—by preventing weed emergence and by cutting off sunlight.

The block is not yet commercially available, said Dr. Richards. There are no figures on what it would cost, but he thinks it should be about the same as or less than patio paving blocks.

Whether the blocks would save enough water to be economically justified, he does not know. But with water becoming more expensive such a means of reducing losses and salinity will be more in demand.

Testing water use by citrus seedlings, Dr. Richards found that unmulched trees required six irrigations over a 40-day period, while only two irrigations were needed for trees growing in soil covered by the mulch blocks.

In a laboratory experiment, comparing evaporation from bare soil with that from soil covered by the blocks, the UCR soil physicist noted six times as much water loss from the bare soil.

There was little difference in soil temperature between the block-mulched and bare soils.



Dr. Sterling Richards, University of California scientist at Riverside, shows how easily water goes through porous block mulch he invented. Used around trees or other plants, blocks reduce water loss, soil compaction, salt buildup, and weed growth. UC has obtained a U. S. patent and has control of commercial license agreements.

Industry People On the Move



Amchem Products, Inc., Ambler, Pa., announces two recent appointments in its Agricultural Chemicals Division, according to M. B. Turner, vice-president and general manager. Stanley B. Seagler has been named to a sales position in the southwestern district, and Ivan J. Jones has been assigned as a district sales manager in eastern Canada.

Prior to joining Amchem, Seagler was plant manager of the Austin Farm Service in the Plainview, Texas, area. Jones formerly was a sales representative and supervisor of Canadian Industries, Ltd., Chatham, Ontario, and a field representative of Green Giant of Canada, Ltd.

* * *

The University of Maryland announces the appointment of Dr. Andrew J. Powell as assistant professor in the Department of Agronomy, according to department head Dr. James R. Miller.

Dr. Powell, who received his B.S. and M.S. degrees from the University of Kentucky, and his Ph.D. from Virginia Polytechnic Institute in 1967, will conduct research and do extension work in turf management, in addition to teaching this course and advising graduate students.

Prior to joining the agronomy staff, Dr. Powell served in the Army at Fort Bliss, Texas, as a Captain in charge of golf course operations, where he helped

organize the Rio Bravo Turf and Golf Course Superintendents Association.

* * *

Ansul Company, Marinette, Wis., announces the appointment of Dr. Ronald J. Wingender as an analytical research chemist in its Madison, Wis., research center. He will work in conjunction with the company's current pesticide studies and will conduct residue analyses in connection with new product screening programs.

From 1961 to 1964, Dr. Wingender worked as a chemist with the Forest Products Laboratories in Madison. He received his bachelor's degree in chemistry from the University of Wisconsin, his master's degree in physical chemistry from the State University of Iowa, and his Ph.D. in analytical chemistry from the University of Wisconsin last March.

* * *

Hypro, Incorporated, a subsidiary of Lear Siegler, Inc., appoints Ramon Pareja chief engineer and Maurice H. Nelson products and applications engineer.

Pareja, who joined Hypro in 1962, will direct a department of project engineers and draftsmen on new product development aimed at increasing the company's industrial and agricultural markets. A native of Spain, he went to Venezuela in 1954 as a hydraulic engineer with the Caroni River electrification program.

Nelson will help coordinate engineering, customer sales and marketing activities in his newly created position. He also will have responsibility for field testing of new products and improvements, in addition to relating customer application needs to the sales and engineering departments. Before joining Hypro in 1955, Nelson was employed by Northern Ordnance, Minneapolis, Minn.

Polluted Air Retards Growth of White Pine

Air pollution very definitely can stunt the growth of a tree.

Forest Service scientists have comparative white pines to prove it, suggests an article in the Cleveland Plain Dealer by William D. McCann.

McCann reports that healthy 15-foot white pines and foot-high sickly trees of the same species are growing a short distance from each other on the grounds of the U.S. Forest and Insect Disease Laboratory at Delaware, O.

After eight years' study, forest researchers conclude that sulfure dioxide and ozone, either singly or together, have stunted the trees, McCann writes.

"Sulfur dioxide is poured into the air primarily by the burning of fossil fuels such as coal and heavy oil," he explains.

"Ozone, a poisonous gas, is often caused by auto exhausts fumes going through a chemical change in the air."

Abnormal trees transplanted to a healthy atmosphere recovered; healthy trees deteriorated when placed in a polluted environment.

Dr. Leon S. Dochinger, chief plant pathologist, even found that when sickly trees were placed half in and half out of a control chamber, the protected half (through filtered air) grew thick, healthy needles while the unprotected half remained scraggly.

Some trees are affected more than others, with stunting found hundreds of miles from the source of the pollution, McCann reports. Other pines stay healthy in the polluted environment. Graft tests indicate that these pollution-resistant characteristics are hereditary.

There are many questions yet to be answered concerning the effects of pollution on trees. But Dr. Dochinger is quoted as concluding that "if dirty air can keep a tree from growing, what can it do to us?"



"My son took me in business."

Insect Report

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



TURF INSECTS

AN ANT

(*Pogonomyrmex salinus*)

UTAH: Collected at Kelton (northwest of Locomotive Springs) and 1.5 miles east of Kelton, and in Kelton Pass, all in Box Elder County. This is a new State record.

SWEET POTATO FLEA BEETLE

(*Chaetocnema confinis*)

ARIZONA: Damaged dichondra lawns in Maricopa and Pima Counties during 1968 and 1969. This is a new State record.

A PLANT BUG

(*Lopidea chelifera*)

UTAH: Collected on *Bassia* spp. at Santa Clara, Washington County. Also taken at Saint George in lesser numbers. This is a new State record.

SOUTHERN CHINCH BUG

(*Blissus insularis*)

TEXAS: Heavy and widespread in Jackson and Brazos Counties, damaging San Augustine grass.

A WIREWORM

(*Conoderus lividus*)

SOUTH CAROLINA: In soil around roots of Coastal Bermudagrass at Brays Island, Beaufort County. Up to 5 larvae per shovelful of soil. About 8 acres out of 25 damaged.

INSECTS OF ORNAMENTALS

CARMINE SPIDER MITE

(*Tetranychus cinnabarinus*)

ARIZONA: Heavy on violets at Tucson, Pima County.

A PSYCHID MOTH

(*Apteronia crenulella*)

NEVADA: Collected on weeds and ornamentals at Genoa, Douglas County. This is a new county record.

FLETCHER SCALE

(*Lecanium fletcheri*)

WISCONSIN: Hatch complete on arborvitae at Middleton, Dane County. Most crawlers emerged. Much lower than usual in Dane County.

BROWN GARDEN SNAIL

(*Helix aspersa*)

OREGON: Damaged nursery stock at Medford, Jackson County. Steadily on increase for several years.

TREE INSECTS

PEACH TREE BORER

(*Sanninoidea exitiosa*)

PENNSYLVANIA: Infested most trees, girdled many, in about 500 weeping flowering cherry trees 1-4 inches in diameter in nursery at Manchester, York County. Most borers emerged; some still in larval and pupal stages.

JACK-PINE BUDWORM

(*Choristoneura pinus*)

WISCONSIN: About 40 percent pupated in Douglas County. Some pupae in Douglas and Bayfield Counties by July 5; little or no defoliation. Third to fifth instars in Vilas County. Pupation just beginning July 9 in Marinette County.

A PINE NEEDLE-SHEATH MINER

(*Zelleria haimbachi*)

OREGON: Damage above normal to home and Christmas tree plantings in Clackamas and Multnomah Counties. Damage severe locally to native ponderosa pines at Medford, Jackson County.

NANTUCKET PINE TIP MOTH

(*Rhyacionia frustrana*)

KANSAS: Infested 50-60 percent of commercial pines in Sedgwick and Cowley Counties.

PINE TUSSOCK MOTH

(*Dasychira plagiata*)

WISCONSIN: About 70 percent of larvae pupated; rest, sixth instars spinning cocoons July 10. MINNESOTA: About 30 percent pupated in east-central area. High counts still persist in this area; 1970 control program possible.

WHITE-MARKED TUSSOCK MOTH

(*Hemerocampa leucostigma*)

WISCONSIN: Adults began emerging July 7 at De Forest, Dane County. Final instars still present July 16.

BLACK PINE-LEAF SCALE

(*Nuculaspis californica*)

CALIFORNIA: Heavy on lodgepole pines at Avenal, Kings County.

LARCH SAWFLY

(*Pristiphora erichsonii*)

MARYLAND: Collected on larch planting in Anne Arundel County. This is a new county record.

Trees Could Be Affected By 'Ovedose' of Weed Killer

Are any of your customers reporting that some of the trees in their lawns seem to be dying from a strange disease?

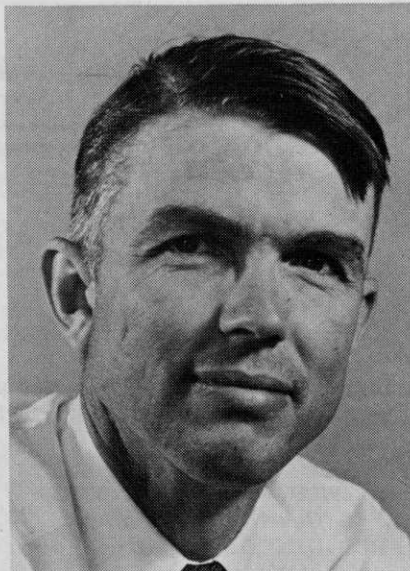
They may be suffering from an overdose of weed killer, suggests Dr. Francis R. Gouin, University of Maryland horticulturist.

"These materials may be effective in controlling weeds while fertilizing lawns, but their use has resulted in increased injury to ornamental plants. Most of the plants will grow out of a slight injury, but repeated damage can be fatal.

The injury shows up as gnarling and twisting of new stems, twisting and curling of the leaf petioles and cupping and distortions of the leaf.

Some home owners "double up" on fertilizers in spots where grass is hard to grow. Double application of fertilizer means doubling the amount of herbicide, Dr. Gouin reminds. This double concentration of herbicide near trees or shrubs increases the chances of injury.

If you do detect trees with herbicide injury, advise your customers to keep them well watered, especially during drought periods. Instruct them to fertilize the injured ornamental during the fall, winter or spring to restore plant vigor.



William Flemer, III, Princeton Nurseries, Princeton, N. J. was elected president of the American Association of Nurserymen during the association's annual convention in July. Flemer, who holds a master's degree in botany from Yale University, began in the family nursery in 1946. He has held numerous officer and committee posts in AAN. Among many offices held in nursery associations, he has been president of the following: New Jersey Association of Nurserymen (1959), Ornamental Growers Association (1958-59), National Association of Plant Patent Owners (1965), Eastern Regional Nurserymen's Association (1966).

Trimmings

CONSERVATIONISTS in New Jersey succeeded in banning the use of DDT against the gypsy moth, contending the chemical was a threat to wildlife. A recent aerial survey indicates that trees in some 38,190 acres in seven counties are now severely defoliated by the heaviest moth infestation in years. The problem is eight-fold worse than last year, says an agricultural department official. Defoliation in the same place next year, he added, will mean tree losses. Dead trees mean less food and shelter for wildlife, increased danger of fire and soil erosion from run-off flooding.

Nice going, conservationists. Your efforts may reap that silent spring, when no birds sing.

* * *

NATURAL DESTRUCTIVE forces never let up, it seems. Mt. Vesuvius destroyed Pompeii, Italy, 2000 years ago. Still, the ruins have attracted historians and incalculable numbers of sightseers. A new threat is the destruction of even the ruins.

The threat is weeds, growing vigorously in the fertile volcanic soil. They fill every courtyard and every crack in masonry. Officials responsible for Italy's antiquities are deeply concerned because not enough funds are available to remove the weeds.

* * *

GOING TO THE OPERA won't be the same next year in St. Louis. The stately, 60-ft. high elm that has graced the lower entrance of the Municipal Opera amphitheater area is dying. The 50-year-old tree is stricken with Dutch elm disease. When symptoms appeared last year, the tree was sprayed and holes were bored through nearby concrete walkways to permit force-feeding of its root system with liquid fertilizer. The operation was unsuccessful, and the tree will be removed at the end of the opera season.

* * *

A FEDERAL NARCOTICS officer may be embarrassed over his ignorance of weeds, but the fellow who exposed him isn't laughing. A Cincinnati man allegedly got \$300 from the federal agent for a supply of marijuana. He was arrested for selling narcotics, but a laboratory examination showed the "marijuana" was only dried garden weeds.

Instead of releasing the man, the charge was changed to larceny by trick. Though the weeds didn't include marijuana, there is a suggestion of sour grapes.

LETTER TO THE EDITOR

Another Way to Kill Cattails

I read with interest the paper on "How to Kill Cattails" by Bert Bordewick in the July issue. I thought your readers would like to know how the same problem was handled in Louisiana.

While looking for a synergistic agent to be used with 2,4-D in 1963, the writer found that the combination of glucose and the residual acids found in untreated blackstrap molasses seemed to serve the intended purpose.

(Blackstrap molasses is the residue from the manufacture of cane sugar.)

It was found that surface aquatic plants were more easily controlled by a mixture of the blackstrap molasses and the amine salt of 2,4-D. It was found also that this mixture was highly successful in controlling most of the submersed aquatic vegetation found

in the area.

This information was given to the operators of Hodges Gardens near Many, La., and was used to clear the lagoons and ponds of the troublesome submersed plants. Cattails remained along the bankline.

A mixture of two gallons of untreated Louisiana blackstrap molasses and one gallon of the 40% amine salt of 2,4-D was added to 100 gallons of water and sprayed on the cattails with a conventional power sprayer until the plants were drenched.

It has now been reported to the writer that the unwanted cattails were completely destroyed.

—**WILLIAM E. WUNDERLICH**, Chief, Aquatic Growth Control Section (RET.), U.S. Engineer District, New Orleans.

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LANDSCAPE DESIGN Salesman: Large Northeast Tree and landscape business. College background in Ornamental Horticulture and/or landscape design. Sales ability one of the prime considerations. The right person will head our landscape department. Must have at least 3-5 years experience in this field and service commitment completed. Salary open; company car furnished; pension plan; paid hospitalization; excellent future. Send resume to: Box 43, Weeds Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

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Aquatic Weed Control

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