

When you buy a piece of turf equipment from your Jacobsen distributor, he knows that the sale doesn't end with delivery.

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That's why your Jacobsen distributor goes out of his way to offer you the best service in the business. From normal maintenance to emergency repairs.

And he's been going out of his way for a long time. Our distributors have been with us for an average of 25 years. And their service managers have been with them for an average of 11 years. That's one heck of a lot of experience.

But Jacobsen distributors don't rest on laurels. Every year they send their service managers and key people to our Racine Product Training Center for comprehensive training sessions.

To stay up-to-date on new products and modifications.

To attend workshops on subjects such as the latest advances in hydraulics and transmissions. And to attend seminars on parts, service and management training.

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Next time you get a chance, ask your Jacobsen distributor to tell you about his service philosophy.

The more you listen to what he has to say, the more you'll know he's been listening to you.

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## FERTILIZER

### Estech, Inc. acquires some Agrico interests

Estech, Inc., parent company of Swift, has acquired some of the Florida retail and agricultural fertilizer interests of Agrico Chemical Co., said Joseph P. Sullivan, president and chief executive officer of Estech.

The Agrico fertilizer mixing plants at Tampa and Fort Pierce were part of the acquisitions as well as the GroTone brand of home fertilizer distributed in Florida and some other southern states.

Sullivan said the mixing plants will be operated by Swift Agricultural Chemicals Corp., subsidiary of Estech that operates phosphate mines in Florida, and manufactures

the Vigoro brand line of retail fertilizers, insecticides, and herbicides.

Agrico Chemical Co. is a subsidiary of the Williams Cos., Tulsa, Oklahoma.

## RECLAMATION

### Gulf States Paper to distribute Enkamat

The Erosion Control Systems Group of Gulf States Paper Corp. will distribute Enkamat, a new erosion control product, and Stablenka, a civil engineering filter fabric, announced J. C. Webb, general manager of new ventures for American Enka Co. and Walter Simons, vice-president of Gulf States. American Enka Co. makes both products.

Enkamat is a flexible, three-dimensional mat of open construction made from heavy nylon monofilaments fused at their intersections. In soil erosion control, Enkamat installs by staking it down over the soil base and burying the edges. The mat fills with soil and sedimentation and grass grows to form a surface capable of withstanding high water velocities.

It is intended for any public or private project which requires permanent surface erosion control at an economical price. This includes ditches, slopes, and waterways.

Enkamat has been used by highway departments in several states to stabilize both natural and artificial embankments, steep excavated slopes, bridge and viaduct aprons, and drainage ditches. It provides an alternative to concrete, asphalt, and rip rap in such applications.

Stablenka is a family of non-woven polyester filter fabrics developed specifically for soil engineering purposes.

## TREES

### Shade tree rated, results available

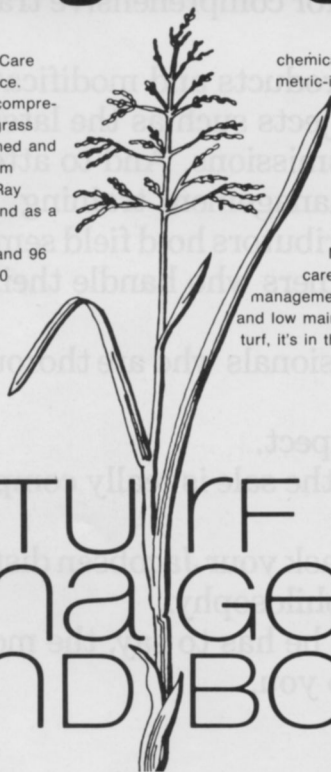
Scientists at the Ohio Agricultural Research and Development Center (OARDC) have announced the names of trees which currently rate highest for planting along city streets.

Dr. T. D. Sydnor, OARDC horticulturist and head of the Ohio Shade Tree Project, says his list of the so-

# Finally, An Aid For Teaching Turfgrass

Superintendents, Contractors, Lawn Care Managers, New, On-the-Job Reference. The Turf Managers' Handbook is a comprehensive, organized approach to turfgrass science and care. It has been designed and written by leading turf specialists from Purdue, Dr. William Daniel and Dr. Ray Freeborg, for on-the-job reference and as a text for students. The book contains 150 illustrations and 96 color photographs. Data includes 240 tables and forms. Included are specifications for rootzones, employment, calculations for

chemical applications, and extensive metric-imperial conversion. Business and technical aspects of turfgrass management are covered in this 424-page Planning, purchasing, hiring, construction, and plant selection are put together for easy on-the-job reference. Markets covered include lawn care, sod production, golf course management, cemeteries, athletic fields, and low maintenance areas. If it concerns turf, it's in the Turf Managers' Handbook.



#### Ordering Information

Please send \_\_\_\_\_ copies of the hardback (\$18.95 ea.)  
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A shipping charge of \$1.25 per book must be added.

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called "top ten" trees is extremely small, considering that 130 types of trees are under evaluation. It represents an average opinion of the evaluation panel regarding the visual impact of the various plants and their suitability as street trees.

The top rated trees include Bloodgood London planetree (*Platanus x acerifolia* 'Bloodgood'), Red Sunset red maple (*Acer rubrum* 'Red Sunset'), Moraine sweetgum (*Liquidambar styraciflua* 'Moraine'), common or European linden (*Tilia x europaea*), Greenspire Littleleaf linden (*Tilia cordata* 'Greenspire'), Select callery pear (*Pyrus calleryana* 'Select'), Korean callery pear (*Pyrus calleryana* 'Faureri'), hedge maple (*Acer campestre*), riverbirch (*Betula nigra*), and upright European hornbeam (*Carpinus betulus* 'Fastigiata').

Sydor says that these plants will not necessarily be the proper ones for a given location. Some people may want their trees to act as a windbreak for the house or to help lower heating costs in the winter and air conditioning costs in the summer. Others may want to attract wildlife, grow their own fruit, or have display flowers.

Characteristics monitored at the Wooster site include: disease and insect tolerance, environmental stress tolerance, growth habit, rate of growth, crotch angles, and wood strength. Sydor says information and data from researchers, observers, and nurserymen at urban sites around the state are also utilized in determining the shade tree rankings.

## TURF

### Turf supplier named businessman of year

Leroy F. Strebel, president of Gulf Shore Turf Supply Company, was honored by the Jacksonville district office of the Small Business Administration as its "Small Business Person of the Year."

In making the announcement, Douglas E. McAllister, SBA district director in Jacksonville, said, "In only five years Mr. Strebel transformed a \$400,000 a year loser into a \$5 million a year success. And he did it with flair, imagination, enthusiasm, and integrity — virtues which are held in high esteem by the business community and SBA."

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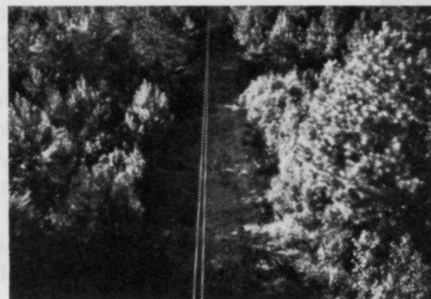
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## LANDSCAPE

### Aesthetic award for retirement community

Rossmoor Leisure World, Laguna Hills, has been named the "Professional Landscape of the Year" by the California Landscape & Irrigation Council, a trade association of union-

affiliated landscape and irrigation contractors who specialize in commercial and industrial projects.

According to CLIC President Klaus W. Ahlers, "Rossmoor Leisure World is probably the largest continuing landscaping project in the United States. To date, the project covers 1,540 acres of landscaping,

including 55,000 trees, 800,000 shrubs, approximately 800 acres of sodded lawn, and 4,000,000 flowers and ground plants.

The project claims to have the largest electronically-controlled sprinkler system in the world, with 250,000 sprinkler heads, 13,000 automatic valves, 800 clocks, and underground piping installations that cover millions of feet in length.

# AN OPEN MESSAGE TO LAWN AND GARDEN MANUFACTURERS

From C. Edward Scofield, Executive Vice President, RA-PID-GRO Corporation



**“**I've helped the lawn and garden industry to grow to an \$11 billion giant! It has been my privilege to frequently be a part of some of the great new changes and developments. I've also experienced my share of disappointments and mistakes. Without strong trade organizations, dedicated pioneers and competent leaders our industry would only be a fraction of what it is today. Your business would still be struggling, your outlook uncertain, were it not for the great work done by many trade organizations. Now we need one strong, overall lawn and garden association to knit manufacturers, producers and growers into a cohesive group. As President of LAGMA, I promise any time and money you invest in this association will pay off handsomely.**”**

Help develop and support a strong, effective trade association. For information on membership and benefits for your firm, ask Ed Scofield or contact:



**THE LAWN AND GARDEN MANUFACTURERS ASSOCIATION**

111 East Wacker Drive, Chicago, Illinois 60601 Telephone: 312/644-6610

## APPOINTMENT

### Collins awarded new appointments

William H. Collins, staff horticulturist for American Garden-Cole, has been named by Secretary of Agriculture Bob Bergland to the Advisory Council of the National Arboretum in Washington, D.C.

Collins has also been appointed to the advisory board of the new Chadwick Arboretum in Columbus, Ohio. He has worked 18 years for American Garden-Cole, the eastern division of American Garden Products, Inc.

## NURSERY

### Montreal to host international garden show

Both North American and European horticulturists will competitively display their plants on the Ile Notre Dame and the site of the 1976 Olympics in Montreal in May through September, 1980.

Both an indoor display lasting nearly two weeks and an outdoor display lasting three months help make this international event a first of its kind.

Interested persons and growers should contact "Les Florales internationales de Montreal, Commissaire general, 360, rue St-Jacques, suite 310, Montreal, Quebec, Canada, H2Y 1P5.

A complete range of cultivated European ornamental plants including trees, shrubs, conifers, roses, annuals and perennials will be among the displays. Indoor plants will be featured at the Olympic Velodrome May 17 to 29. Outdoor displays will be featured on Ile Notre Dame May 31 to September 1, 1980.



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# KEYS TO MANAGING ZOYSIA OFFERED BY MISSOURI'S DUNN

Text and photos by George L. Zeis

Feisty Harry S. Truman is credited with making the now famous statement, "If it gets too hot in the kitchen, it is time to get out."

Using editorial prerogative, we'll turn that statement around somewhat and say that many of the presentday turfgrasses such as bluegrass, fescue, bermuda and bentgrass, just to name a few, have been having difficulty in standing up to the "heat" of wear and tear on golf courses.

Dr. John H. Dunn, Professor of Horticulture at the University of Missouri, Columbia, Mo. has great expectations for another turfgrass that can stand the heat and beating on golf courses, particularly those courses south of a line roughly drawn from Washington, D.C., through Cincinnati, St. Louis, Kansas City and on to Los Angeles. It is called Zoysia.

"Although Zoysia will have some success in growing north of this transition line," Dr. Dunn commented, "it must be kept in mind that this turf grass is best suited for warmer climates."

Zoysia as a fairway turf is probably second only to bluegrass in Missouri. It is a native of eastern Asia and is named after Karl Von Zois, an Austrian botanist.

Actually, there are three groups of Zoysia. The

Japonica group came from North Korea and Manchuria, according to Dr. Dunn, and has a fair tolerance for colder weather as compared to *zoysia matrella* or *zoysia tenuifolia*. Approximately 95 percent of the Japonica group is planted in the transition zone area.

Frank N. Meyer, a United States Department of Agriculture researcher, is credited with much of the basic development of *Zoysia japonica* having started this work in 1906. The Meyer variety is a dense, hardy selection from japonica seedlings developed at Beltsville, Maryland.

With the work that Meyer had done as far back as 1906, it is a fair question to ask why it has taken so long for zoysia to catch on. There are several major reasons. Zoysia is a very slow growing turf that can best be planted vegetatively into established fairways by sprigging, plugging, strip-sodding, solid sodding or more recently by broadcasting of stolons on the surface. And up to now, zoysia has required a lot of hard work to plant.

Meyer Zoysia has been the most promising zoysia to work with in the transition zone. Although a slow grower, this turfgrass has a number of assets including: 1) resists crabgrass and other weeds; 2) grows well during the heat of summer; 3) it is

**With proper management,** zoysia gives excellent growth on home lawns, even in shaded areas.



drought tolerant and needs less irrigation than most turfgrasses; 4) it is very resistant to wear.

The disadvantages of Meyer Zoysia would include: 1) loss of its green color in the fall after the first few killing frosts (some do not call the browning a disadvantage); 2) dormant zoysia will be invaded by weeds; 3) it will take one full year to become fully established as a sod in Southern Florida and usually up to three years in the northern areas.

Zoysia is best started in spring or early summer to benefit from the longest period of warm weather. Since vegetative prepropagation is the best way to go with zoysia, sprigs or stolons must be planted live, usually having three nodes. Part of the sprig should be slightly under the ground surface and the other part exposed.

A relatively new approach for sprig planting was made by Tommy Stone, Superintendent of the County Club of Missouri, Columbia, Missouri. In 1972, on their newly developed golf course, Stone stripped the fairways clean of all vegetation. Then, using a manure spreader, 300 bushel of stolons per acre were spread over the fairways.

The sprigs were watered immediately after they had been spread on the ground. Stone maintains that watering is critical at this stage of planting with sprigs. For those following this method of planting, watering immediately is essential.

The cost of establishing zoysia on this golf course in 1972 including driving range, tees and fairways, was approximately \$15,000. A similar project today would cost much more.

Dr. Dunn advises that if the broadcast method is used to establish zoysia, some implement such as a disk be used to establish the roots of the stolon in the ground. Dunn advises that the sprigs should be planted when they have a good growth — again, late spring or early summer.

"Plugging" zoysia has been a common practice up to now. And this may well be one of the major reasons why golf course operators or homeowners have shied away from this turfgrass. For quicker growing, Dunn points out, the land should be cleared of other vegetation. And since this grass takes a period of some three years to get well established in the transition zone, few homeowners want to put the necessary effort forth to have zoysia lawns.

So far as golf operations are concerned, strip-sodding and plugging have been the primary methods of introducing zoysia into fairways. Solid sodding has been used rather extensively in some areas but it is not advised for complete fairways because of the relatively high costs. Strip sodding should be done from six to twelve inches apart.

Under good growing conditions zoysia will give good spread within a period of three years. However, quickest spreading results from planting in a well prepared, well fertilized seed bed. If the soil cannot be sterilized, weed growth can be reduced by the use of herbicides and hand weeding. Atrazine and simazine are two herbicides that have given good crabgrass control as well as controlling other perennials. Dr. Dunn suggests using herbicides as pre-emergents.

The developing turf should be well fertilized, according to Dr. Dunn, using from 8 to 10 pounds of actual nitrogen per 1,000 square feet with the ap-



Dr. John Dunn inspects a plug of zoysia removed from an experimental plot.

plications being made during the summer months and until mid-August. The soil should also contain a fairly high level of phosphorus and potash. Soil pH should be about 6.5. Discontinuing fertilization in mid-August in the transition zone is to allow the grass to harden for the winter months.

Weed control practices should be followed during the summer months to prevent the growing of other grasses. The University of Missouri researchers have used 2,4-D for broadleaf control and several pre-emergence herbicides for crabgrass control in newly planted Meyer zoysia with good success. From the work done at Columbia, it appears that zoysia turf can become well established after two summers.

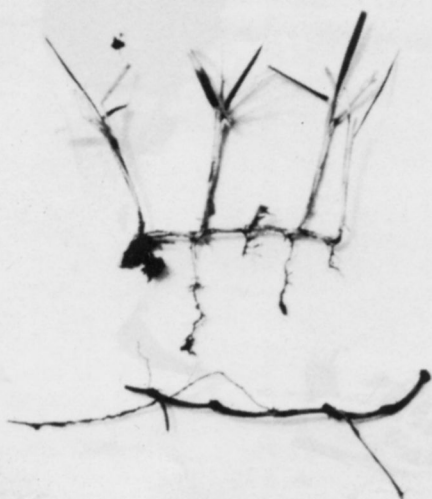
At the Missouri Lawn and Turf Conference, held in Columbia in 1977, Mel Anderson, manager of a country club in Lawrence, Kansas related his experience in planting zoysia in small areas. "The method I used with small areas," Anderson commented, "was to drag the stolons up with a Rogers verticutter, get them out on the ground and distribute them with a manure spreader.

"On the last small areas," he continued, "I took the zoysia, cut it out with a verticut machine, and, by the same method, prepared the area. I set the blade of a mower as low as I could, scalped the turf and swept the areas. Then I repeated this procedure, getting as close to the soil as I possibly could.

"Next, I spread the stolons, without top-dressing, let the stolons lie on the surface and watered for about eight days."

Anderson concluded with these remarks: "I would say that our success was better than any other methods I had ever used to plant zoysia. We





**Plugging is being replaced** by sprigging or stolonizing. Structure of zoysia (top) makes for dense, weed resistant turf. Close-up of plug (bottom) shows density and healthy root system.

had very little desiccation and in the period of a year had a pretty well established turf."

Good management is a key element in the establishing of zoysia as a turf and to maintain it for the best results during its life span. This turfgrass has lasted as long as 20 years.

Management practices which pay off in getting the most out of a zoysia turf after it has become established would include:

- 1) After becoming well established, zoysia needs relatively small amounts of nitrogen fertilizer. Two pounds of nitrogen per year per 1,000 square feet is usually sufficient. Maintain moderate to high levels of phosphorous and potash. This may amount to about 200 pounds per acre but will vary from area to area.

- 2) Once established, and with watchful attention to fertilization, zoysias slow growth become a virtue. Even then Dr. Dunn suggests mowing two to three times a week depending on growing conditions. There is usually less thatching where more frequent mowings are made.
- 3) No turfgrass makes a thicker, more resilient carpet than does zoysia. But there are some drawbacks, too. Such durability and tightness tend to build thatch in time. Some plantings may become so tight that water runs off as from a roof. Watering, under such conditions, becomes difficult. The first evidence of lack of moisture is a browning appearance.
- 4) To help prevent tightness of zoysia top-growth, thatch removal must be done periodically. How often this has to be done depends to considerable extent on previous management practices. De-thatching of zoysia usually has to be started the third or fourth year after planting, according to Dr. Dunn. It may become necessary to open the surface of the turf every few years after the grass has become established.
- 5) Use a reel type mower and cut at a height of from one-half to one inch. Avoid scalping as this may set the growth back and give an uneven appearance.
- 6) While zoysia has no serious disease problems, dollar spot and brown patch are sometimes found. Both these diseases respond well to fungicide treatment.
- 7) There may be some billbug damage but apparently this insect has not, up to now, posed any great threat to this turfgrass.

While most attention in this discussion has related to the use of zoysia on golf courses, the use of this grass also has considerable merit with the homeowner as well. But several factors have to be kept in mind when being used as a lawn grass.

As is true with golf course planting, best establishment takes place on the home lawn when the ground has been completely cleared of other plant growth. Not too many homeowners are satisfied with going through all this trouble and expense.

Another problem with zoysia for the homeowner has been the amount of work needed to establish such a lawn. The conventional way has been by plugging. This is a back breaking job. It also takes a longer time to establish a zoysia lawn this way because of competition with other plant growth.

Too much shade can also be another drawback to get the best possible growth of zoysia. Most home lawns are usually well dotted with trees and extra care and attention is needed to keep this turfgrass growing properly.

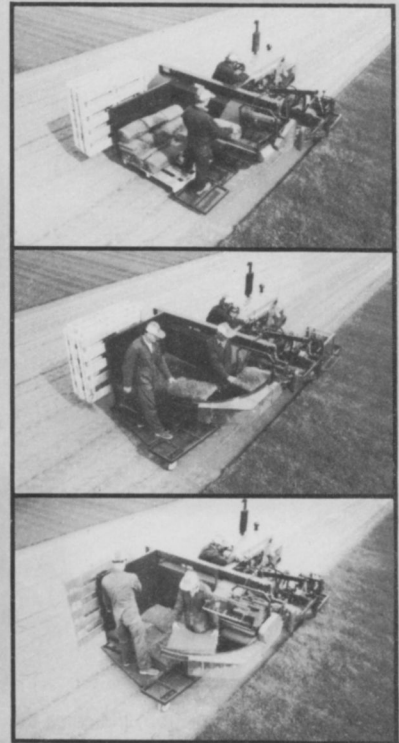
There may also be some objection to the browning of zoysia too early in the fall, particularly in the transition area. But beauty is in the eyes of the beholder. Some people think that the golden brown color of zoysia during the late fall and winter months is beautiful — and they may well have a good talking point. **WTT**



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# ANALYZING ENGINE AILMENTS FOR PREVENTION AND CORRECTION

by Paul Scholten, Service Manager, Kohler Co.



**Valve stem erosion** (top) indicates the fuel mixture is too lean or condensation inside the engine. Damage to entire circumference of the valve face (bottom) is caused by insufficient valve clearance.



Too often a mechanic will pull an ailing engine from a piece of equipment, tear it down, rebuild it, and put it back into service without really finding out what went wrong with the engine in the first place.

What I would like to do is outline an approach that will help you determine what went wrong. With that knowledge, you can take steps in your regular maintenance program to prevent future problems and also eliminate some of the causes of premature engine wear and increase engine life.

Start with a notebook in which you can jot down the condition of parts as you find them. Observing the condition of engine components is the key to analyzing engine troubles. And keep in mind at all times that dirt, improper lubrication, and excessive heat are three of the most frequent causes of engine problems.

Do not begin by cleaning up the engine and tearing it down. You'll destroy a lot of valuable evidence that way.

Instead, start by checking for any accumulation of dirt and grit on the engine block and cooling fins. Dirt on the engine block, and especially in the fins can be a cause of heat build up which can lead to many other problems. Also, dirt on the engine increases the opportunities for dirt to get into the engine. If dirt accumulation is heavy, make a note to include a brief cleaning of the engine in your preventive maintenance schedule.

Next, examine the engine for any obvious oil leaks and make note of them. When you drain the oil, save it and measure it. From this you can tell if the engine had been running with too little oil. Too little oil, of course, means poor lubrication and ultimately damage to the engine.

Examine the condition of the oil. Is it thick and gritty? If so, review your maintenance schedule to be sure that you are changing the oil at proper intervals. Also, check to see if there is any foreign matter or chunks of dirt or metal in the oil.

Carefully examine the folds of the oil filter element to determine if there are any pieces of grit or metal trapped there. Debris in the oil can be a source of severe engine damage.

The next step is to examine the air cleaner assembly. Check the fit. Is the assembly loose or are there signs of damage? Remove the air cleaner element and inspect it carefully by holding a bare light bulb inside of it. You should be able to see light coming through the paper element. Is the element dirty, damaged, or plugged? A very dirty or plugged air cleaner element may mean that enough air was not getting through to the carburetor, and it may also mean that dirt was getting into the engine. Remember, dirt in the engine can ruin an engine in short order.

Also, carefully examine the air cleaner for openings at the edge of the paper and other indications that the element may have been defective.