

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 seedings 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.

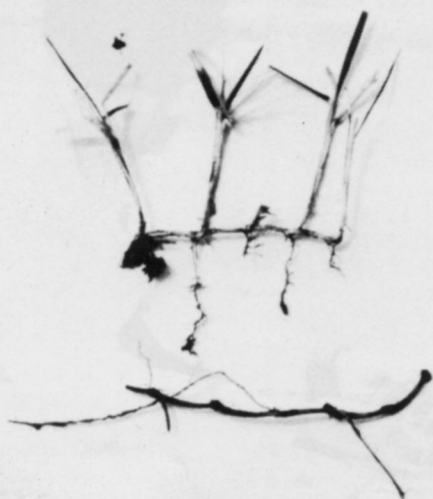
Weed control practices should be followed during the summer months to prevent the growing of other grasses. The University of Missouri researchers have used 2,4-D for broadleaf control and several pre-emergence herbicides for crabgrass control in newly planted Meyer zoysia with good success. From the 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**