

Superintendents in the St. Louis area are finding zoysia may be the closest thing to a "wonder grass" for maintaining quality turf during the summer stress period.

# The St. Louis Solution

by Stanley Zontek

*In the past few years as Regional Director and traveling agronomist for the United States Golf Association Green Section, I have observed how golf course superintendents in the St. Louis metropolitan area have been dealing with one of their major problems - that of maintaining quality fairway golf turf during the summer stress period. This is a report on the solution many of the golf courses have found for good turf for their golfers now and perhaps, even more importantly, a high quality low maintenance golf turf for the future.*

**I**t is important to briefly define the transition zone and why it is so difficult to grow good, reliable quality turfgrass in this part of the country. Simply put, the transition zone is that part of the country where the Northern (cool-season) grasses are at the limit of

their Southern adaptation and the Southern (warm season) grasses are at the limit of their Northern adaptation.

Grasswise, this is an "in-between" area where, due to weather patterns, some years the cool season grasses thrive on fairways and the next, due to a hotter and perhaps wetter weather pattern, the warm season grasses

thrive. There never seems to be any compromise for the golf course superintendent caught in between Mother Nature and the golfers of the transition zone.

This leaves the golf course superintendent, his governing club structure and the everyday golfer in a dilemma.

What type of grass should be grown on fairways?

Cool season varieties such as the improved Kentucky bluegrasses and/or perennial ryegrasses can be overseeded into the existing fairway turf, but must be cut high (in the range of 1 to 1 1/4 inches) to survive the heat and humidity of the summer season.

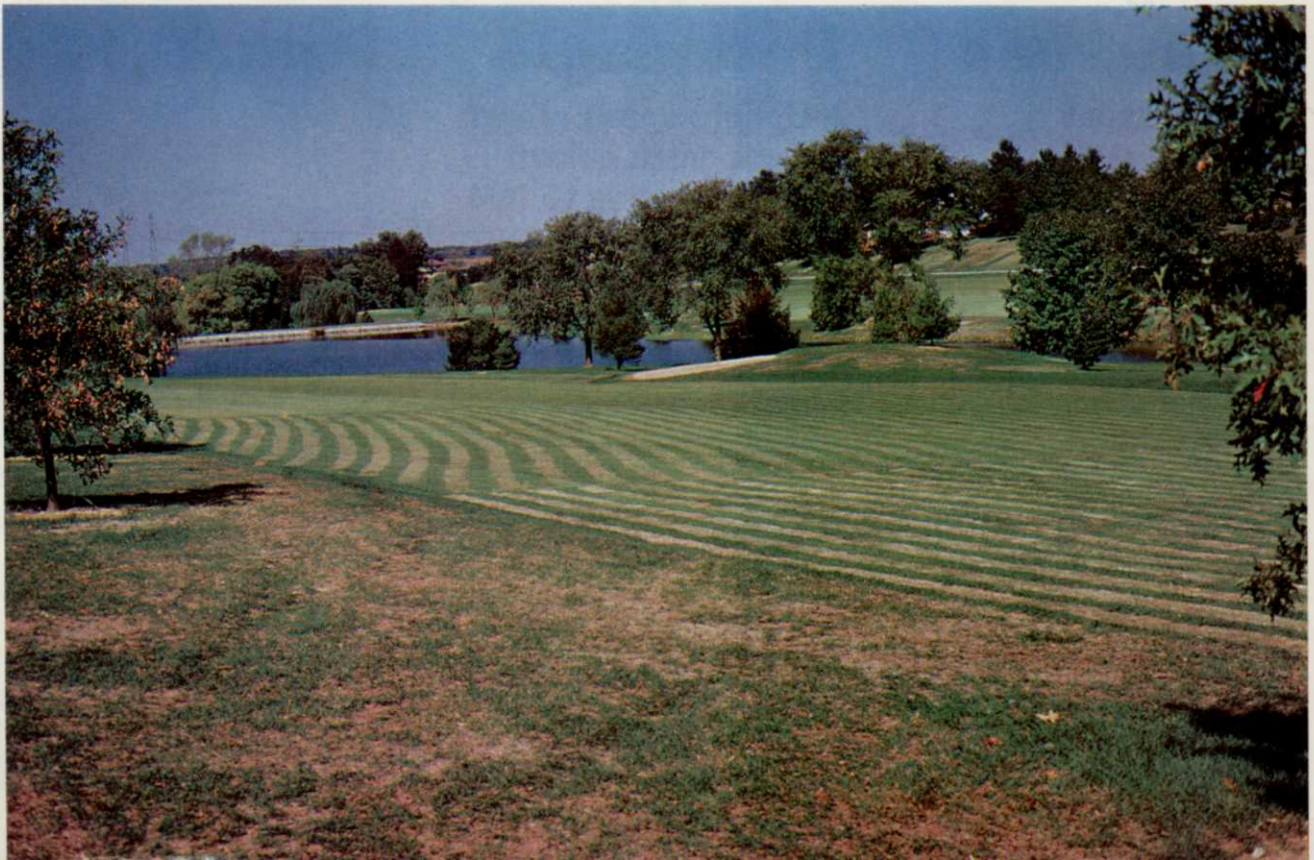
In addition, a comprehensive

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**Strip-sodding** of zoysia on Forest Hills fairways was faster than plugging.

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## Choosing a zoysia establishment program

If a golf course decides to establish zoysia fairways, there are five basic programs that can be followed. The program that is finally chosen generally depends on how much money can be spent each year for the program, how much the golfers are to be inconvenienced and how quickly the course wants zoysia fairways. The basic programs are:

**1 Plugging** - This technique is the one most used by homeowners. On golf courses, it was used early on when the first fairways were being established to zoysia. It is still being used today. Small areas can be effectively plugged by hand and there are even commercial companies that will plug larger acreages on a contract basis. The plugs are usually two to four inches in diameter and are generally planted on approximately 12-inch centers.

**2 Strip Sodding** - This procedure is probably the most used today on golf courses that want to establish zoysia as quickly as possible. It basically involves removing four to 12 inch strips of existing turf and replacing it with a corresponding width of zoysia sod. The sod strips are planted on 12-16 inch centers. Obviously, the closer the rows are planted, the faster the zoysia will spread and vice-versa. By the nature of this program, establishment time for strip sodding is usually faster than plugging. You simply are putting more zoysia into an area.

Because of the amount of zoysia sod required to do an area using this technique, it is also the most expensive of the zoysia establishment

programs. However, by planting a strip of sod into an area, it is one of the most sure and effective programs in use today. (Note: Both strip sodding and plugging can be done during the active growing period of the zoysia. There also have been reports of success using plantings of dormant zoysia strips and plugs).

**3 Row Planting** - This is a relatively new and somewhat still experimental technique of establishing zoysia fairways. So far, results to date on those courses that have tried this planting technique have been extremely encouraging. Hyde Park Golf and Country Club of Louisville, KY, have utilized this planting technique on all of its fairways. Basically, continuous rows on 12-inch centers four to five inches deep are cut into the soil using a row planting machine and shredded sprigs are inserted into the groove. The groove is mechanically closed by this same planting machine and the area is ready for post-plant care.

As far as can be determined now, for large acreages, this procedure promises to offer an alternative to the more traditional programs of plugging and strip sodding. This planting procedure is done on a contract basis.

**4 Hydrostolonizing** - Although initially used to establish zoysia on some fairways at Bellerive Country Club and Old Warson Country Club, this technique is now mostly used only on new golf courses being planted, on establishing zoysia nurseries or on limited areas that can be

taken out of play and given time to establish. Zoysia sprigs are shredded, mixed with water (sometimes containing fertilizer) a binder and a mulch. This combination is sprayed onto bare soil followed by careful post-plant care especially as relates to irrigation. By the very nature of this program, it is quite disruptive to play and thus only now used on specific locations and in specific situations.

**5 Seed** - Through the efforts of Dr. Herbert Portz and his team at Southern Illinois University in Carbondale, IL, zoysia seed is now available. By a specially-developed process of ultraviolet light and soaking seed in a potassium or sodium hydroxide solution, formerly difficult to germinate zoysia grass seed will germinate.

The seed is fairly expensive and is somewhat slow to establish. The grass itself is fairly coarse once established, but this is the first time zoysia from seed is available to the industry. The zoysia seed that is now available has limited usage on fairways due to its coarseness and width of leaf and its slowness to establish with competition from other grasses. As it is now, using known establishment techniques, zoysia seed has not been very successfully overseeded into an existing turf.

It is important to remember that this is the first step towards a seeded variety of zoysia. Research on improved zoysia from seed is ongoing. For now, this coarser type of zoysia has potential usages as a rough grass, for bunker mounds, tee banks, etc.

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fungicide and herbicide program should also be followed to protect these grasses from summer diseases and weed infestations. When properly managed these grasses have good spring and fall color, density and growth, but the high summer cut along with some natural thinning of the grass is disliked by many golfers because the ball doesn't sit up as well.

On the other hand, do you rely on the warm season grasses like bermudagrass and zoysia which can be cut quite low and can provide excellent summer golf turf conditions when play is usually at its peak?

These grasses turn off-color in the fall, remain off color through the winter and only green up during mid-spring. While it is true that dormant zoysia and bermudagrass provide a fine playing surface, to the average golfer, there is still a stigma about playing golf on off-color tan/brown dormant turf especially when the golf course down the road having cool season grasses is green, lush and growing. The average golfer has a hard time understanding this.

Farther South, dormant bermudagrass is routinely overseeded with ryegrass blends for winter color, but in the transition zone regular fall overseeding of warm season grasses is not routinely practiced since ryegrass may compete with bermuda in the spring.

It has generally been accepted that fall renovation and overseeding of ryes for winter color injures the existing warm season turf when it is going dormant, potentially increasing winterkill problems.

Also, the overseeded cool season grasses, especially if they contain a high percentage of perennial rye, can be so persistent that next spring and summer they can favorably compete and persist with the warm season grasses particularly if the summer season is moderate. In some years, the overseeded ryes never leave.

What it really boils down to is a commitment to either warm season or cool season grasses with their associated advantages and disadvantages with little choice in between.

### Some solutions

Zoysia grass has been around for a long time.

First introduced into this country in the late 1890s, it was propagated and some work done on it by the USGA Green Section and the USDA in the 1930s and 1940s. The real work on improved turf-type zoysias really didn't begin in this country until after World War II.

Then, in 1950, Dr. William Daniel of Purdue released the variety, "Midwest." This was followed in 1951 by the release of Z-52 or Meyer zoysia. Both releases were subspecies of *Zoysia japonica*. Today, by far the most used variety is Meyer.

Why zoysia? The answer is simple, yet complex.

First, it was observed by golf course superintendents primarily in the St. Louis area (along with a few other areas of Kansas and Illinois) that year in and year out the zoysia, if properly managed, seemed to tolerate and even thrive under the extremes of weather experienced in the transition zone. Zoysia exhibits outstanding winter hardiness (we know of zoysia being grown in Minneapolis) besides exhibiting excellent summer performance (it is a warm season grass). Further, once established, zoysia fairways exhibited outstanding playing characteristics and were very economical to maintain.

During the 1970s, superintendents saw that zoysia rarely experienced winterkill that was often a problem with bermudagrass in this part of the country. Zoysia seemed to green up relatively early in the spring and zoysia required far fewer fungicides, insecticides and herbicide applications. Zoysia required less water and fertilizer once it was established than cool season fairway grasses or even bermudagrass.

It provided outstanding playing turf preferred by the golfers during the peak of the summer golfing season when cool season grasses were at their weakest; the zoysia was so dense it literally crowded out and eliminated most goosegrass and crabgrass problems all

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by itself without extensive pre-emerge or post-emerge herbicide programs. It required little summer "pampering" and when fall frosts came it went dormant near the time play fell off anyway and besides, even dormant and off-color it still provided an excellent playing surface with practically no fall care.

No overseeding, no fall fertilization, no widespread herbicide treatments or even mowing -- it literally was one less turf area for the golf course superintendent to worry about when it went dormant.

### Negative aspects

The negative aspects of zoysia management were far offset by the positive benefits. Even the problem of fall, winter and early spring color was solved by good communication programs with the golfers.

By stressing the advantages of

lower short and long term fairway maintenance costs and zoysia's outstanding summer performance, even the average golfer realized that there was no perfect fairway grass for the transition zone, but, when all factors were considered, zoysia made the best sense and was probably the best compromise grass available.

There are some negative aspects of zoysia, namely cost and speed of the establishment program.

Zoysia is slow to establish when planted into existing stands of cool season grasses. Depending on the management program and the weather, it sometimes takes four to five years for the zoysia to spread and provide a good turf cover. Zoysia does not grow well in shade.

Its performance on shady tees and shady fairways is not very good.

Commercially-grown zoysia sod is expensive to purchase. Because Meyer zoysia must be

established vegetatively either by stolons, plugging, row planting or strip sodding and most of these planting materials must at some time be purchased, establishment costs run high. The supply of zoysia sod is limited and the demand and cost of zoysia remain high.

Another area where zoysia does not perform well is when it is planted into any area contaminated with patches of bermudagrass. Generally, on a one-to-one basis, bermudagrass, because of its aggressiveness, will out compete and tend to dominate zoysia in a mixed stand. Only when winterkill is experienced on the bermudagrass or when a very careful and precise zoysia management program is followed will zoysia tend to dominate in a mixed stand with bermudagrass.

Zoysia is clearly not for all golf courses in all situations and careful consideration must be given before establishing any zoysia program. **WT&T**

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