



## Zoysiagrass for Turfgrass

### Areas in Indiana

*Clark Throssell, Zac Reicher and Jeff Lefton  
Purdue University Turfgrass Specialists*

Zoysiagrass, a warm-season turfgrass species with a moderately narrow leaf blade, is found throughout Indiana. Under favorable environmental conditions, and with proper management, Zoysiagrass will form an extremely dense, upright, green, attractive turf. Zoysiagrass has both rhizomes and stolons and spreads slowly over time. The term, warm-season turfgrass, refers to the weather conditions that favor growth of Zoysiagrass. Zoysiagrass grows best in Indiana during the months of June, July, and August, when day and night temperatures are hot and the sunlight is intense. In Indiana, Zoysiagrass is best adapted to home lawns, commercial lawns, and golf course fairways and tees located in the southern one-third of the state. Zoysiagrass can be grown successfully in the remainder of Indiana, but is dormant for longer periods of the year. Other attributes of zoysiagrass include a relatively slow leaf growth rate, resistance to many diseases and insects, adaptation to all types of soils, and a lower water requirement than Kentucky bluegrass, perennial ryegrass, or turf-type tall fescue.

Like all turfgrass species there are limitations associated with the use of zoysiagrass. The major complaint of individuals with Zoysiagrass turf is that it is very slow to green up in the spring and begins to lose green color early in the fall. Zoysiagrass begins to turn green in early- to mid-May and becomes fully green by the end of May in central Indiana. In southern Indiana, Zoysiagrass begins to green up in late April and is fully green by mid-May. In fall, as the night temperature drops to the mid 50's, zoysiagrass begins to lose color. After the first hard frost occurs, zoysiagrass will turn a tan color. Zoysiagrass has a tan color from mid-to-late October until greenup occurs in spring.

A major disadvantage of Zoysiagrass is that it must be established vegetatively using sod or small pieces of sod called plugs. Currently, there are no commercially available sources of Zoysiagrass seed.

### **Establishment**

The ideal time to establish Zoysiagrass turf is from mid-May to the first of July. There is no advantage to establishing Zoysiagrass earlier than mid-May since cool soil and air temperatures prior to that time severely limit Zoysiagrass growth. Establishing Zoysiagrass after the first part of July may not give the grass time to fully establish before winter. Zoysiagrass may be susceptible to winter kill due to cold temperatures if it is not well-established. After establishment, Zoysiagrass is winterhardy in Indiana.

For home lawns, zoysiagrass can be established from sod or plugs. If sod is to be used, the existing turf should be killed and the soil prepared similarly to establishing from seed. Plugs are small square or round pieces of Zoysiagrass sod approximately 4 square inches, or 2 inches in diameter. Plugs are planted by hand using an implement (plugger) that removes a plug of the existing turf. The void is then filled with a zoysiagrass plug. The plugs are planted in a grid pattern approximately one foot apart. Plugging is a very labor intensive, time-consuming endeavor. Since zoysiagrass has both rhizomes and stolons, it will spread from the plugs until it covers the entire lawn. The rate of spread of zoysiagrass is very slow. Therefore, it may

take 3 to 5 years to achieve complete coverage when establishing Zoysiagrass from plugs planted on 1-foot centers. As Zoysiagrass plugs are planted closer and closer together, the length of time for complete coverage is reduced.

Generally, zoysiagrass sod is fairly expensive. To reduce the cost of establishing zoysiagrass on large turf areas such as golf course fairways and tees, strip sodding is often used. Strip sodding is a procedure that involves planting 3-to-6-inch-wide strips of zoysiagrass sod, 12 to 24 inches apart, the entire length of the fairway or tee. Specialized machines are available to remove the 3-to-6-inch-wide strips of the existing turf so the Zoysiagrass sod can be planted. Strip sodding is also a very labor intensive process. A large crew is needed to hand plant the zoysiagrass strips. After strip sodding, it can take from 2 to 4 years to achieve complete coverage depending on the width of the strips planted and the distance of spacing between the strips. Following establishment, fertilize every 3 to 4 weeks with 1.0 lb. actual nitrogen per 1,000 sq.ft. during June, July, and early August. This will help increase the rate at which the zoysiagrass spreads. After the zoysiagrass covers the area, reduce the fertilization rate as described later.

**Regardless of the method of establishment, it is important that the turf site be managed to favor the zoysiagrass rather than the previous turf. By managing to favor the zoysiagrass, it will spread more rapidly.**

## **Fertilization**

Established Zoysiagrass thrives and provides an excellent quality turf under a minimal fertilization program. Over-fertilization is often the cause of decline of a zoysiagrass turf stand. One fertilization in the early part of June, after the turf has become fully green, is often more than adequate for Zoysiagrass. The fertilizer used should have a nutrient ratio of approximately 4-1-2 and should be applied at the rate of 1.0 lb. actual nitrogen per 1,000 sq. ft. of turf area. Do not attempt to force zoysiagrass to green up by applying fertilizer in the spring. Zoysiagrass will green up when the soil and air temperatures are consistently in the 70's or higher.

If a second fertilization is needed, early July is the recommended time period. Apply no more than 1.0 lb. actual nitrogen per 1,000 sq. ft. at this time. Do not fertilize zoysiagrass after August 1. Late summer or early fall fertilization of zoysiagrass will not prolong the green color in the fall. A fertilization after August 1 will only reduce the winterhardiness of zoysiagrass.

Some managers of zoysiagrass fertilize once a year, or only once every other year, and maintain a dense, vigorous stand of high quality turf.

## **Mowing**

Zoysiagrass provides the best quality turf when it is mowed at a height of 1/2 to 1 inch on a frequent basis. During the summer months zoysiagrass may need to be mowed twice a week or more. A reel type mower is preferred for mowing zoysiagrass.

## **Thatch**

Accumulation of thatch is the most serious problem to overcome when managing zoysiagrass. Although zoysiagrass grows relatively slowly, it tends to develop a thatch layer fairly rapidly. Thatch control in Zoysiagrass should begin before thatch accumulation becomes a problem. A thatch layer greater than one-half inch thick is undesirable. Thatch removal in Zoysiagrass should be done yearly, in June, after the Zoysiagrass is fully green. A power rake (dethatcher) or core aerifier may be used. The debris brought to the turf surface when using a power rake should be collected and removed. To properly control the thatch, it may be necessary to make more than one pass over the lawn when using a power rake or core aerifier.

## **Watering**

Although zoysiagrass requires less water than Kentucky bluegrass or turf-type tall fescue, zoysiagrass will benefit from regular irrigations during dry periods. A thorough watering, to wet the soil profile to a depth of 6 inches every 2 to 3 weeks, during periods of prolonged dry weather will improve the quality of the turf.

# Pest Control

Due to the extremely high density of zoysiagrass, weeds are less of a problem in zoysiagrass turf than in other turf stands. It may be necessary to control crabgrass or other annual grasses using a preemergence herbicide. Broad leaf weeds can be controlled using standard herbicides available in garden stores.

Diseases are rarely a problem in zoysiagrass. If there is a disease problem it is usually due to the accumulation of thatch and overfertilization.

Chinch bugs are the most common insect problem in zoysiagrass. The adult chinch bug is about 3/16 inch long with a black body, white wings, and reddish-brown legs. Young chinch bugs are an orange-red color with a white band across the back. Chinch bugs injure the turf by sucking the sap from the leaves and stems, causing the turf to turn yellow and then reddish brown. Damage from chinch bugs is most often observed during July and August and is most severe during periods of hot, dry weather. Many insecticides are available to control chinch bugs; they should be applied only when chinch bug activity has been observed in July and August.

## Zoysiagrass Maintenance Calendar

<u>Month</u>	<u>Operation</u>
April	Annual grass control, using a preemergence herbicide, if necessary.
May	Broadleaf weed control (optional)
June	Fertilize with 1.0 lb. actual nitrogen 1,000 sq.ft. Thatch removal.
July	Water if necessary
August	Water if necessary
Mid-Sept. to early Nov.	Broadleaf weed control if necessary.(This is the ideal time to control broadleaf weeds.)

Purdue University  
Cooperative  
Extension Service  
West Lafayette  
Indiana 47907