

# Zoysiagrass for FLORIDA Lawns:

## A Passing Fancy or Here to Stay?



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**In** recent years, the use of zoysiagrass in the landscape has been a topic of debate. It now appears — based on sod production estimates — that significant quantities of zoysiagrass are being planted across Florida and production continues to increase. Reasons for the shift are many and include improved aesthetics, available pest management options — especially weed management, and perceived lower irrigation requirements — just to name a few.

Zoysiagrasses were introduced into the United States from the Orient, and these grasses make attractive turf throughout much of the United States. Several varieties are used for residential and commercial landscapes, athletic fields, golf course tees, fairways and roughs. Table 1 provides a quick comparison of several zoysiagrass varieties.

### **Establishing zoysiagrass in the landscape**

The focus of this article is on the management of zoysiagrass. For a thorough discussion on establishing zoysiagrass, refer to *Zoysiagrass in Florida* (<http://edis.ifas.ufl.edu/LH011>), *Establishing Your Florida Lawn* (<http://edis.ifas.ufl.edu/LH013>), and *Preparing to Plant a Florida Lawn* (<http://edis.ifas.ufl.edu/LH012>).

### **Managing zoysiagrass in the landscape**

Some suggest that zoysiagrass requires a higher level of maintenance than other lawn grasses. We contend, however, that zoysiagrass management may not necessarily require a *higher* level of maintenance, but the maintenance is *different* than that of other lawn grasses. Table 2 provides a quick comparison of zoysiagrass to other lawn grasses.

#### **Fertilizing**

Proper fertilization is an important component of the best management practices of your turf and it greatly influences the overall health of the turf. Applying too much or too little fertilizer can increase zoysiagrass' vulnerability to many stresses, including weeds, insects and disease.

## Which Variety is Best?

Improvements in zoysiagrass varieties have been a major objective of turfgrass breeders. These improvements are aimed at maximizing the positive attributes of zoysiagrass while minimizing the disadvantages. Although one can find information on the Internet about many zoysiagrass varieties, at the present time, only a few are commercially available in Florida. Based on research information and anecdotal observations, here is a summary of what to expect:

**Cashmere** is a 1988 release from Pursley Turf Farms located in Palmetto, Florida. It is dark green, has a fine leaf texture and forms a dense turf. Its shade tolerance is not fully known, but it does lack cold hardiness and is best adapted to the southern regions of Florida.

**El Toro** was selected for quick establishment, improved cool-season color, cold tolerance and reduced thatch buildup. El Toro is also reported to have early spring green-up, more shade tolerance and improved resistance to rust disease. It also has excellent drought tolerance. It is, however, susceptible to large patch disease. It was the number one performing coarse-textured zoysiagrass in the National Turfgrass Evaluation Program (NTEP) trial conducted in Gainesville and the greater Pensacola area from 1997-2000 (Table 1).

**Emerald** zoysiagrass was released in 1955. It has very fine leaf blades and may be used for top-quality lawns where time and money allow for adequate maintenance. Emerald produces excessive thatch and is susceptible to dollar spot, leaf spot and large patch disease. It was the number one performing fine-textured zoysiagrass in the National Turfgrass Evaluation Program (NTEP) trial conducted from 1997-2000 (Table 1).

**EMPIRE** is a cultivar that is gaining popularity in Florida. It is similar in texture to El Toro and has a very dense growth habit. It maintains a nice green color and, when compared to other new zoysiagrass cultivars, it has a moderate rate of establishment. EMPIRE has performed well in sandy and clay soil types with aggressive growth from its stolons and rhizomes, but can be mowed with a standard rotary mower due to its broader leaf and open growth habit. It does not do as well in shade as other zoysiagrass cultivars. EMPIRE is being planted in numerous communities in Florida, and it seems to do well in many areas throughout the state; however, it is susceptible to large patch disease.

**JaMur** is a medium coarse textured cultivar that has performed well in many areas and is now produced in Florida. It has a very attractive color and performs well in moderate shade. JaMur has an excellent rate of establishment and will tolerate mowing heights as low as ½ inch, but performs well at normal home lawn mowing heights, and it can easily be mown with a rotary mower. It is susceptible to large patch disease.

To look their best, zoysiagrasses require frequent but LIGHT fertilization. They should receive three (north Florida) to five (south Florida) pounds of nitrogen (per 1,000 ft<sup>2</sup>) during the growing season in most situations. Of course, localized microclimatic effects can have a tremendous effect on turfgrass growth, and a range of rates allows for these environmental variations. An example of this would be a typical home lawn that is partially shaded and partially sunny. The grass growing in the shade should receive lower rates of fertilizer than that growing in full sun. Avoid applying nitrogen fertilizer simply to promote green color. Instead, monitor growth and apply only when the growth rate has dramatically declined. Potassium nutrition also is important and should be applied at rates equal to nitrogen. During excessively rainy periods, potassium may need to be applied more frequently due to its leaching ability.

Since zoysiagrass is very slow to green-up in the spring, avoid applying fertilizer until after the turf has become fully green. This is especially important in north Florida where late spring frosts may damage the grass. Likewise, don't fertilize too late in the year, as this can slow regrowth the following spring. An application of iron can enhance spring green-up. Early spring and late fall applications of nitrogen on zoysiagrass will significantly increase the chances of getting large patch disease.

## Zoysiagrasses were introduced into the United States from the Orient, and these grasses make attractive turf throughout much of the United States.

### Mowing

If fertilized as recommended, zoysiagrasses may require frequent mowing during the summer months to look their best. Mowing height is dictated by the cultivar selected. The coarse-textured zoysiagrasses can be maintained between 1" and 3", and the finer-textured zoysiagrasses prefer mowing heights below 1". The frequency of mowing should follow the "1/3 rule" — never remove more than one-third of the leaf blade. For example, if the desired height-of-cut is 3", mow when the turf reaches 4". Similarly, if the desired height-of-cut is ¾", one must mow when the turf reaches 1". For mowing heights less than 1.5", it is best to use a reel-type mower.

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Because zoysiagrass leaves are very tough, they can be quite difficult to mow. Sharp blades are a must, regardless of whether a rotary or reel mower is used. As a general rule, the shorter you mow (within a cultivar's range of mowing heights), the better the grass will perform.

### Thatch control

Zoysiagrasses typically develop a thick thatch layer in the years after establishment — especially when over-fertilized with nitrogen or over-irrigated. This thatch must be controlled or removed mechanically to maintain a uniform grass appearance. This is most often done using a vertical mower or core aerator. Some have noted that scalping, during or shortly after spring green-up, will help reduce thatch build-up. One of the most important methods of reducing thatch build-up is to keep nitrogen fertility at the recommended levels and irrigate according to the needs of the grass. In addition, shorter mowing heights help prevent thatch build-up.

### Watering

Most agree that zoysiagrasses are quite drought tolerant compared to other lawn grasses grown in Florida. However, drought tolerance means different things to different people. Although zoysiagrasses will survive extended periods of drought, they often do so in a dormant-like state. Recent research at Texas A&M supports this notion. After 60 days of drought, seven zoysiagrass cultivars had less than 1.5% green living color compared to 'Floritam' St. Augustinegrass (20% green), 'Tifway' bermudagrass (50% green), and 'Celebration' bermudagrass (71% green). Zoysiagrass clearly needs supplemental irrigation during drought periods to remain green. Otherwise, it will turn brown. To maintain green color during prolonged droughts, watering zoysiagrass every other day may be necessary. Irrigating as needed is an excellent way to water any grass, provided the proper amount of water is applied when needed, not at a later or more convenient time. When using this approach, water at the first sign of wilt and apply ¾ inch of water per application.

### Pest control

Like other lawn grasses grown in Florida, zoysiagrass lawns will encounter pest problems. Periodic control of one or more

of these problems will be necessary to grow a high-quality turf. When pest problems arise, consult the *University of Florida's Pest Control Guide for Turfgrass Managers* (<http://turf.ufl.edu/2006TurfPestControlGuide.pdf>) for pest control options.

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**Table 1. Ranking of average turfgrass quality ratings of commercially available zoysiagrass cultivars grown at two Florida locations from 1997-2000 as part of the National Turfgrass Evaluation Program (NTEP).†**

Cultivar‡	Establishment Method§	Texture&	Turfgrass Quality Ranking (1 = best)	
			Gainesville	Pensacola
El Toro	Vegetative	Coarse	1	1
De Anza	Vegetative	Medium	2	5
JaMur	Vegetative	Coarse	3	3
Zeon	Vegetative	Fine	4	6
Miyako	Vegetative	Coarse	5	7
Emerald	Vegetative	Fine	6	4
Zorro	Vegetative	Fine	7	8
Victoria	Vegetative	Medium	8	2
Chinese Common	Seeded	Coarse	9	9
Korean Common	Seeded	Coarse	10	12
Meyer	Vegetative	Coarse	11	11
Zenith	Seeded	Coarse	12	10

†Ranking of mean turfgrass quality is achieved by assigning "1" to the highest mean, "2" to the second highest mean, etc., for each location. Ranking should only be used to determine the general performance of a cultivar at a given location.

‡Only named, commercially available varieties are included in the table. Not all varieties may be available in Florida.

§Seeded varieties are direct seeded. Vegetatively established varieties can be established by sod, sprigs or plugs.

&Textural classes were determined from data taken at the Gainesville location as published by [www.ntep.org](http://www.ntep.org).

**Meyer** (Z-52, Amazoy®) has been in use since the 1950s and is often seen in ads as the "miracle grass." It is very slow to establish and hunting billbugs and nematodes pose serious problems with Meyer, limiting its use in Florida. Meyer zoysiagrass performed very poorly at the Florida locations of the NTEP trial conducted from 1997-2000 (Table 1), and its use in Florida is discouraged.

**PristineFlora** is a new University of Florida cultivar being released for use in high maintenance situations including high-end home lawns. This variety is fine-textured, extremely dense and has a dark green color. PristineFlora will not produce seed heads as prolific as other fine-textured cultivars, such as Emerald or Diamond.

**UltimateFlora** is another new zoysiagrass developed by the University of Florida. This cultivar is used for home lawns and was selected for the lawn at the Birmingham Home & Garden Inspiration Home in Vestavia Hills (a suburb of Birmingham), Alabama, and at the 2006 New Southern Home in St. Cloud, Florida. Like PristineFlora, it does not produce seed heads as prolific as some cultivars.

**Zeon** is a fine-textured zoysiagrass that has been used on both home lawns and golf courses. It has a deep green color and upright growth habit. Both rotary and reel mowers can be used, but Zeon has very stiff leaves and a reel mower will work best. It is planted on several golf courses in Georgia and Texas.

**Zenith** zoysiagrass is one of the few commercially available seeded varieties. This dark-green, medium-textured zoysiagrass did not perform very well in the 1997-2000 NTEP trial (Table 1); however, it has performed better in subsequent research over the past couple of years. Generally speaking, the seeded cultivars do not perform as well as the vegetative cultivars. NOTE: When planting zoysiagrass seed, do not rake the seed into the soil as is recommended with other species. Zoysiagrass seed requires light for germination to take place.

**Zorro** is a fine-textured zoysiagrass released by Texas A&M University. Zorro establishes well, has good shade tolerance and is easier to mow than some fine-textured cultivars. This turf performed moderately well in Florida in the 1997-2000 NTEP trial (Table 1).



**An EMPIRE lawn at Misner Reserve, Lakewood Ranch, Florida. Photo courtesy of Sod Solutions, Inc.**

**Weeds** – One of the best attributes of zoysiagrass is its ability to resist weed invasion due to its thick, dense growth habit. When zoysiagrass becomes damaged from insect or disease problems, voids in this dense mat are created and weeds will likely invade. Fortunately, unlike St. Augustinegrass and centipedegrass, zoysiagrass is very tolerant to many effective pre- and postemergence herbicides, giving a wide range of options to the turf manager.

**Insects** – The most serious insect on zoysiagrass is the hunting billbug. Billbugs feed on roots causing the turf to die in irregular-shaped patches. The damage most often

occurs in the fall and spring when populations are high and may be misdiagnosed as dormancy. Stems and rhizomes break easily, have irregular feeding marks, and the turf will not hold together if cut. Most damage occurs on infertile or dry soil. If, upon inspection, one finds 10 to 12 billbugs per square foot, control may be necessary.

Mole crickets and white grubs can also negatively impact zoysiagrass. Mole crickets feed on grass roots and leaf blades and their tunneling activity dislodges plants from the soil, causing them to dry out. White grubs, like billbugs, feed on roots, causing the turf to turn yellow, wilt and eventually

**Table 2. A generalized comparison of zoysiagrass to common lawn grasses grown in Florida.**

	Centipedegrass	St. Augustinegrass	Zoysiagrass
Mowing Height	1-2"	Cultivar dependent (2-4")	Cultivar dependent (0.25 - 3")
Mower Type	Rotary	Rotary	Reel-type or Rotary
Fertility Requirement	1-3 lbs N 1000 ft-2 yr-1	2-6 lbs N 1000 ft-2 yr-1	3-5 lbs N 1000 ft-2 yr-1
Grassy-weed Herbicides	Preemergence - many Postemergence - few	Preemergence - many Postemergence - none	Preemergence - many Postemergence - many
Broadleaf Weed Herbicide Tolerance	Many are damaging	Many are damaging	Most are safe
Insects	Spittlebugs Ground Pearls	Chinch Bugs Sod Webworm White Grubs	Hunting Billbug Mole Crickets White Grubs
Disease	Centipedegrass Decline	Take-all Root Rot Brown Patch Grey Leaf Spot	Large Patch Dollar Spot Rust



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die. Both of these insect pests often attract raccoons, skunks, armadillos and birds, which may actually cause more damage than the insect itself.

**Nematodes** – Many state that nematodes are serious pests on zoysiagrasses; however, this is not well documented in the scientific literature. University of Florida researchers and turfgrass breeders are aggressively working to identify the extent of zoysiagrass susceptibility, and they are identifying superior cultivars that can withstand nematodes.

**Disease** – Without a doubt, the most troubling disease for zoysiagrass is large patch (same causal organism as brown patch in St. Augustinegrass). This disease becomes prevalent each fall and can be a problem through the following spring. Although zoysiagrass is probably not more susceptible to this disease than St. Augustinegrass, recovery can be slow due to zoysiagrass' prolonged dormant to semi-dormant condition. As mentioned, zoysiagrass will be the first turf species to go off-color in the fall and the last to green-up in the spring. Should a large patch disease outbreak occur, one can expect to see the damage well into the next summer. With this in mind, it is important to treat preventively to ward off any likelihood of this disease. Additionally, one needs to avoid excessive applications of fast-release nitrogen and keep thatch levels to a minimum.

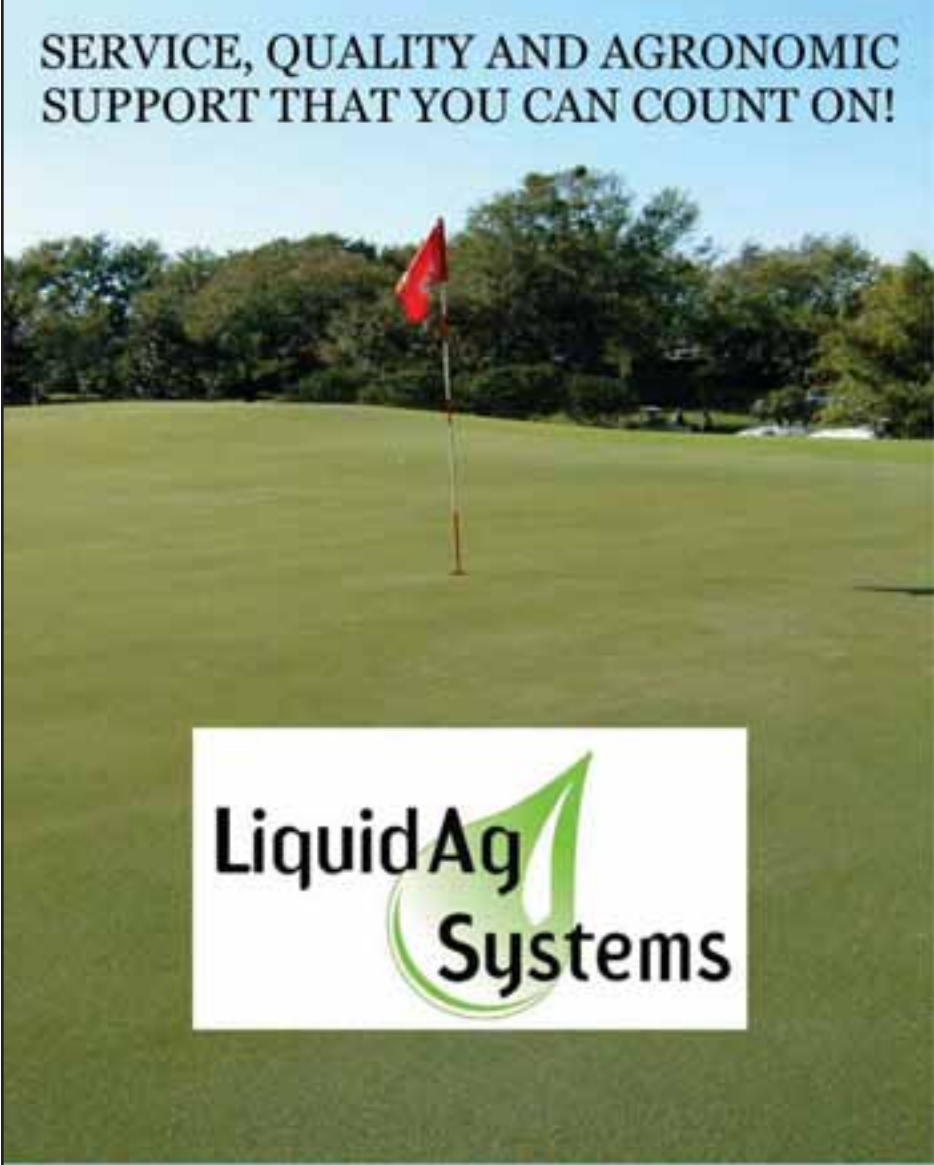
Other diseases that impact zoysiagrass include dollar spot and rust. Dollar spot typically occurs when nitrogen levels are below optimal and can easily be corrected with a light application of nitrogen. Rusts occur during mild, humid weather and appear as small yellow to orange to reddish-brown pustules on the leaves. Fungicides are effective, but most often, frequent mowing with clipping removal will keep this under control.

### Not just a passing fancy

As homeowners and landscapers discover the merits and aesthetic value of zoysiagrass, its market share will continue to increase, and landscape managers will be expected to manage this “not-so-new” turf. Be assured, researchers at the University of Florida continue to conduct research aimed at selecting improved zoysiagrasses that are adapted to Florida's diverse

climate and environment. Additionally, research focused on improving zoysiagrass management is also underway. Upon completion of the research, additional University of Florida Extension Fact Sheets will be published, and articles will be written for the *Florida Turf Digest*. ☼

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