

# Turfgrass Selection *Zoysia*

**Tom Samples, Professor and John Sorochan, Associate Professor  
Plant Sciences**

*Zoysia*, one of the earliest grass species to be used as turf, is native to Australia, China, Japan, Korea, New Zealand and the Philippines where climate and rainfall vary greatly depending on season. This slow-growing, sod-forming species forms a dense, uniform turf in full sun and light, open



shade. When propagated from sprigs or plugs, many varieties may require two or more years for total turf coverage. Unlike bermudagrass, leaves and stems that develop from nodes on stolons and rhizomes grow upright at an angle of about 90 degrees. Leaves are very stiff and stems are very tough; two attributes that contribute to excellent wear resistance but can cause mowing challenges. The drought, heat and salinity tolerance of *Zoysia* is excellent. Due, in part, to the limited rate of growth of lateral stems, the species recovers very slowly from injury compared to bermudagrass and St. Augustinegrass. *Zoysia* produces excessive

thatch. Intensely managed, high-quality *Zoysia* turfs are often dethatched in early to mid-summer every year. Low-temperature hardiness, leaf width and growth rate vary among the three species of interest in Tennessee. Rankings of low-temperature hardiness, leaf width and rate of growth by species are: *Z. japonica* > *Z. matrella* > *Z. pacifica*.

## Varieties

**Vegetative, Clonal Types.** Improved, vegetatively established varieties available in Tennessee include 'Cavalier,' 'El Toro,' 'Emerald,' 'Meyer,' 'Palisades,' 'Royal,' 'Zeon' and 'Zorro.' El Toro, Meyer and Palisades are medium-coarse, low-temperature-hardy *Z. japonica* varieties. Meyer, released in 1951, is the most widely used *Zoysia* in the state. El Toro, released in 1986, resembles Meyer. However, El Toro is more shade-tolerant, faster-growing, has slightly wider leaves, is less dense and produces less thatch than Meyer. In 1996, Texas A&M University released Palisades, a variety noted for good winter hardiness and



Meyer *Zoysia*



Palisades *Zoysia*

improved shade tolerance.

Cavalier, Royal, Zeon and Zorro are dense, fine-textured and low-growing varieties of *Z. matrella*.

Cavalier, released for production in 1996, has long and slender leaves, good salt and traffic tolerance, and improved shade tolerance. Cavalier is also resistant to fall armyworms and brown patch. Royal, a *Z. matrella* hybrid released in 2001, has dense rhizomes and tillers, excellent salt tolerance, good shade tolerance and recovers rapidly from damage. Royal transitions from winter dormancy earlier than several other varieties. Zeon, a medium-fine-textured variety of *Z. matrella* released in 1996, is very tolerant of extended periods of drought and is adapted to both clayey and sandy soils. Zeon spreads faster from plugs and sprigs than the inter-specific hybrid Emerald



Zeon *Zoysia*



Compadre *Zoysia*

and has demonstrated good insect resistance and shade tolerance. Zorro, propagated from a clone of one *Z. matrella* seedling, was released in 2002. Like other varieties of *Z. matrella*, Zorro has limited low-temperature tolerance. Zorro tolerates low-light conditions, recovers quickly from damage, has excellent salt tolerance and resists several diseases and insect pests. The variety Emerald, released in 1955, is a hybrid between *Z. japonica* and *Z. tenuifolia* (*Z. tenuifolia* is also recognized as *Z. pacifica*). An objective of crossing the two species was to combine the deep green color, texture and density of the *Z. tenuifolia* parent from Guam with the cold hardiness and aggressiveness of the *Z. japonica* parent from Korea. Although less tolerant of extreme low temperatures, Emerald is much denser and more shade-tolerant than Meyer.

**Seeded Types.** Presently, seed of 'Common' *Z. japonica* imported from China, Japan and/or Korea is marketed in the Southeast. 'Cathay,' 'Ming,' 'Sunrise' and 'Zen' are blends of Common *Z. japonica* seed. Turfgrass breeders continue to develop varieties with improved quality and pest resistance. These varieties are also capable of yielding substantial amounts of viable seed. 'Compadre,' 'Compatibility,' 'J-36,' 'J-37,' 'SR9000,' 'SR9100,' 'SR9150,' 'SR2000,' 'W3-2' and 'Zenith' are examples of varieties released and marketed since 1991. Seeded *Zoysia* varieties vary in color, density, disease and insect resistance, leaf width and rate of growth. Seeds are often pre-treated or coated before packaging in an effort to enhance germination and speed the growth of seedlings.

### Several commercially available *Zoysia* varieties and the year of introduction.

Cultivar, Accession (AN), Plant Patent (PP) and/or Registration (RN) Number	Year of Introduction, Agency, Institution or Company
<i>Zoysia japonica</i> types	
Meyer, RN 12 (tested as Z-52)	1951, U. S. Department of Agriculture (USDA) / U.S. Golf Association (USGA)
Sunburst	1952, USDA
Midwest	1963, Indiana Agricultural Experiment Station (AES)
El Toro, PP5845	1986, University of California
Belair, AN R52-25 and RN 104	1987

Cultivar, Accession (AN), Plant Patent (PP) and/or Registration (RN) Number	Year of Introduction, Agency, Institution or Company
GNZ, PP7074	1989, Proprietary
ZT-4, PP6516	1989, Proprietary
Zoyboy, PP8553	1994, Proprietary
DeAnza, PP9127	1995, University of California
Victoria, PP9135	1995, University of California
Crowne, PP11570 (tested as DALZ8512)	1996, Texas A&M
JaMur	1996, Proprietary
Palisades, PP11515 (tested as DALZ8514)	1996, Texas A&M
Miyako, PP10187	1998, Japan
Empire, PP11466	2000, Proprietary
Empress, PP11495	2000, Proprietary
<i>Zoysia japonica</i> , seeded types	
Compatibility	2000, Patten Seed
J-36	J. R. Simplot
J-37	J. R. Simplot
SR9000	Developed by Turfgrass Germplasm Services and released by Seed Research of Oregon in 1994
SR9100	Developed by Turfgrass Germplasm Services and released by Seed Research of Oregon in 1994
Zenith	2000, Patten Seed
<i>Zoysia matrella</i>	
Cashmere, PP6529	1989, Proprietary, Pursley
GS90-18, PP9089	1995, Japan

Cultivar, Accession (AN), Plant Patent (PP) and/or Registration (RN) Number	Year of Introduction, Agency, Institution or Company
Cavalier, PP10788 (tested as DALZ8507)	1996, Texas A&M
Diamond, PP10636 (tested as DALZ8502)	1996, Texas A&M
Matrella	Alabama AES
Zeon	1996, Proprietary
Royal (tested as DALZ9006)	2001, Texas A&M
Zorro (tested as DALZ9601)	2001, Texas A&M
<i>Zoysia japonica</i> x <i>Zoysia tenuifolia</i>	
Emerald (RN 7)	1955, USDA

## References:

Alderson, J. and W. C. Sharp. 1995. Grass Varieties in the United States, Agricultural Research Service, U.S.D.A., Lewis Publishers, CRC, New York, NY.

Engelke, M. and D. Stone. 2003. Management of Zoysiagrass on Golf Courses, GCSAA Seminars 2004, Golf Course Superintendents Association of America in partnership with Jacobsen, a Textron Company, Lawrence, KS.

Hanson, A. A. 1972. Grass Varieties in the United States, Agricultural Research Service, U.S.D.A., Agriculture Handbook Number 170, Washington, D. C.

McCarty, L. B. 1995. Zoysiagrass for Florida Lawns *In* SP 45 Florida Lawn Handbook, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL.

Visit the UT Extension Web site at  
<http://www.utextension.utk.edu/>

W159H-9/07

Copyright 2007 The University of Tennessee. All rights reserved. This document may be reproduced and distributed for nonprofit educational purposes providing that credit is given to University of Tennessee Extension.

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating.  
 UT Extension provides equal opportunities in programs and employment.