Breeding and Development of Zoysiagrass

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Goals:

- Develop improved zoysiagrass cultivars with multiple character performance involving low water-use, persistence under drought and temperature stress, and tolerance to poor water quality.
- Develop seeded zoysiagrasses that are genetically stable, with improved turf quality, persistence, and competitive ability.
- Continue genetic studies involving the heritability and stability of biological traits.

Marking the 10th year of this USGA-sponsored research project, more than $500,000 has been directed toward the breeding and improvement of zoysiagrass. Germplasm acquisition and maintenance continue, and TAES-Dallas is serving as a remote quarantine site for zoysiagrasses introduced from other countries, primarily China and Japan. Plant materials are manipulated to produce self- and cross-pollinated seed to expedite their removal from quarantine. Seed are not subjected to the severe testing period or procedures that are required for vegetative material.

The NTEP zoysiagrass trials established in 1991 include nine TAES entries. DALZ8507, a fine-textured, cold hardy *Zoysia matrella*, topped the trials in both 1992 and 1993. Other varieties that are doing well include DALZ8512, DALZ8514, DALZ9006, and DALZ8508.

Breeder fields of DALZ8502, DALZ8507, DALZ8512 and DALZ8514 (15,000 ft^2 0.139 ha each) were planted in July 1992. Considerable planting stock for each of these varieties was harvested and entered into advance testing at ten golf courses throughout the United States.

Foundation fields of DALZ8507, DALZ8512 and DALZ8514 were established vegetatively in June 1994. Planting stock can be harvested by spring 1995 to coincide with the anticipated release of these varieties for commercial production.

The DALZ8502 putting greens at TAES-Dallas continue to perform well. The chipping green established at Colonial Country Club is reported to be doing well. The shaded tee box evaluation supports the potential use of this grass under low light conditions. Rapid regrowth of DALZ8502 occurs due to its extensive rhizome system.

The Linear Gradient Irrigation System (LGIS)

has been reestablished with 12 *Zoysia* experimentals, three bermudagrasses, a buffalograss, a St. Augustinegrass and a Texas bluegrass in order to provide extensive inter- and intra-species water-use and cultural input comparisons. The influence of fertility and moisture levels on turfgrass performance is of particular interest.

Mean Turfgrass Quality Ratings of Zoysiagrass Cultivars for Each Month Grown at Twenty-Three Locations in the United States. 1994 Data.[2]

	Turfgrass Quality Ratings 1 - 9; 9 = Ideal Turf: Months[1]												
NAME	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**MEAN**
TC 2033	5.7	4.7	5.2	4.8	5.4	6.2	5.9	6.7	6.6	6.5	6.1	4.9	6.1
CD 2013	5.4	4.3	4.7	4.9	5.2	5.8	6.2	6.7	6.2	6.6	6.1	4.3	6.1
DALZ 8507	5.2	5.0	5.3	5.3	5.0	5.8	6.3	6.7	6.4	6.3	5.8	4.4	6.0
EMERALD	5.3	4.6	5.1	5.2	5.4	6.2	6.2	6.4	6.1	6.2	5.6	4.5	6.0
TC 5018	5.4	4.0	4.8	4.7	5.6	6.1	5.9	6.5	6.1	5.9	5.7	4.1	5.9
QT 2004	5.3	4.4	4.6	4.6	5.1	5.5	6.0	6.4	6.2	6.3	6.1	4.2	5.9
SUNBURST	5.0	4.3	4.7	4.8	5.4	5.8	5.9	6.3	6.0	6.3	6.1	4.4	5.8
DALZ 8508	5.2	4.8	5.6	5.3	4.8	5.8	6.0	6.6	6.1	6.1	5.3	4.0	5.7
CD 259-13	5.2	4.2	4.3	4.0	5.6	6.1	6.1	6.1	5.8	5.7	4.9	3.5	5.7
MEYER	5.0	4.3	4.1	4.6	5.2	5.7	5.9	6.2	6.0	6.0	5.5	3.7	5.7
BELAIR	4.8	4.3	3.9	4.1	5.2	5.7	5.6	6.2	5.6	5.6	5.5	3.9	5.6
DALZ 9006	5.9	5.0	5.3	5.4	4.8	5.9	5.9	6.3	6.1	5.9	5.3	4.1	5.6
DALZ 8514	5.7	4.9	4.9	4.8	4.7	5.6	5.6	6.1	6.0	6.0	6.0	4.3	5.5
DALZ 8512	5.7	4.4	4.9	5.0	4.8	5.8	5.7	6.2	5.9	6.2	6.4	4.8	5.5
TGS-W10	5.2	4.0	4.0	4.6	5.2	5.7	5.5	6.0	5.4	5.7	5.3	3.8	5.4
EL TORO	5.3	4.7	4.9	4.8	4.5	5.5	5.5	6.0	5.8	6.1	6.3	4.3	5.3
TGS-B10	5.3	4.2	4.2	4.1	5.1	5.5	5.5	5.9	5.5	5.5	5.1	3.7	5.3
QT 2047	4.8	4.0	3.8	4.2	5.1	5.4	5.4	5.7	5.5	5.4	4.7	3.5	5.3
DALZ 8516	5.3	4.7	4.9	5.3	4.6	5.1	5.1	5.4	5.4	5.9	5.7	4.2	5.0
KOREAN COMMON	4.9	4.1	4.1	4.1	4.9	5.1	5.1	5.4	5.1	5.2	5.0	3.5	5.0
JZ-1	4.9	4.2	4.1	4.1	4.8	5.0	5.1	5.4	5.1	5.5	5.2	3.2	5.0
DALZ 8502	6.0	5.2	4.8	5.0	4.2	4.7	4.8	4.8	5.2	5.4	5.7	4.7	4.6
DALZ 8501	4.8	4.7	3.9	4.4	3.9	3.8	4.2	4.2	4.4	4.9	5.1	3.6	4.0
DALZ 8701	5.6	5.2	3.9	4.3	3.4	4.1	4.0	4.2	4.2	4.9	5.6	3.6	3.8
LSD VALUE	1.3	0.8	1.0	0.9	0.7	0.6	0.6	0.6	0.6	0.7	0.9	1.2	0.5

[1] To determine statistical differences among entries, subtract one entry's mean from another entry's mean. Statistical differences occur when this value is larger than the corresponding LSD Value (LSD 0.05).

[2] Source: National Turfgrass Evaluation Program. National Zoysiagrass Test - 1993.