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 which are genetically stable with improved turf quality, persistence, and competitive ability.
- Continue genetic studies involving the heritability and stability of biological traits.

The National Turfgrass Evaluation Trials (NTEP) zoysiagrass trials included nine entries from the breeding program. DALZ8507, a fine-textured, cold hardy *Zoysia matrella* and DALZ8512 and DALZ8514 performed well during the year (See Table II).

A large breeder field (15,000 ft^2) of DALZ8502, DALZ8507, DALZ8512, and DALZ8514 were established in July 1992. All four fields were fully established by midsummer 1993. These fields will serve as: 1) planting stock for foundation production, once approved for release, and 2) source material for more extensive field evaluation studies. Release documents are being prepared for DALZ8507, DALZ 8512, and DALZ8514.

The DALZ8502 putting greens at TAES-Dallas continue to perform well. One is grown in sand and the other is on clay soil. In 1992, overseeding on part of the sand green and tee box revealed severe damage to this zoysiagrass and this practice will not be recommended in the future.

Under an agreement with Colonial Country Club, we have established a 4,500 ft^2 chipping green and a 1,500-ft^2 shaded tee box to continue field evaluation of DALZ8502. Rapid regrowth from the sod production area harvested for green and tee box evaluations demonstrates the extensive rhizome system of this fine-textured *Z. matrella* variety.

The Linear Gradient Irrigation System (LGIS) has been established with 12 experimental *Zoysias*, three bermudagrasses, a buffalograss, a St. Augustinegrass, and a Texas bluegrass to provide extensive inter- and intraspecies water-use and culture input comparisons. Of targeted interest is the influence of fertility levels across the moisture gradient on turfgrass performance.

Table II. 1993 Mean Turfgrass Quality Ratings of Zoysiagrass Cultivars For Each Month Grown At Twenty-Two Locations in the United States.

	Turfgrass Quality Ratings[1]											
Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DALZ 8507	4.8	5.3	5.5	5.9	5.0	6.5	6.6	6.7	6.7	7.0	5.4	6.3
EMERALD	4.7	4.9	5.8	6.2	5.6	6.6	6.4	6.4	6.4	6.6	5.3	5.9
CD 2013	4.0	4.2	5.1	5.3	5.4	6.2	6.2	6.3	6.5	6.3	5.7	5.4
DALZ 8508	4.3	4.8	5.6	5.4	5.1	6.1	6.3	6.5	6.5	6.3	5.1	5.8
TC 2033	4.3	4.9	5.4	5.4	5.3	6.1	6.3	6.4	6.3	6.6	5.5	5.8
DALZ 9006	4.6	4.9	5.5	5.9	4.9	6.2	6.3	6.4	6.5	6.7	5.7	6.3
QT 2004	4.0	4.2	4.9	5.5	5.4	6.2	6.1	6.3	6.2	6.0	4.9	5.3
SUNBURST	3.9	4.0	5.3	5.6	5.7	6.1	6.2	6.0	6.2	5.8	5.0	5.3
DALZ 8514	4.6	4.6	5.5	5.4	5.1	5.5	6.3	6.0	5.9	6.1	5.2	5.8
TC 5018	4.0	3.8	4.7	5.9	5.8	6.0	6.2	5.9	5.9	5.7	4.7	5.2
DALZ 8512	4.0	4.1	5.0	5.6	5.2	5.5	6.2	6.0	6.0	6.2	5.8	5.9
MEYER	4.2	4.4	4.7	5.3	5.3	6.1	5.9	5.8	5.9	5.6	4.4	4.5
EL TORO	4.3	4.4	5.5	5.4	5.3	5.4	6.0	5.8	5.8	6.0	5.4	6.0
BELAIR	3.9	3.6	4.3	5.3	5.2	5.8	5.8	5.9	5.8	5.1	4.0	3.6
CD 259-13	4.0	4.4	5.0	5.7	5.4	5.8	5.9	5.8	5.7	5.0	3.9	4.3
DALZ 8516	4.2	4.6	4.7	4.6	4.8	5.4	5.4	5.6	5.8	6.0	4.8	5.2
QT 2047	4.1	4.2	4.2	5.4	5.1	5.8	5.6	5.6	5.5	5.0	3.8	4.9
TGS-W10	3.7	3.7	4.3	5.5	5.2	5.5	5.6	5.6	5.6	5.2	4.4	4.4
TGS-B10	4.0	3.9	4.5	5.7	5.2	5.5	5.6	5.5	5.4	5.1	4.0	4.4
DALZ 8502	5.3	6.0	5.3	6.1	4.8	5.6	5.0	5.3	5.1	5.9	5.7	6.4
JZ-1	3.9	3.6	4.2	5.2	4.8	4.8	5.1	5.1	5.1	5.0	4.1	4.4
Korean Common	4.0	3.4	4.5	5.2	5.0	4.8	5.0	4.9	5.0	4.8	4.0	4.3
DALZ 8501	5.3	5.2	4.5	4.3	3.5	4.9	4.4	4.6	4.6	5.2	4.4	5.2
DALZ 8701	5.1	5.6	4.5	4.5	3.4	4.2	4.3	4.4	4.5	5.9	5.5	6.0
LSD Value[2]	0.6	1.1	0.9	1.2	0.7	0.7	0.6	0.5	0.6	0.6	0.9	1.0

[1] Turfgrass Quality, where 1 = poor and 9 = ideal turf

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