

Zoysiagrass Performance, Water Use, and Rooting as Affected by Traffic and Nitrogen

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Goals:

- Evaluate nine new experimental zoysiagrasses for:
 - water use.
 - drought tolerance.
 - cultural requirements.
 - stability under environmental stress and pest pressure.

Zoysiagrass (*Zoysia japonica*) is a deep-rooted, drought resistant species in many areas of the United States, especially in the transition zone. Due to considerable genetic diversity among ecotypes, zoysiagrass has been targeted by the USGA as a species that could be developed through breeding to exhibit low water use, high drought avoidance and high drought tolerance.

Objectives of the current study were to evaluate nine experimental zoysiagrasses from Texas A&M University versus three commercial cultivars under three nitrogen levels and three traffic programs for:

- a) evapotranspiration (ET), spatial rooting/water extraction patterns, and drought avoidance/tolerance responses
- b) basic cultural requirements (fertility, disease, insect, traffic tolerance)
- c) determination of the stability of these grasses to environment, disease, and insect pressures.

A summary of the observations to date are:

1. The entries which were most rapid to cover during plugging were 8514, EL TORO, and 8512, while the least were 8516 and 8502.
2. Cultivars exhibiting substantial cold induced winter injury at this location are 8501, 8502, and 8701.
3. Consistently high visual quality has been expressed by 8507, EMERALD, and 8512 at 1.25 and 2.50 lb N/1000 ft²/yr and by 8501 at

3.75 lb N. The lowest visual quality has been 8501 across all N levels.

4. All cultivars substantially improved in quality from 1.25 to 2.50 lb N with some improvement from 2.50 to 3.75, but of lesser magnitude.
5. Differential cultivar responses are starting to develop under the three traffic treatments.
6. Evapotranspiration (ET) rates over all dates ranged from 3.93 for MEYER to 2.77 mm d⁻² for 8507. Cultivars exhibiting lowest ET and very little wilt during a moderately severe dry-down were 8501, 8512, EL TORO, and 8502.
7. Cultivars demonstrating moderately severe wilt in late summer dry-down were 8516, 8507, 8508, and 9006.
8. Rooting data under cultivar and traffic regimes are currently being processed.
9. Tawny mole cricket injury and suitability for oviposition was lowest for 8502 and 8514, while 8516 exhibited greatest damage.