

# 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.*

## Cooperators:

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After many years of selection, evaluation and extensive examinations, The Plant Improvement Review Committee at Texas A&M University officially released four high quality turf-type zoysiagrass cultivars 1996. DIAMOND, formerly identified as DALZ8502, is a very fine texture, dense, shade tolerant *Zoysia matrella*, suitable for golf course tee boxes, putting green surrounds, putting greens, and athletic fields in the southern United States.

CAVALIER (DALZ8507), is a fine-texture *Z. matrella*, suitable for golf course fairways, athletic fields, and home lawns. CAVALIER's overall turfgrass performance was evaluated as number one in the National Turfgrass Evaluation Program over a 3-year period.

CROWNE (DALZ8512) and PALISADES (DALZ8514) are medium to coarse texture varieties of *Z. japonica* and suitable for use on golf course roughs, sports fields, home lawns, or as utility turf. CROWNE is noted for excellent competition against weeds, and low water use needs. PALISADES also is noted for low water use, and has a more rapid sod harvest cycle than other zoysiagrasses.

All cultivars are vegetatively propagated by either stolons and/or rhizomes. The rate of establishment and harvest cycle differs considerably among them. DIAMOND reproduces primarily by a deep, dense rhizome system which requires approximately 15 months for the first harvest, with subsequent harvest in Dallas, Texas approximately every 6 months. CAVALIER is primarily stoloniferous and requires 10-12 months for establishment,

with a 12 month harvest cycle. CROWNE and PALISADES both reproduce extensively with stolons and rhizomes. CROWNE's harvest cycle will approach three crops in 24 months, whereas, PALISADES will provide two harvest in 12 months in environments similar to northern

Texas. Approximately 1,100 m<sup>2</sup> of breeder fields and 7,000 to 8,600 m<sup>2</sup> of foundation fields are ready for harvest for CAVALIER, CROWNE and PALISADES. DIAMOND is available only as breeder stock, as a foundation field is not available.

**Table 5. Summary agronomic merits and limitations of four new zoysiagrasses.**

New Zoysiagrass	Agronomic merits	Agronomic limitations
<p><b>DIAMOND (DALZ8502)</b> is a fine textured highly rhizomatous, vegetatively propagated <i>Z. matrella</i> noted specifically for its excellent tolerance to low light and high salt conditions, and rapid recuperative ability. Diamond is suitable for use as a warm-season turfgrass for putting greens and tee boxes on golf courses, especially in the coastal regions of the southern United States where shade and salinity are a problem.</p>	<ul style="list-style-type: none"> <li>• Excellent salt tolerance</li> <li>• Excellent shade tolerance</li> <li>• Highly rhizomatous</li> <li>• Excellent sod strength</li> <li>• Low water requirements</li> <li>• Early spring green up</li> <li>• Good genetic color</li> <li>• Fall color retention</li> <li>• Fine leaf texture</li> <li>• High shoot density</li> </ul> <p><u>Disease Resistance:</u> <i>Rhizoctonia</i> blight resistance  <u>Insect Resistance:</u> Fall army worm and tawny mole cricket</p>	<ul style="list-style-type: none"> <li>• Lacks winter hardiness</li> <li>• Tropical and sub-tropical climates</li> <li>• Susceptible to the tropical sod web worm</li> <li>• Susceptible to zoysiagrass mite</li> <li>• Tendency to thatch and scalp</li> <li>• Will not tolerate overseeding</li> <li>• Slow initial establishment from sprigs</li> </ul>
<p><b>CAVALIER (DALZ8507)</b> is a fine-textured, long-leaf, vegetatively propagated <i>Z. matrella</i> noted specifically for uniformity in appearance and distinct summer presentation. It is genetically stable, basically self-infertile and vegetatively propagated through weak rhizome and strong stolon growth.</p>	<ul style="list-style-type: none"> <li>• Cold hardy</li> <li>• Shade tolerant</li> <li>• Salt tolerant</li> <li>• High visual quality</li> <li>• Fine leaf texture</li> <li>• Spreads by stolons</li> </ul> <p>Good genetic color  <u>Insect resistance:</u> tropical sod web worm, fall army worm, tawny mole cricket  <u>Disease resistance:</u> <i>Pythium</i> blight and <i>Rhizoctonia</i> blight</p>	<ul style="list-style-type: none"> <li>• Requires sharp reel mower</li> <li>• Slow rate of establishment</li> <li>• Slow rate of recovery</li> <li>• Vegetative propagation required</li> <li>• Potential tendency of thatch</li> <li>• Susceptible to zoysiagrass mite</li> </ul>
<p><b>CROWNE (DALZ8512)</b> is a coarse-textured, vegetatively propagated clone of <i>Z. japonica</i> which is suitable for use as warm-season turfgrass for golf course roughs, home lawns, industrial parks, and highway right-of-ways throughout the central mid-western states. Optimum mowing height will range from 5.0 to 7.5 cm; however, it can be mowed as close as 1.5 cm.</p>	<ul style="list-style-type: none"> <li>• Medium-coarse texture</li> <li>• High visual quality</li> <li>• Rapid establishment and regrowth</li> <li>• Good fall color retention</li> <li>• Shade tolerant</li> <li>• Salt tolerant</li> <li>• Cold hardy</li> <li>• Heat tolerant</li> <li>• Variable mowing height (1.0 to 7.5 cm)</li> </ul>	<ul style="list-style-type: none"> <li>• Susceptible to <i>Rhizoctonia</i></li> <li>• Tendency to scalp</li> </ul>
<p><b>PALISADES (DALZ8514)</b> is a medium-coarse textured vegetatively propagated clone of <i>Z. japonica</i> which is suitable as a warm-season turfgrass throughout the transition zone for golf course fairways and roughs, home lawns, sports fields, industrial parks, and highway medians. Optimum mowing height ranges from 1.0 to 5.0 cm. On tees and fairways, mowing heights of 8 mm is possible with acceptable results.</p>	<ul style="list-style-type: none"> <li>• Medium-coarse texture</li> <li>• High visual quality</li> <li>• Rapid establishment and regrowth</li> <li>• Good fall color retention</li> <li>• Shade tolerant</li> <li>• Salt tolerant</li> <li>• Cold hardy</li> <li>• Heat tolerant</li> <li>• Variable mowing height 1.0 to 5.0 cm)</li> </ul>	<ul style="list-style-type: none"> <li>• Susceptible to fall army worm</li> </ul>