Response of the new Bahiagrass lines to Herbicide Application.

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Turfgrass Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSTM Metulfuron</td>
<td>0</td>
</tr>
<tr>
<td>DISMISS SOUTH Sulfentrazone + Imazethapyr</td>
<td>3</td>
</tr>
<tr>
<td>CONFRONT. Trifluralin + Clopyralid</td>
<td>3</td>
</tr>
<tr>
<td>ACECLAIM. Fenoxaprop</td>
<td>1-D</td>
</tr>
<tr>
<td>CERTAINTY. Sulfosulfuron</td>
<td>NR</td>
</tr>
<tr>
<td>CELSIUS. Thienizarazone + Imazosulfuron + dicamba</td>
<td>NR</td>
</tr>
<tr>
<td>SEDGE-HAMMER. Halosulfuron</td>
<td>NR</td>
</tr>
<tr>
<td>SPIDER. Bromoxynil</td>
<td>S</td>
</tr>
<tr>
<td>S-5</td>
<td>S</td>
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</tbody>
</table>

- Visible leaf tissue injury
- Leaf color
- Dry weight

Physiological Responses of Bahiagrass Mutants under Drought Stress

- Evapotranspiration
- CO₂ assimilation rate (Pn)
- Stomatal conductance (gs)
- Water Use Efficiency (WUE)
- Photochemical efficiency (Fv/Fm)
- Turf Quality-Leaf Firing

- Rapid stomatal closure = more water conservation
- However = limit CO₂ and decrease photosynthesis.
- Delay in stomatal closure would be beneficial under short and intermittent drought because it of photosynthesis maintenance.
- WUE (Pn/gs) may be a good predictor of turfgrass performance during periods of drought stress and was associated with less leaf firing and wilting.

Photosynthesis as a further predictor:

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Introduction

Turfgrasses provide numerous environmental benefits such as temperature reduction, air and water filtration, soil stabilization and wildlife ecosystem services. Moreover it gives many benefits to human health providing a comfortable living space.

Problem

- Projections indicate that by 2070, Florida’s population will reach to almost 34 million residents. That’s it an increase in 80%
- Urbanization-related water use is projected to increase by over 100% and 1/3 of the state will be covered by different types of development.
- Additionally, temperatures are projected to increase 2-5 °C Celsius and drought periods will become more frequent and severe.

Solution

The use of drought responsive turfgrass is one of the most promising strategies to face these challenges.

One of the species that has this characteristic is Bahiagrass. Research have shown that this grass has a broad, deep root system that allow it to survive in dry and infertile environments.

From the cultivars available in the market ‘Wilmington’ exhibits promising turf attributes such as darker color and finer leaf texture. ‘Argentine’, is a broad leaf cultivar, that produces fewer seedheads and has a more prostrate growth habit than ‘Pensacola’.

However, these cultivars still have several negative attributes including unaesthetic seedheads and open growth habit.

Since sexual recombination is not possible to achieve in apomictic races. Mutant lines were produced by exposing either seedlings or portions of rhizomes to different mutagenic treatments.

In 2007-08, more than 2,000 mutant lines of apomictic bahiagrass were generated at the UF. From that population, the breeding program at UF, has identified 9 promising new lines with superior turf qualities. These grasses have shown improved density, darker color, and fewer seedheads compared to their parental lines.

However, further investigation of these lines is required before they enter the marketplace.

- The goal of this study is to identify the new lines that possess similar or improved herbicide tolerance and drought response compared to their parental lines.

To investigate these the following studies are proposed:

- Evaluation, Selection and Production of Turf-Type Bahiagrass