Turfgrass cultivars that require less irrigation, coming soon to a sod grower near you

J. Erickson, K. Quesenberry, J.B. Unruh, P. Harmon, A. Dale, N. Flor, J. Zhang, J. Buhlman, K. Cox, C. Alexis and P. Reith

Kevin E. Kenworthy

UF/IFAS Agronomy Dept

kenworth@ufl.edu
Breeding Program

• Conventional Species:
  – St. Augustinegrass
  – Zoysiagrass
  – Bermudagrass

• Alternate Species:
  – Bahiagrass
  – Centipedegrass
  – Carpetgrass
  – Seashore Dropseed
Zoysiagrass:

- **Traits of interest:**
  - Environmental: Drought, Nutrient Use
  - Home Owner: Shade and Winter Color
  - Sod Producers: Diseases (Large Patch) and Growth Rate

- **Objectives:**
  - Improved spring green up and winter color for Florida market
  - Equivalent or improved drought resistance, large patch tolerance and shade tolerance compared to commercial standards.
Process

SCRI Trial
- Drought: 1 year

Florida and NTEP Trials:
- Shade
- Sod
- webworm
- Large patch
- Winter color
- Adaptability
- Production

Selected:
- Advanced trials
- NTEP
- Work with producers
- Work with Golf Course Superintendents

Release → Commercialization

USDA-SCRI Project
Zoysiagrass
Drought Response

USDA-SCRI Project

USDA-SCRI Multi-State
1312, 1313 and 1319

PCA1 and PCA2

PCA2 (24% explained var.)

PCA1 (34% explained var.)
PCA1 and PCA2 - Turf Quality Winter

Turf Quality Winter

Florida ITN Trial
1312, 1313 and 1319
1307 not included
Large Patch Disease

% Disease Severity of Large Patch

1 = Entry better than Empire, p < 0.05
2 = Entry better than Zeon, p < 0.05
3 = Entry better than Meyer, p < 0.05
UF St. Augustinegrass Breeding

- Roselawn, 1944, developed by R. Bair
- Floratine, 1960, developed by G.C. Nutter
- Floratam, 1973, developed by G.C. Horn
- Floralawn, 1985, developed by A. Dudeck
- FX-10, 1990, developed by P. Busey
- FX-33, 1990, developed by P. Busey
- FloraVerde, 2006, developed by R. Nagata
- NUF-76 (Captiva), 2007, developed by R. Nagata
USDA-SCRI Drought Response
Turf Quality (CitraBlue = 06-2-8-1-1)

USDA-SCRI Project
CitraBlue’s Unique Color and Density

Digital Green Cover Index

MAR APR MAY JUN JUL SEP OCT NOV DEC
Floratam Palmetto TamStar DALSA1618
DALSA1404 DALSA1323 FSA1601 CitraBlue
XSA11277 XSA11168 XSA10137
# Water Use, N and Color

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>ET mm d⁻¹ Unfertilized</th>
<th>ET mm d⁻¹ Fertilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floratam</td>
<td>5.4a† B‡</td>
<td>6.0a A</td>
</tr>
<tr>
<td>Palmetto</td>
<td>4.5b B</td>
<td>6.1a A</td>
</tr>
<tr>
<td>TamStar</td>
<td>5.2ab B</td>
<td>5.8a A</td>
</tr>
<tr>
<td>DALSA1618</td>
<td>5.2ab B</td>
<td>5.9a A</td>
</tr>
<tr>
<td>DALSA1404</td>
<td>4.9ab B</td>
<td>5.5a A</td>
</tr>
<tr>
<td>DALSA1323</td>
<td>5.0ab B</td>
<td>5.9a A</td>
</tr>
<tr>
<td>CitraBlue</td>
<td>5.1ab B</td>
<td>5.7a A</td>
</tr>
<tr>
<td>XSA11277</td>
<td>5.3a B</td>
<td>5.9a A</td>
</tr>
<tr>
<td>XSA11168</td>
<td>5.5a A</td>
<td>5.5a A</td>
</tr>
</tbody>
</table>

†Cultivar means for ET within a fertilization treatment (column) followed by the same lowercase letter do not differ (P > 0.05). Mean separations done using Tukey’s HSD.

‡Fertilization treatment means for ET within a cultivar followed by the same uppercase letter do not differ (P > 0.05). Mean separations done using Tukey’s HSD.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Initial SPAD</th>
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<tbody>
<tr>
<td>Floratam</td>
<td>26.7 b</td>
</tr>
<tr>
<td>Palmetto</td>
<td>22.4 bc</td>
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<tr>
<td>TamStar</td>
<td>23.4 bc</td>
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<tr>
<td>DALSA1323</td>
<td>23.2 bc</td>
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<tr>
<td>DALSA1404</td>
<td>23.1 bc</td>
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<td>DALSA1618</td>
<td>23.6 bc</td>
</tr>
<tr>
<td>CitraBlue</td>
<td>33.6 a</td>
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<tr>
<td>XSA11168</td>
<td>21.4 c</td>
</tr>
<tr>
<td>XSA11277</td>
<td>22.0 bc</td>
</tr>
</tbody>
</table>

Means not followed by the same lower case letter are different (P < 0.05)
N Program and Rate Trial

Fertilization Programs:

- **Scotts – 4X Year**: 0.8 lb/1,000 ft\(^2\) - 3.2 lbs N total
  - Scotts Crabgrass Pre Plus Fertilizer – Feb 15
  - Scotts LawnPro Step 3 – April 01
  - Scotts LawnPro Step 3 – June 01
  - Scotts LawnPro Step 4 – September 01
- **IFAS – 4X Year**: 1.0 lb/1,000 ft\(^2\) - 4.0 lbs N total
  - IFAS - 15-0-15 – April 01
  - IFAS - 15-0-15 – June 01
  - IFAS - 15-0-15 – August 01
  - IFAS - 15-0-15 – October 01
- **Blackout -3X Year**: 1.0 lb/1,000 ft\(^2\) - 3.0 lbs N total
  - Polyon 43 – April 01
  - Polyon 43 – May 31
  - Polyon 43 – October 01
- **Unfertilized Control**
OBJECTIVES (turf-type bahiagrass):

- Darker Green Bahiagrass
- Denser Bahiagrass
- Changes in Seedhead Production
  - Number
  - Height
  - Time of Emergence
Comments: Zoysiagrass

- Produce high quality landscapes with improved disease responses
  - Exception being dollar spot on 1307
- 1307, 1313 & 1319 have improved winter color
- 1312 poor winter color, but good cold tolerance
  - Recommending for north Florida or out of state
- 1313 concerns for sod tensile strength and harvest shock
  - May get dropped
- 1319 most consistent NTEP entry and very consistent in Florida
  - concern for TSW feeding
  - Must be mowed short or the canopy will become uneven
- 1307 extremely good sod strength
  - Very uniform appearance
  - More flexible mowing height
Comments: CitraBlue

• Good drought response
• Good disease resistance
• Good shade tolerance
• Appears to be more competitive against weeds
  • Increased canopy density
• Attractive blue-green color
• Good performance in landscape tests
• Positive feedback from homeowners
• Positive feedback from sod producers

H & H Sod

Duda Farms

UF University of Florida
Turfgrass Science
Future Florida Landscapes

• Planted with lawns that...
  – require less potable water and use water more efficiently
  – Require less fertilizer to maintain density and color
  – Improved insect and disease resistance
Thank You!

Kevin E. Kenworthy, PhD
UF-IFAS Agronomy Dept.
Kenworth@ufl.edu

@kekenworthy
@UFTurfTeam