

# INTERSPECIFIC HYBRIDIZATION OF *PASPALUM* SPECIES FOR TURFGRASS

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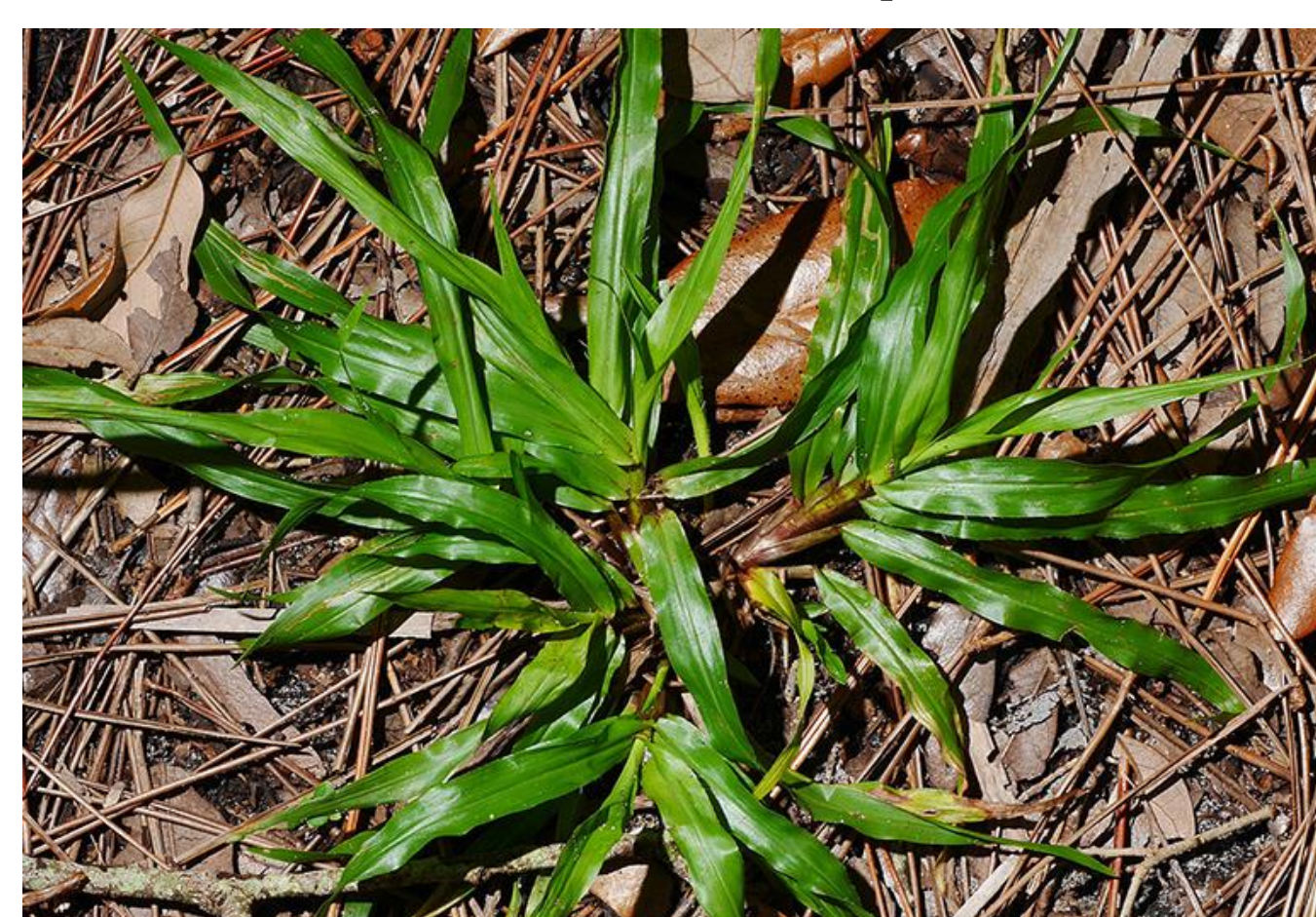
## Introduction

- Bahiagrass (*Paspalum notatum* Flüggé; Figure 1)
  - Perennial warm-season grass
  - Native to South America
  - Adapted to a wide range of soils
  - Low nutrient and water requirements
  - Low shade tolerance
- Fringe-leaf paspalum (*Paspalum setaceum* var. *ciliatifolium*; Figure 2)
  - Florida native bunch grass
  - Good shade tolerance
- Other interspecific hybrids currently exist within the *Paspalum* genus, but none between bahiagrass and fringe-leaf paspalum.
- **Objective:** Develop novel interspecific hybrids between *P. notatum* and *P. setaceum*.

**Figure 1. Bahiagrass (*Paspalum notatum*)**



**Figure 2. Fringe-leaf paspalum (*Paspalum setaceum*)**



## Materials & Methods

### Interspecific crosses

- Pollen transferred from fringe-leaf paspalum (male) to bahiagrass stigmas (female) (Figure 3),
- Pollinated seed heads were bagged (Figure 4).
- Immature seed were harvested 10-12 days after pollination.

**Figure 3. Cover glass with pollen**



**Figure 4. Bagged seed head**



### Embryo Rescue

- Due to high embryo abortion rates, embryo rescue was used.
- Florets were dissected under a hood using aseptic techniques.
- The immature embryos were removed and transferred to half strength MS medium for culture under artificial lighting (Figure 5).
- Germinated seedlings were transplanted from culture plates to small pots under high humidity for acclimatization and subsequently transferred to the greenhouse.

**Figure 5. Germinating embryos, a young seedling, and a mature plant**



### Flow Cytometry

- Flow cytometry was performed on progeny and parents.
- 'Argentine' bahiagrass ( $2n=4x=40$ ) and 'Pensacola' ( $2n=2x=20$ ) were included as diploid and tetraploid references
- For each sample, 'B73' maize (*Zea mays* L.) was included as an internal standard to estimate total picograms per nucleus.
- Meristems were extracted, chopped, and prepared using the CyStain PI Absolute P kit and protocol.

## Results and Conclusions

- 74 bahiagrass seedheads were pollinated by fringe-leaf paspalum.
- 51 germinating embryos were rescued and raised to maturity.
- Based on the total picogram values, all analyzed progeny are likely the result of self-pollination rather than interspecific hybridization (Figure 6 & Table 1).

**Table 1. Total picogram values**

Sample	PG/nucleus
PS26 (Fringe-leaf Paspalum)	2.12
PN23 (Bahiagrass)	1.31
PN23 x PS26 (Putative Hybrid)	1.32
Pensacola	1.32
Argentine	2.55

**Figure 6. Flow cytometry histograms of (A) Bahiagrass female parent, (B) Fringe-leaf paspalum male parent, (C) Putative Hybrid**

