

Final Technical Report
FCEB Project #41

FINAL REPORT – FLORIDA CATTLE ENHANCEMENT GRANT

Project Title: Evaluation of new warm-season perennial grass cultivars adapted to poorly drained soils and propagated by seed in Florida (P0324554)

Investigators: Joao Vendramini, Lynn Sollenberger, and Philippe Moriel

1. Project Overview

The general objective of this proposal is to evaluate forage production, nutritive value, and persistence of six new seed-propagated warm-season perennial grasses adapted to poorly drained soils in Florida. This proposal addresses the FCA Priorities Pasture and Forage Management (New annual and perennial options for North and South Florida and Warm season varieties that thrive under low soil fertility).

The experiment has been conducted at the Range Cattle Research and Education Center, Ona, FL, in 2024 and 2025. Plots were established in 2023 and the experimental period will be from May to October 2024 and 2025. The soil at the experimental area is a Pomona Fine Sand series classified as poorly to very poorly drained. A pressure transducer will be installed in the experimental area to monitor the depth of the water table and a data logger will record the data every 15 minutes. It has been observed that the water table has been at the surface level for at least 1 month during the growing season at the experimental area.

Treatments will be the factorial arrangement of six forage cultivars (six new seed-propagated cultivars and Gibtuck limpgrass) and two grazing intensities (8 or 4-inches stubble height) distributed in a randomized complete block design with four replicates. The 10-inches stubble height has the objective to simulate a lenient grazing while the 4 inches is expected to challenge the persistence of the plant. Plots will be grazed every 4 weeks at the target stubble height.

Plots are 30 x 15 ft with 5 ft aisle between plots. Plots have been mob grazed by beef cows at the specific target stubble height. An area of 18 sq ft will be harvested at the center of the plot and used for forage production calculation before each grazing event. Forage samples will be analyzed for CP, NDF, in vitro digestible dry matter., and NDF digestibility.

Root and rhizome samples will be collected immediately after the last grazing in 2024 and 2025 using a circular soil core (10.5-cm diam. by 20-cm depth). The root and rhizome mass are important indicators of persistence and the root mass per acre will be determined. In addition, the plots will be evaluated for ground cover after the last grazing of 2023 and 2024.

Data will be analyzed by fitting mixed-effects models using the PROC MIXED procedure of SAS (SAS Institute Inc., 1996). Block and its interactions will be considered random effects and months will be analyzed as repeated measures. Treatments will be considered different when $P < 0.05$.

Deliverables	Progress
1. Plot establishment	Plots were established at the experimental area, fenced, and water was installed for the animals.
2. Forage herbage accumulation, light interception, height and nutritive value evaluations	Samples from May, June, and July were collected and analyzed.

Percentage of completion: 100%

2. Project Results

There was a cultivar x month interaction for herbage accumulation (Figure 1). There was a linear increase in herbage accumulation of all cultivars from May to July, primarily due to greater rainfall in June and July. However, cultivar 549 had greater herbage accumulation than the other cultivars in June. In July, all testing cultivars had greater herbage accumulation than limpgrass.

It is important to mention that the objective of this trial is to test the production and persistence of these cultivars on poorly drained soils, however, the water table still is below the soil surface and the plots were not flooded (Figure 2). Plots will be harvested until October and it is expected that the water table will reach the surface on late August 2024.

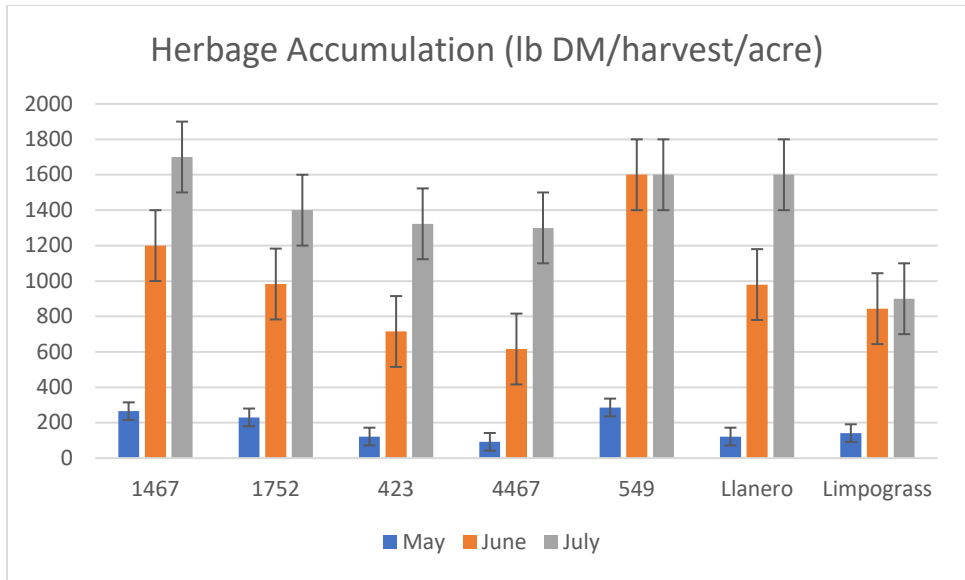


Figure 1. Monthly herbage accumulation of 7 warm-season grass cultivars grazed at 4- or 8- inches stubble height.

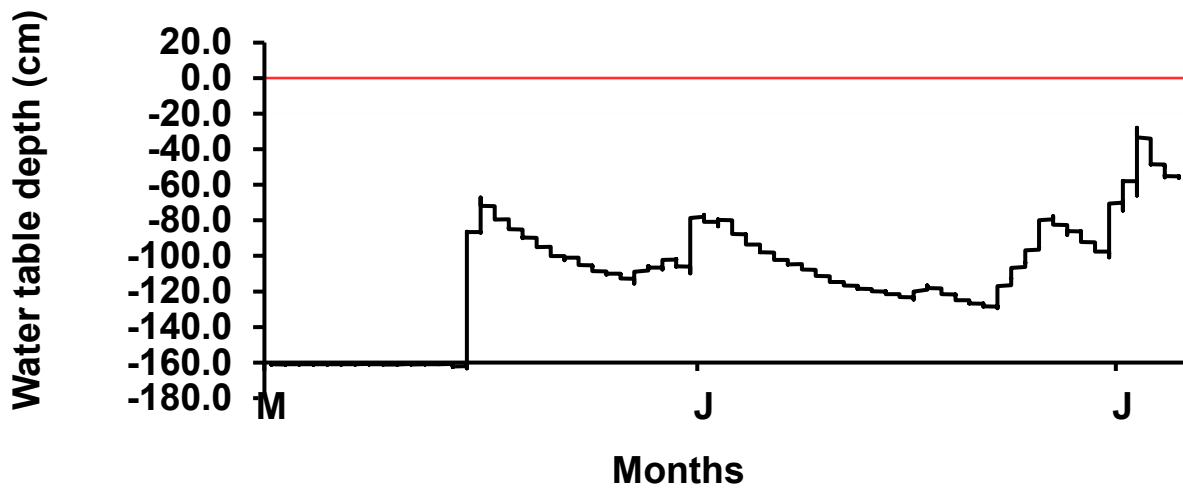


Figure 2. Water table depth at the experimental area in May, June, and July 2024.

The cultivar 549 had greater light interception (LI) (Figure 3) and height (Figure 4) than the other cultivars. This is likely the explanation for the greater herbage accumulation observed for this cultivar.

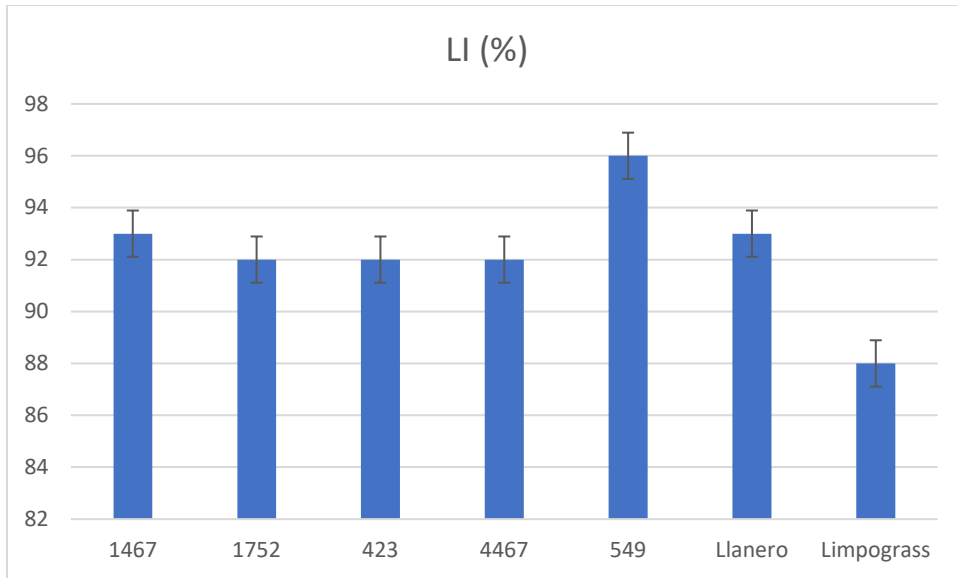


Figure 3. Light interception (LI) of 7 warm-season grass cultivars grazed at 4- or 8-inches stubble height.

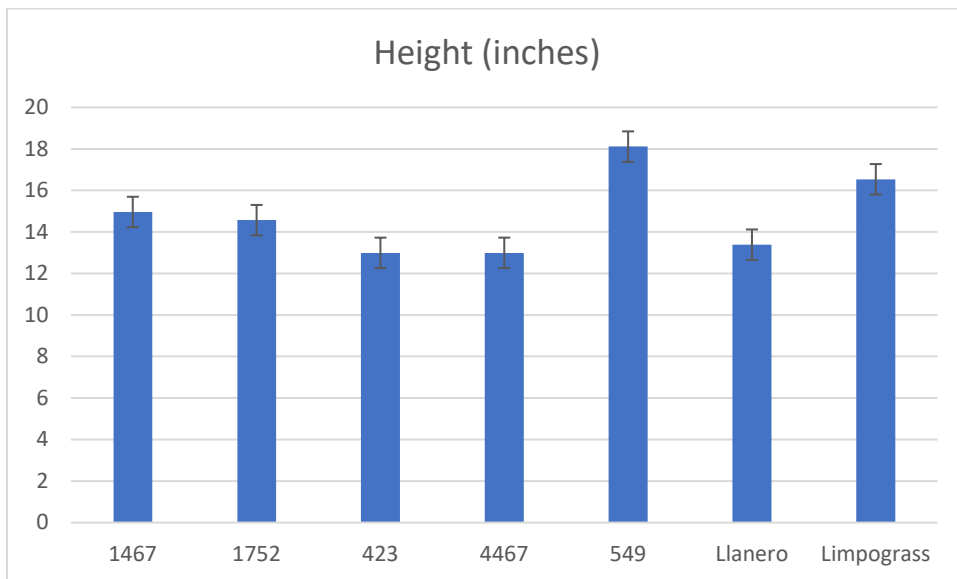


Figure 4. Canopy height of 7 warm-season grass cultivars grazed at 4- or 8-inches stubble height.

Limpograss and Llanero has less CP concentration than the other cultivars, which did not differ among them (Table 1). Llanero had the least IVDOM concentration and there was no difference among the other cultivars (Table 1).

Table 1. Nutritive value of 7 warm-season perennial grass cultivars grazed at 4- or 8-inches stubble height

Cultivar	CP%	IVDOM (%)
1467	12a	60a
1752	12a	58a
423	12a	59a
4467	13a	59a
549	11a	59a
Llanero	10b	51b
Limpograss	9b	58a
SE	1	3

There was no effect of stubble height on herbage accumulation; however, plots grazed at 8-inches stubble height had greater LI and canopy height.

Table 2.

Stubble height (inches)	HA (lb DM/harvest/acre)	LI (%)	Height (inches)
4	850a	90b	13b
8	870a	94a	17a
SE	100	1	2

3. Implications

Except for Llanero, the new cultivars propagated by seed had similar or greater performance than limpograss. The grazing stubble height had little effect on forage characteristics. The subsequent harvests and potential raise of the water table will be essential to challenge the new cultivars under flooding conditions.

PLEASE REMIT TO:

UNIVERSITY OF FLORIDA BOARD OF TRUSTEES
 Contracts & Grants
 PO Box 931297
 Atlanta, GA 31193-1297

Invoice Date: 08/12/2024
 Invoice Period: 03/01/2024 - 07/31/2024
 Principal Investigator: Vendramini, Joao
 Mauricio Bueno
 Award Begin Date: 10/30/2023
 Award End Date: 07/31/2024
 UF FEIN: 59-6002052

SPONSOR:

FL CATTLE ENHANCEMENT BOARD
 P.O. Box 421929
 Kissimmee FL 34742-1929
 United States

Sponsor Award ID: 41
 Award Title: Evaluation of new warm-season perennial grass cultivars adapted to poorly drained soils and propagated by seed in Florida
 Award Amount: \$31,631.00

Invoice #	I000130447
UF Award #	AWD15786
Primary Project #	P0324554
Primary Department:	60780000
Current Invoice Amount:	\$19,043.41

Description	Current	Cumulative
Personnel - Salary	\$6,608.45	\$11,014.08
Personnel - Fringe Benefits	\$779.77	\$1,299.63
Tuition	(\$2,692.38)	\$1,346.19
Materials and Supplies	\$1,470.39	\$1,470.39
Contractual Services	\$6,042.98	\$6,042.98
Other Expenses	\$10,836.82	\$10,836.82
Direct Cost	\$17,003.05	\$25,967.11
Facilities and Administrative Costs	\$2,040.36	\$3,116.05
Total	\$19,043.41	\$29,083.16

For billing questions, please call 352.392.1235
Brown, Katrina Adel brownk3@ufl.edu
Please reference the UF Award Number and Invoice Number in all correspondence

By signing this report, I certify to the best of my knowledge and belief that the report is true, complete, and accurate, and the expenditures, disbursements and cash receipts are for the purposes and objectives set forth in the terms and conditions of the federal award. I am aware that any false, fictitious, or fraudulent information, or the omission of any material fact, may subject me to criminal, civil, or administrative penalties for fraud, false statements, false claims or otherwise. (U.S Code Title 18, Section 1001 and Title 31, Sections 3729-3730 and 3801-3812).

Payment History	
Cumulative Invoices:	\$29,083.16
Payments Received:	\$10,039.75
Outstanding Balance:	\$19,043.41
Note: Outstanding balance includes current invoice amount	

Katrina Brown

 Certifying Official

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Project ID	Deptid	Department Name	Current	Cumulative

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Principal Investigator: Vendramini,Joao
Mauricio Bueno
Award Begin Date: 10/30/2023
Award End Date: 07/31/2024

UF FEIN: 59-6002052

P0324554	60780000	AG-RCREC-ONA	\$13,851.09	\$23,890.84
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