Evaluation of Varied Harvest Management Strategies of Alfalfa-Bermudagrass Mixtures on Animal and Stand Performance in the Southeastern US

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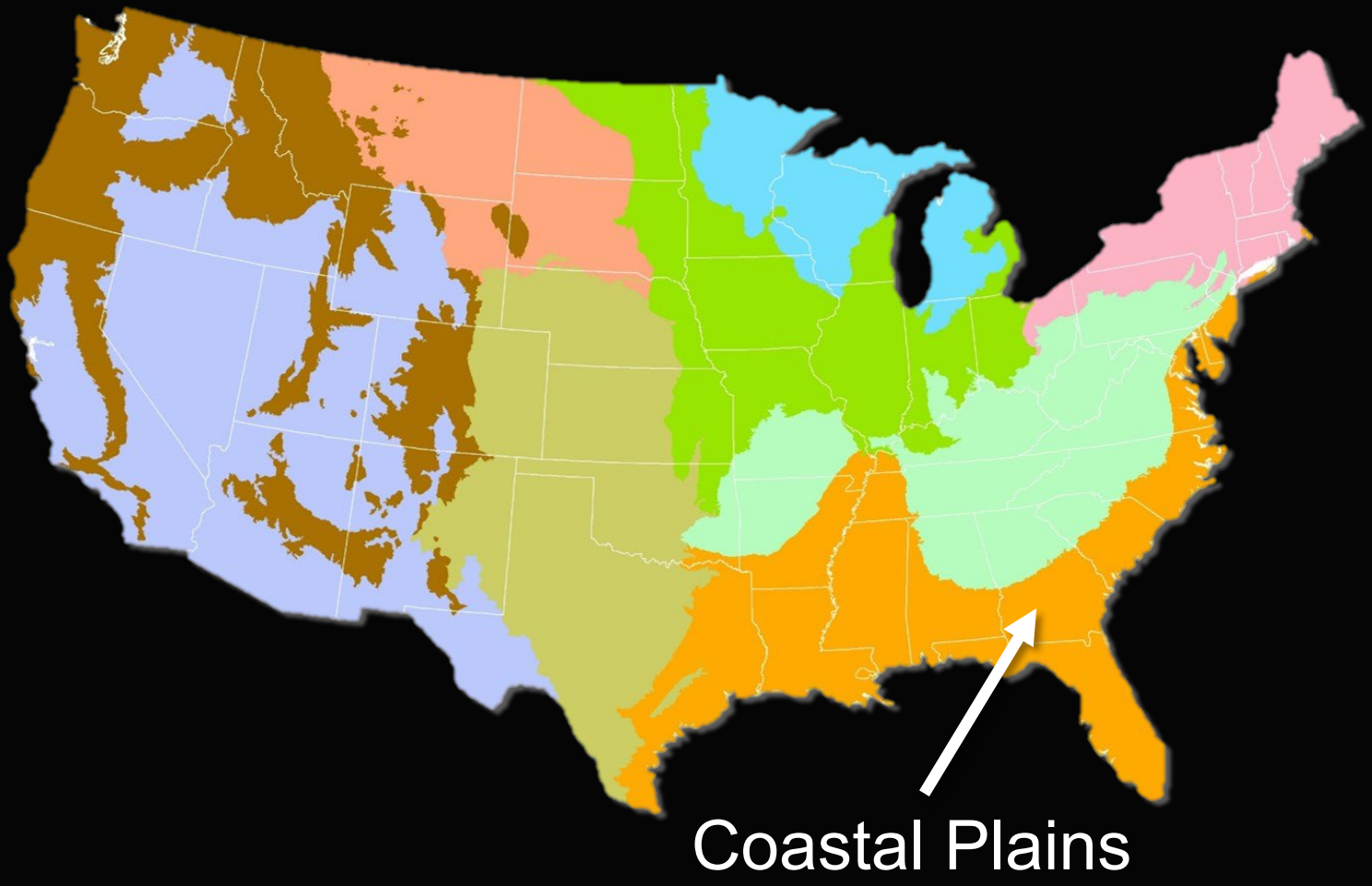
Introduction



Introduction

Bermudagrass

https://hayandforage.com/article-101-top-reasons-for-bermudagrass-decline.html

Bahiagrass

https://www.aces.edu/blog/topics/forages-livestock/bahiagrass-management/

Which management is best?

Grazing

Baleage

Objective

To compare three harvest strategies of alfalfa interseeded into Tifton-85 bermudagrass in terms of animal and forage responses

Study Establishment

Study location: Headland, Alabama and Tifton, GA

Year 1: June – November 2020

Year 2: April – December 2021

Established '*Bulldog 805*' alfalfa into '*Tifton-85*' bermudagrass

Planting Rate: 16.8 kg ha^{-1}

Row spacing: 35.5 cm

Planting Depth: 1.27 cm

Experimental Design

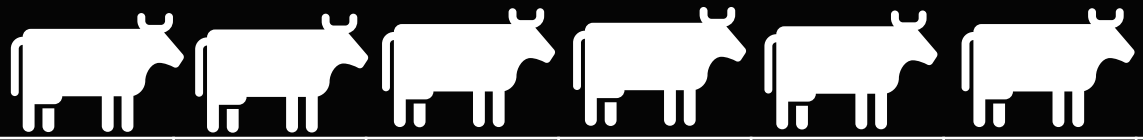
Randomized Complete Block Design

Harvest Treatments

- Cut Only
- Graze Only
- Cut and Graze (CG)

Study Design

Graze



Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Cut

Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

CG

Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Baleage Management

Harvested paddocks on 28-35d interval

Baled at a target moisture of ~55%

Alfalfa 1st harvest in Y1 was at 25 % bloom, all subsequent harvests for Y1 and all Y2 10 % bloom

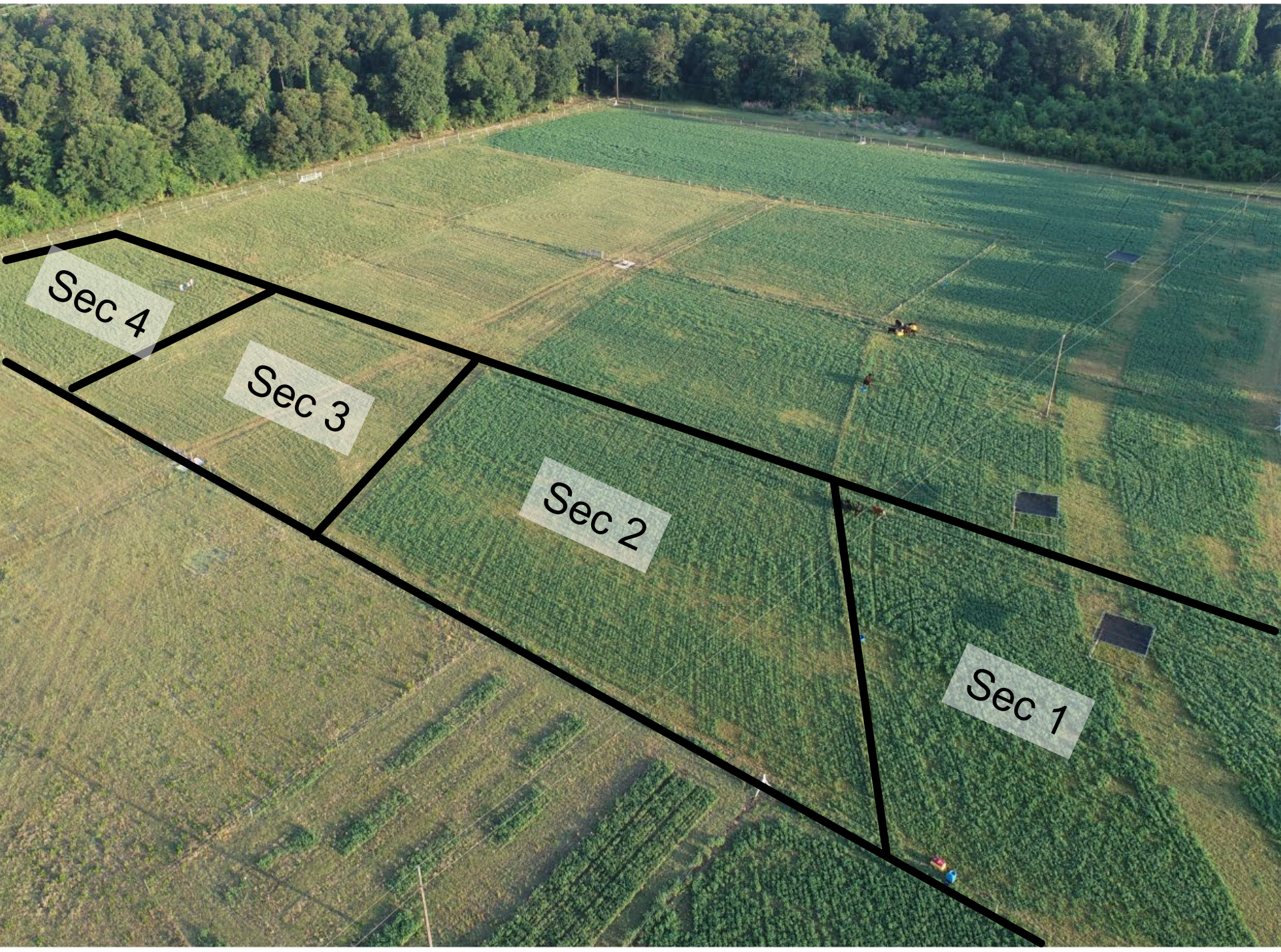
Grazing and Animal Management

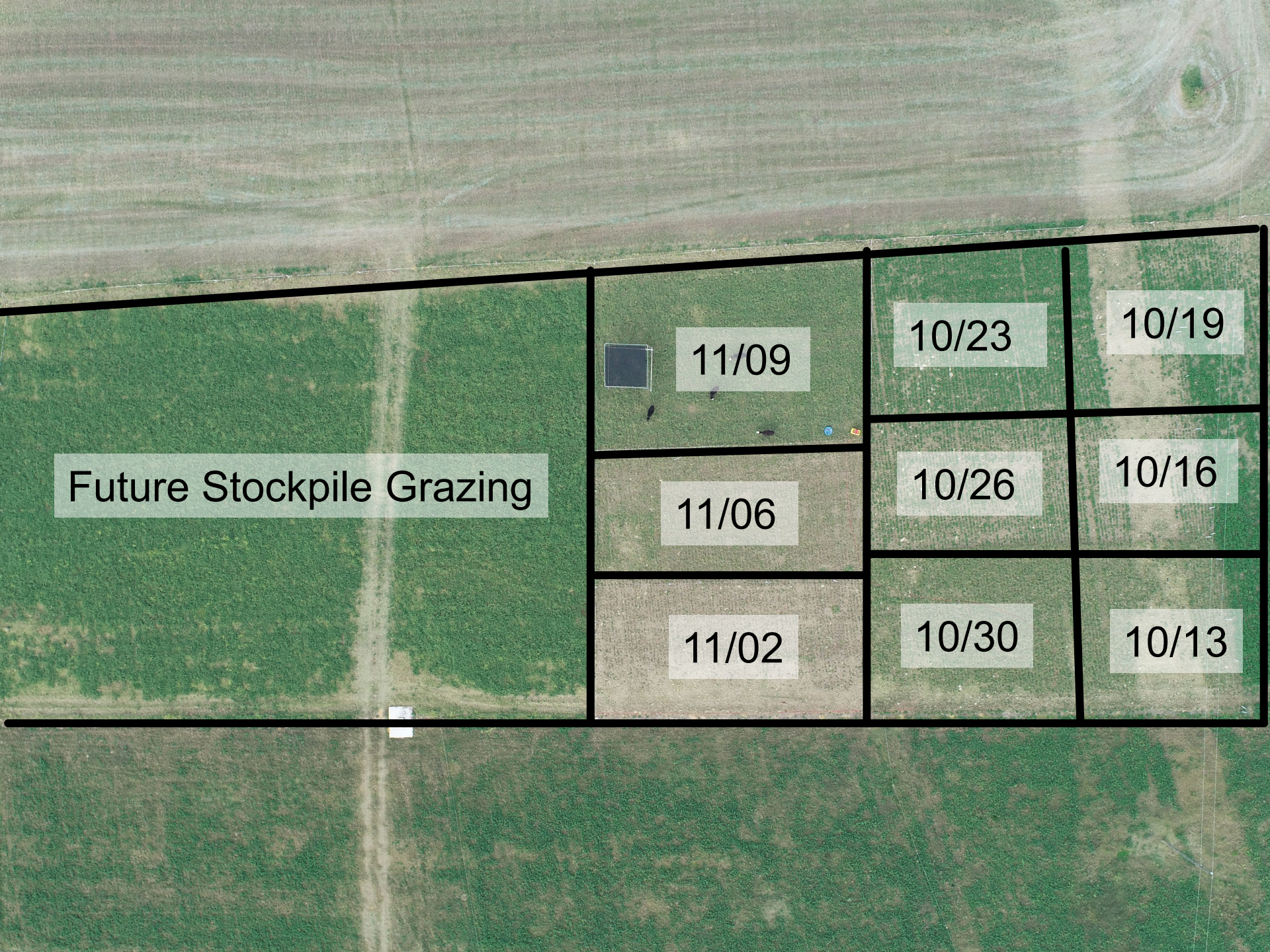
In-Season Grazing

- Paddocks divided into four subsections
- Put-and-take grazing

Stockpile Grazing

- Fixed stocking with size of subsection changing
- Graze for 3% BW, 75% efficiency of utilization


Sec 4
Sec 3
Sec 2
Sec 1


Future Stockpile Grazing
11/09
11/06
11/02
10/23
10/19
10/26
10/16
10/30
10/13

Forage Collection and Analysis

- Forage collected from 0.1 m^2 quadrats
- Evaluated for:
  - Herbage availability
  - Botanical composition
  - Nutritive value (NIR analysis)

Statistical Analysis

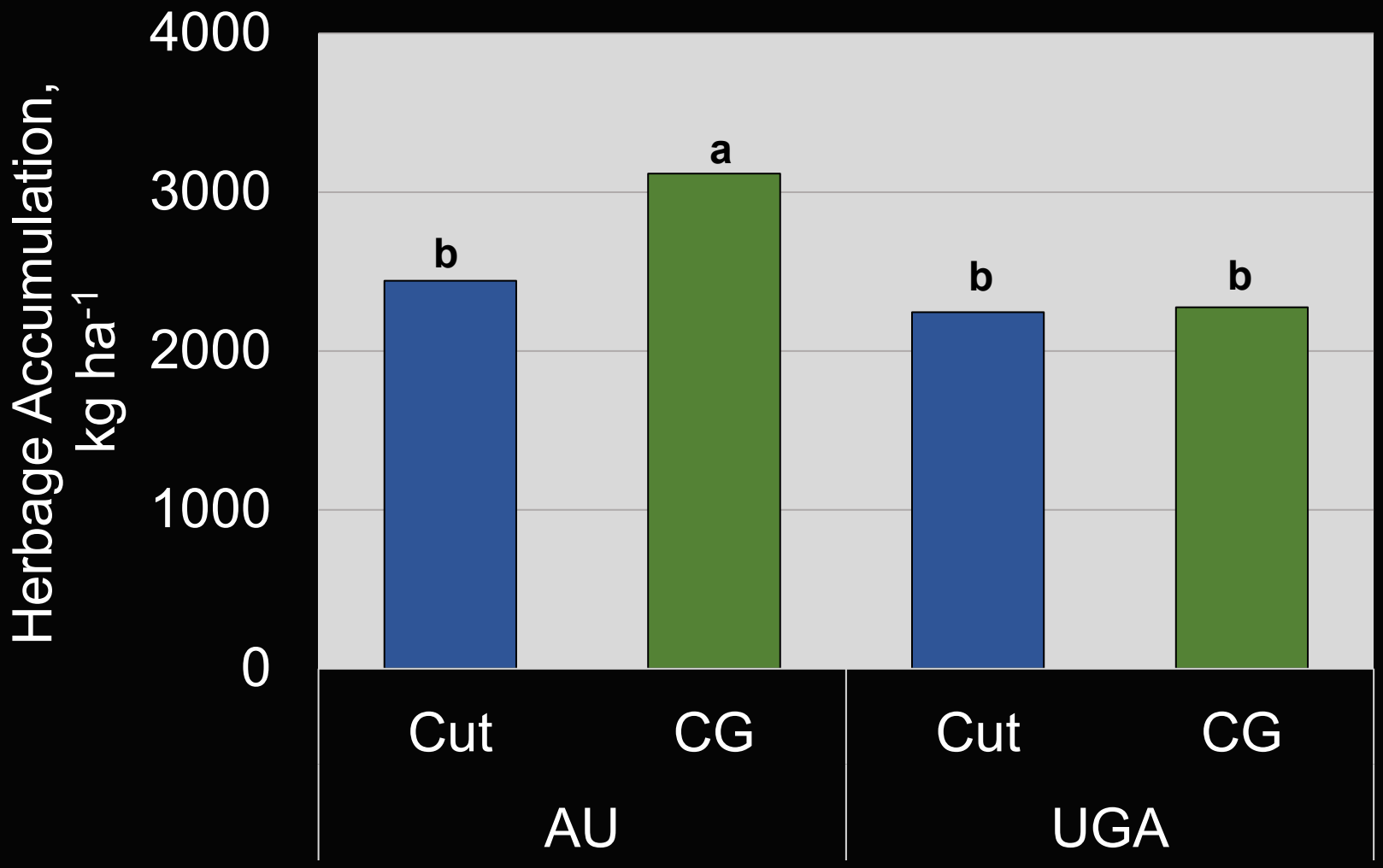
- Statistical analysis was conducted using the PROC MIXED procedure of SAS 9.4 (Cary, NC)
- Fixed Effects = Year, Location, and Harvest Method
- Random Effects = Block
- Ran with REPEATED measures
- Significance defined at $\alpha \leq 0.05$

Results: Weather

Headland, AL	Tifton, GA
Avg. Max Temperature • Year 1: 28.3 ^{0}C • Year 2: 27.4 ^{0}C	Avg. Max Temperature • Year 1: 25.6 ^{0}C • Year 2: 25.1 ^{0}C
Avg. Rainfall • Year 1: 104.1 mm • Year 2: 114.3 mm	Avg. Rainfall • Year 1: 103.2 mm • Year 2: 131.5 mm

Results: Baleage Data

Results: Herbage Accumulation

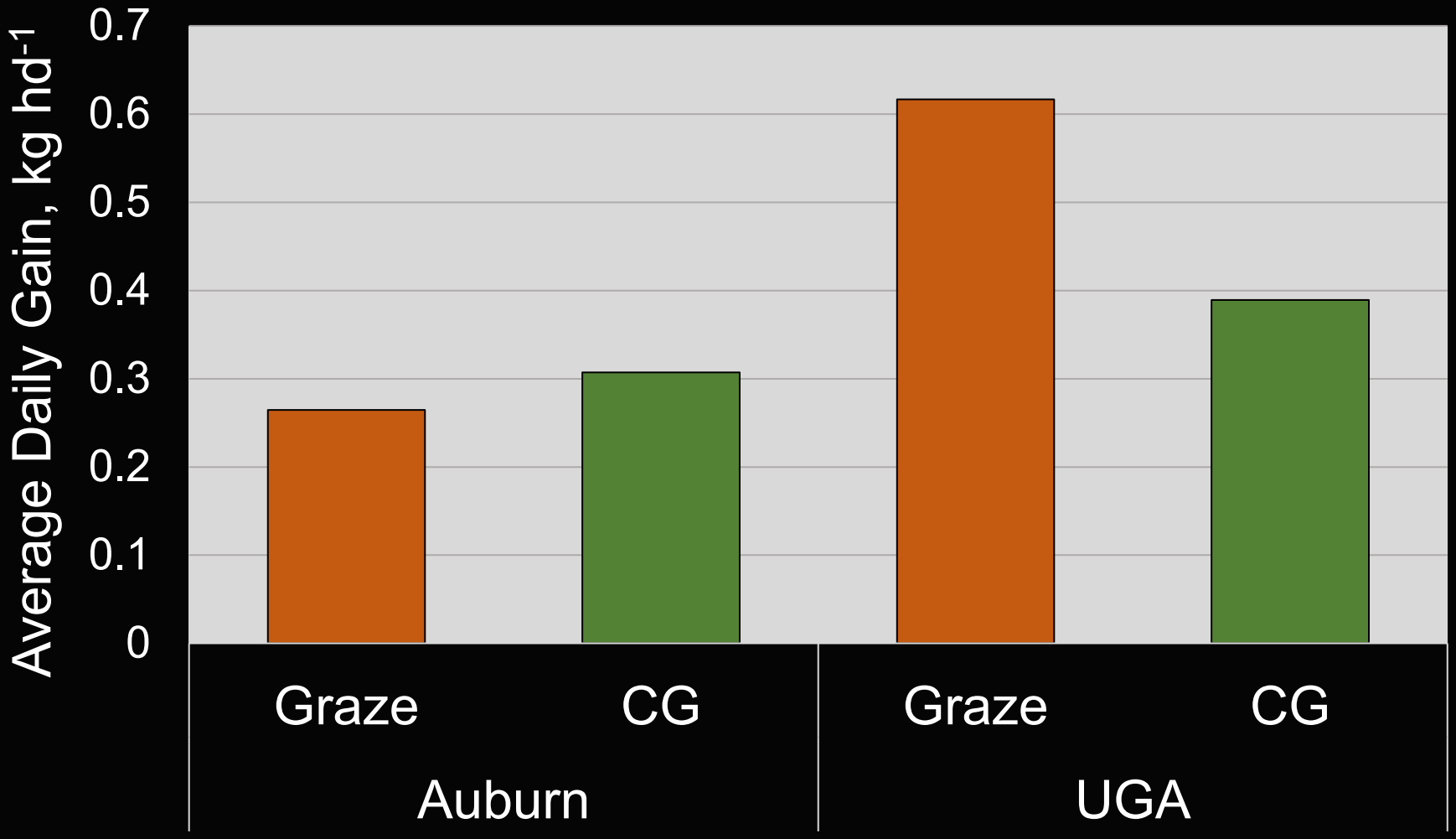


Results: Grazing Data

Results: Grazing Days

	Year 1	
	CG	Graze
Auburn	56	98
UGA	84	112

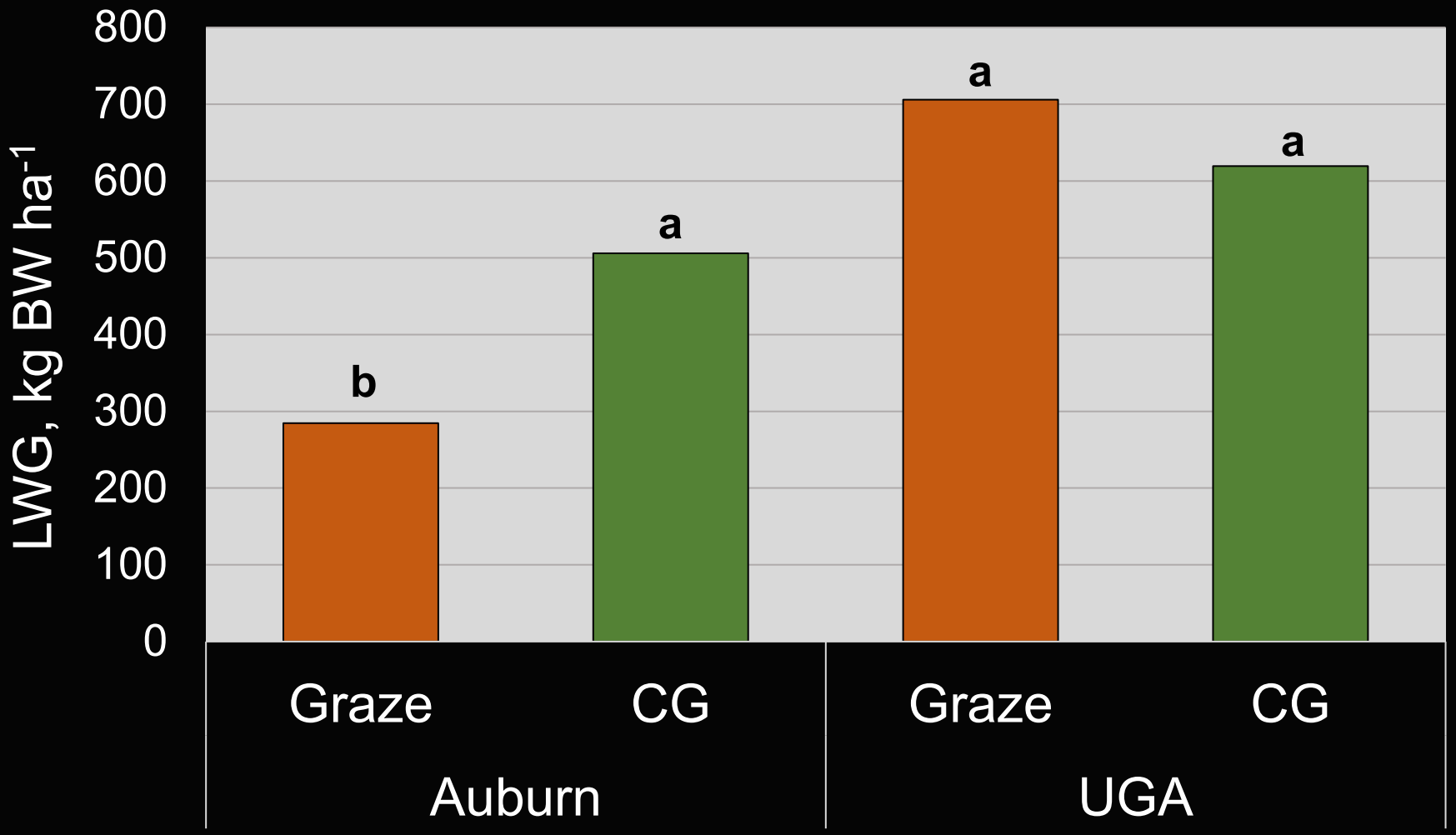
Results: Average Daily Gain



SEM ± 0.08 kg hd^{-1}

* Columns without common letters differ $P \leq 0.05$.

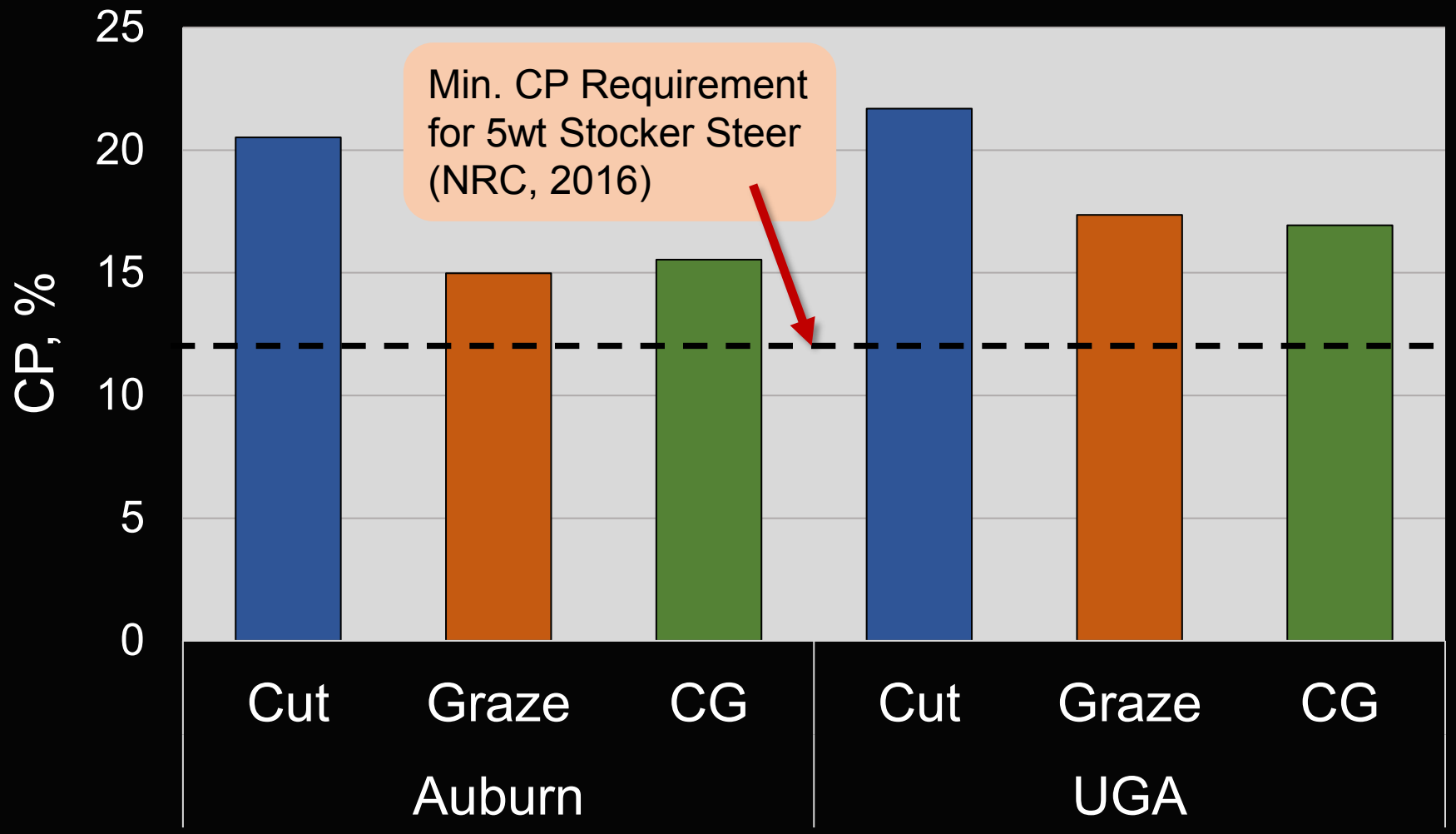
Results: Live Weight Gain



SEM ± 62.34 kg BW ha^{-1}

* Columns without common letters differ $P \leq 0.05$.

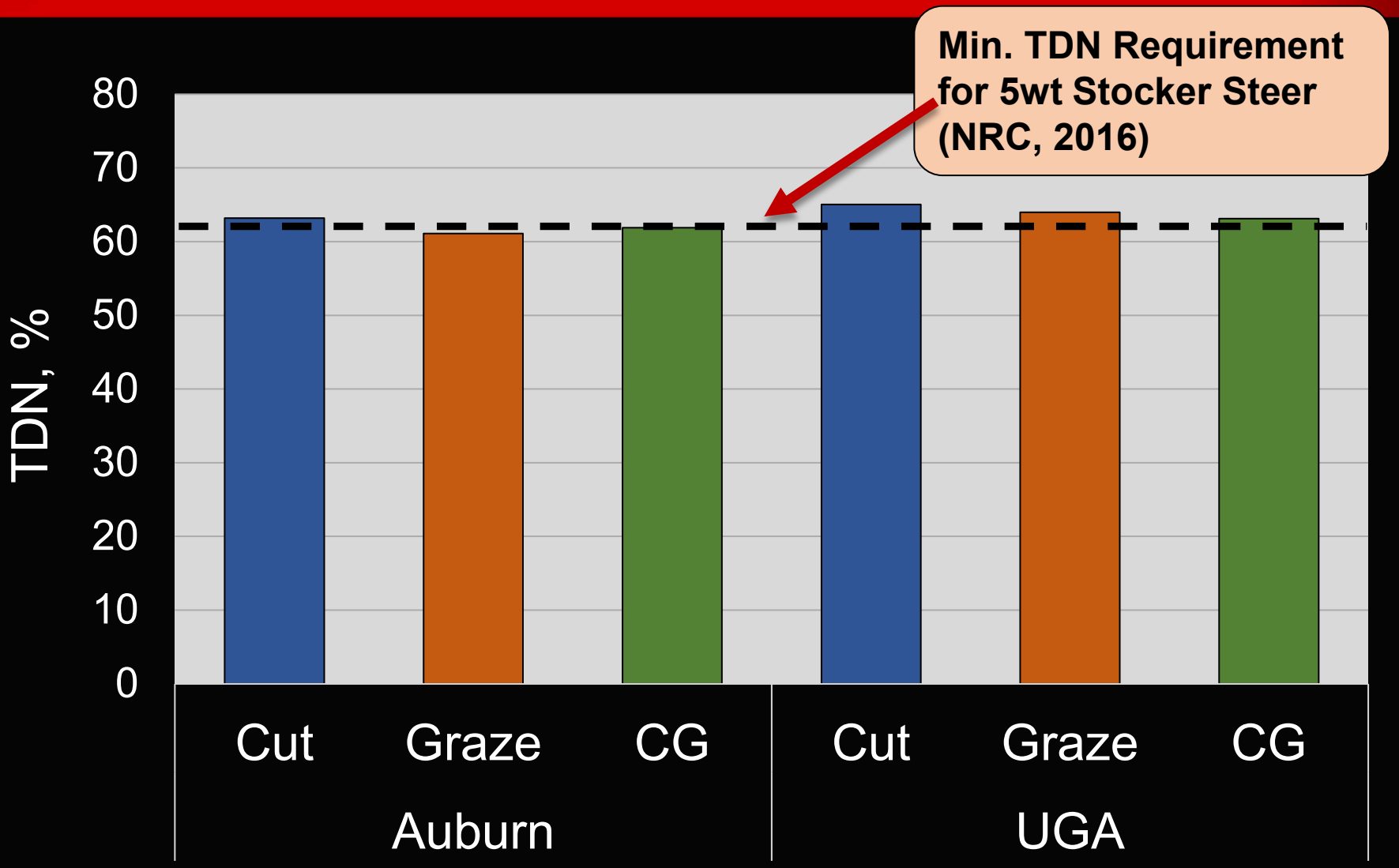
Results: Crude Protein



SEM ± 1.54%

* Columns without common letters differ $P \leq 0.05$.

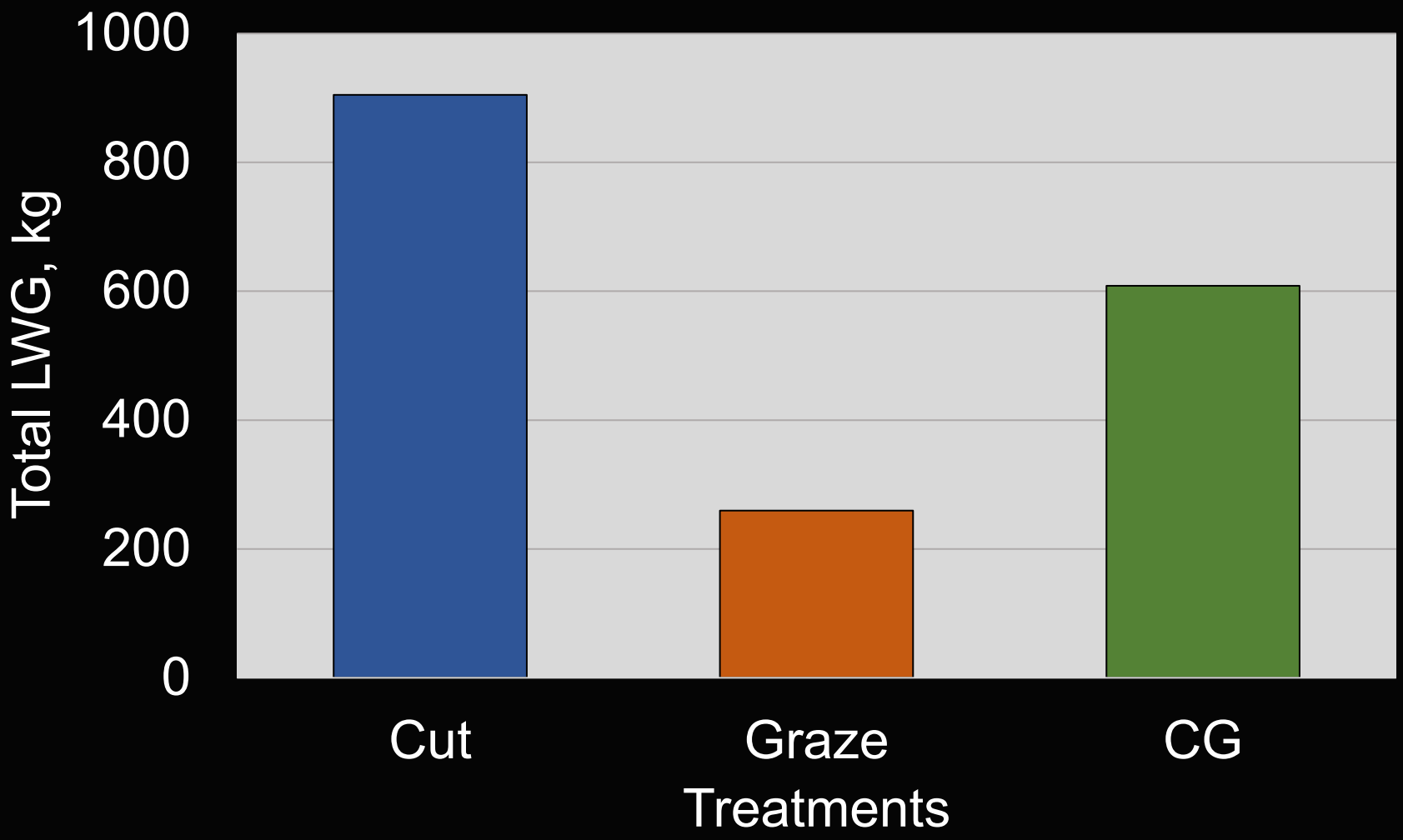
Results: Total Digestible Nutrients



SEM ± 0.95%

* Columns without common letters differ $P \leq 0.05$.

Results: 3-way Comparison



SEM ± 95.08 kg

* Columns without common letters differ $P \leq 0.05$.

Results: Total Days of Production

Location	Year 1			Year 2		
	Cut	Graze	CG	Cut	Graze	CG
Auburn	137	98	112	183	133	144
UGA	112	112	112	186	186	188

Summary

- Herbage Accumulation was greatest in the AU CG treatments
- LWG was lowest in the AU Graze treatments
- CP and TDN met or exceed the needs of a growing stocker steer

Conclusion

Strategic management in a dual-use (cut and graze) system is the best management practice for producers in the Southeast looking to use alfalfa-bermudagrass mixtures.

Questions?

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