Annual Ryegrass Management Effects On Tifton 85 Bermudagrass Spring Regrowth – Two-Year Evaluation

Eduardo Alava[1], Yoana Newman[1], Lynn Sollenberger[1], Diane Rowland[1],Charles Staples[2], and Leonardo Ortega[4], (1)Agronomy, University of Florida, Gainesville, FL, (2)University of Florida, Gainesville, FL, (4)National Mango Board, Orlando, FL

Introduction

- Overseeding pastures with cool season forages can extend grazing season during winter an additional 75 to 150 days. However, the spring transition from annual ryegrass to bermudagrass can be troublesome and inconsistent due to heat-tolerant annual ryegrass.
- Field observations in some years have shown stand reduction and slow spring regrowth of Tifton 85 pastures that were overseeded with cool season forages and grazed during the cool season .

Objectives

- To quantify the effects of method and timing of annual ryegrass removal on:
  - Tifton 85 cover, expressed in percent
  - Light interception, expressed in percent
  - Root-rhizome mass, expressed in g m^{-2}
  - Root-rhizome total non structural carbohydrates (TNC), expressed in g kg^{-1}

Materials and methods

- Three replicates from Date x Method factorial combination treatments were arranged in a Randomize Complete Block design.

Removal Date	Removal Method	Control
1 (early March)	SG (Simulated grazing)	CT85 not overseeded
2 (Date 1 + 7 d)	M (Mowing)	CAR unharvested
3 (Date 2 + 7 d)	C (Herbicide)	

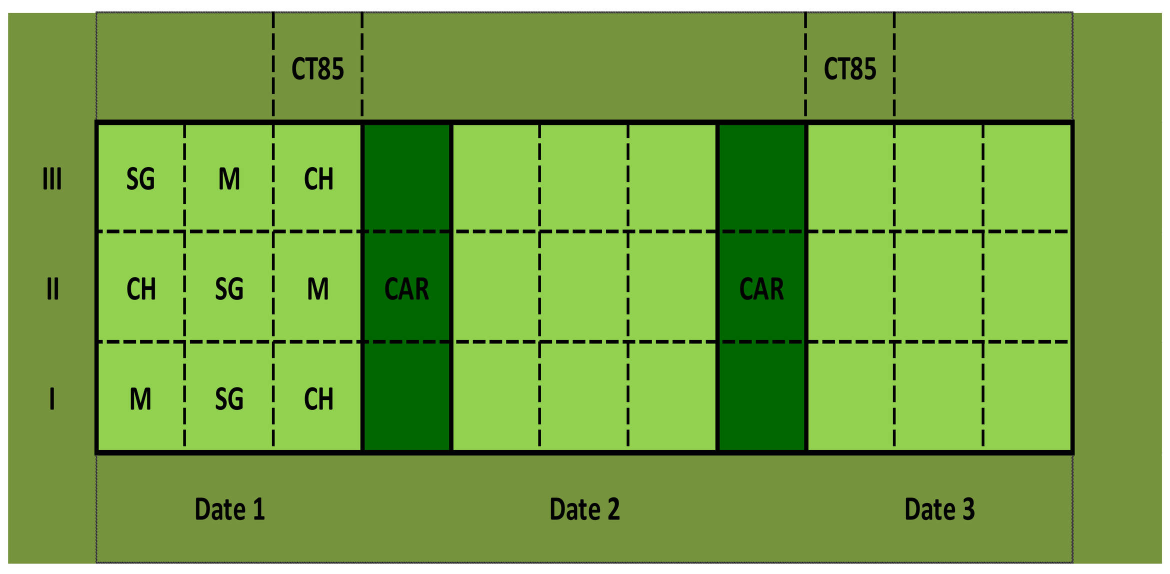
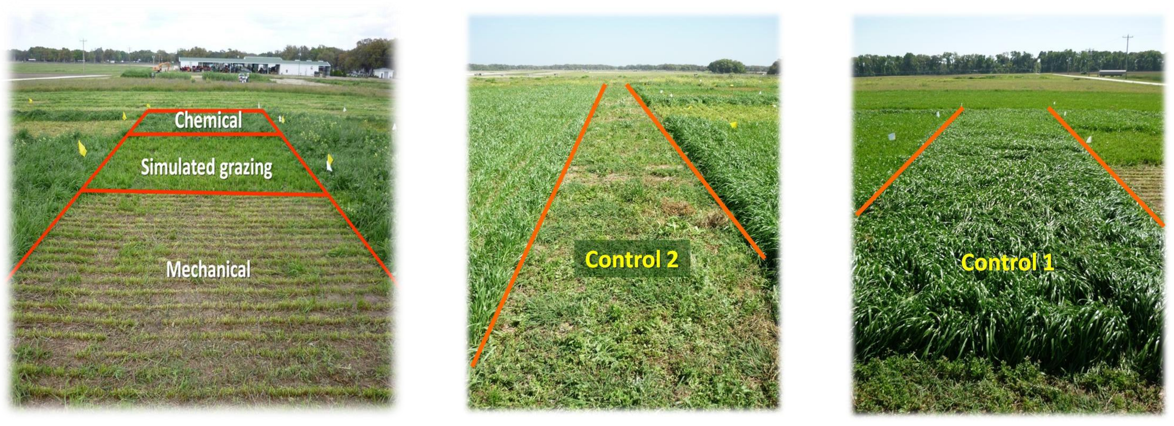


Fig. 1. Experimental layout



Management

Before treatment initiation:

- Dormant Tifton 85 bermudagrass plots were overseeded early December.
- Annual Ryegrass was harvested every 28 d before treatments were imposed, and received 40 kg of N ha^{-1} after each harvest.

After treatment initiation:

- SG plots were harvested every 15 d to 8-10 cm stubble height.
- M plots were harvested every 21 d to 2-4 cm stubble height.
- C plots were harvested 7 d after herbicide application.

Sampling

- Root-rhizomes samples were taken at day 0 and last harvest.
- Cover visual estimation measurements were recorded before treatments were imposed.
- Light interception measurements were taken before treatments were imposed at 12:00 pm.

Data Analysis

- Data was analyzed using Glimmix procedure of SAS, and pdiff function was used to calculate differences between treatments.

Results

Light Interception

2011

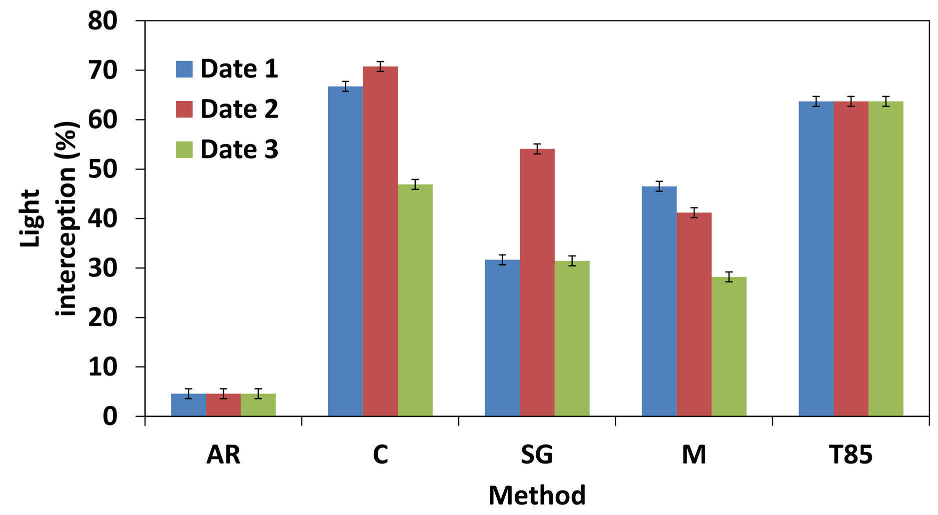


Fig. 2. Date x method effect†

2012

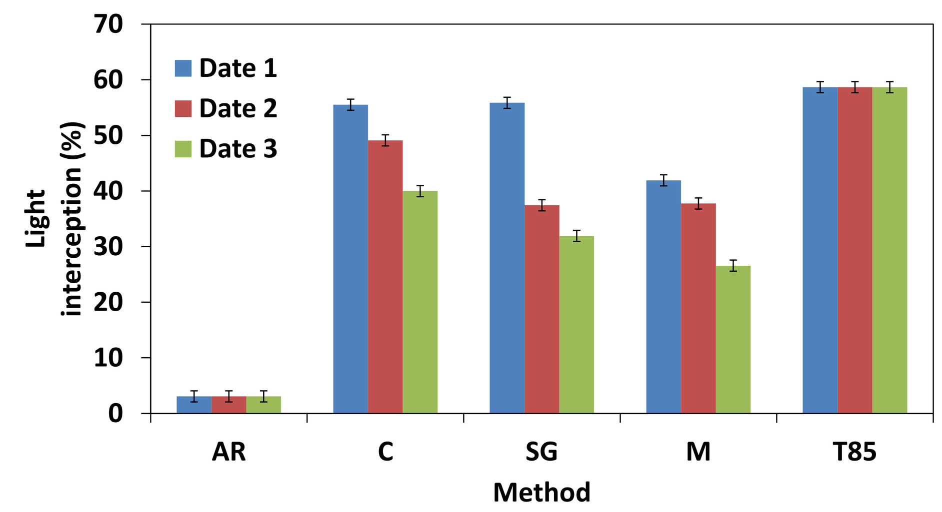


Fig. 3. Date x method effect†

†= Mean comparisons ($P < 0.05$)

Tifton 85 Cover

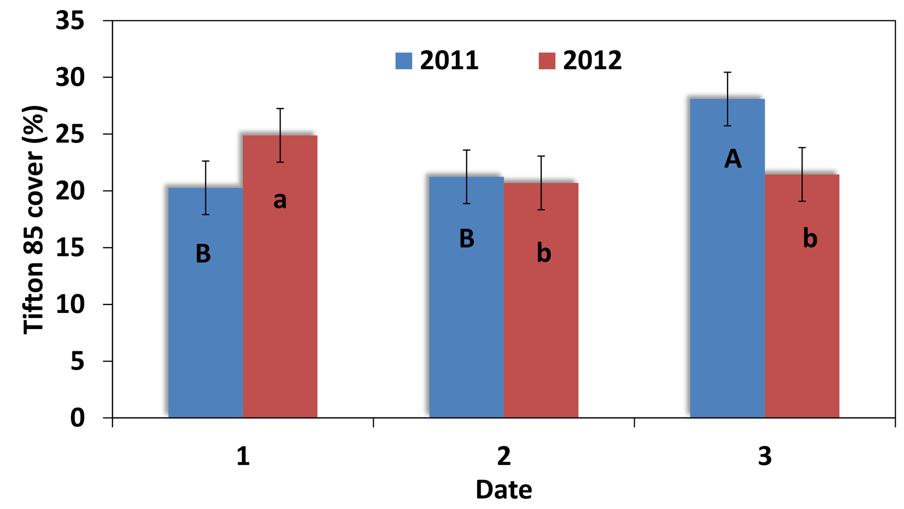


Fig. 4. Year x date effect†

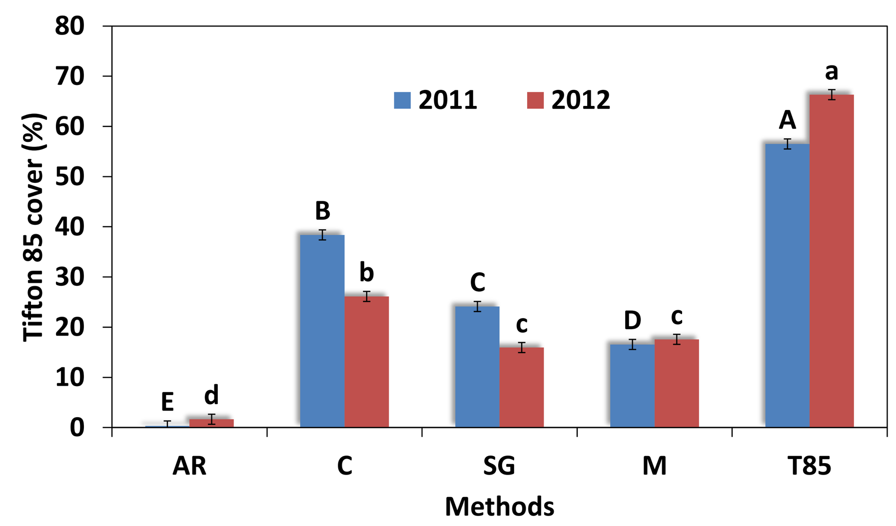


Fig. 5. Year x method effect†

†= Mean comparisons ($P < 0.05$)

Tifton 85 Root-Rhizome Mass

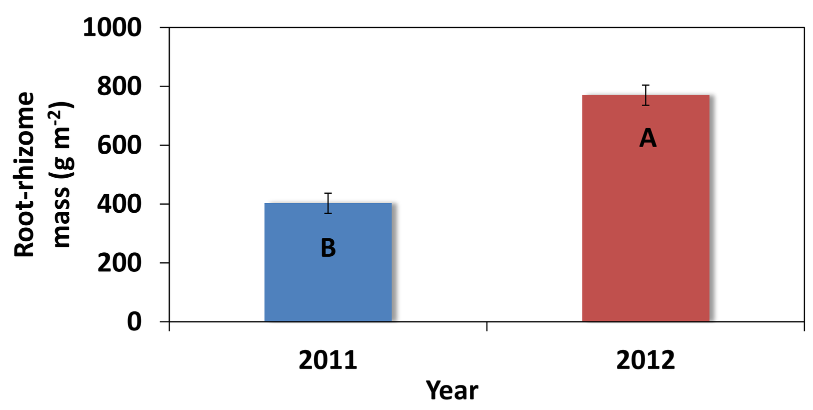


Fig. 6. Year effect†

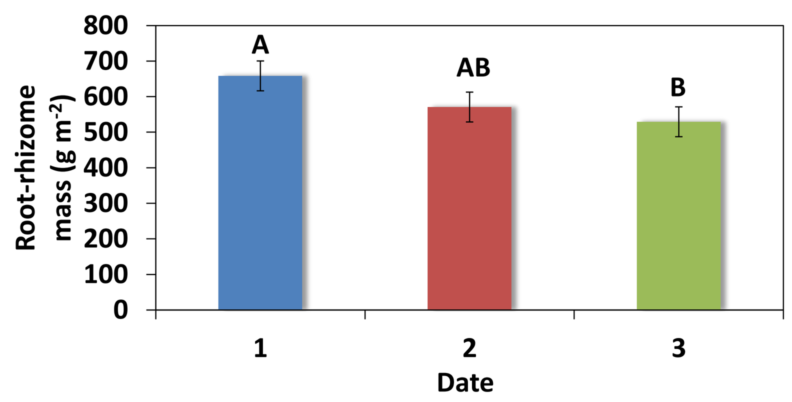


Fig. 7. Removal date effect†

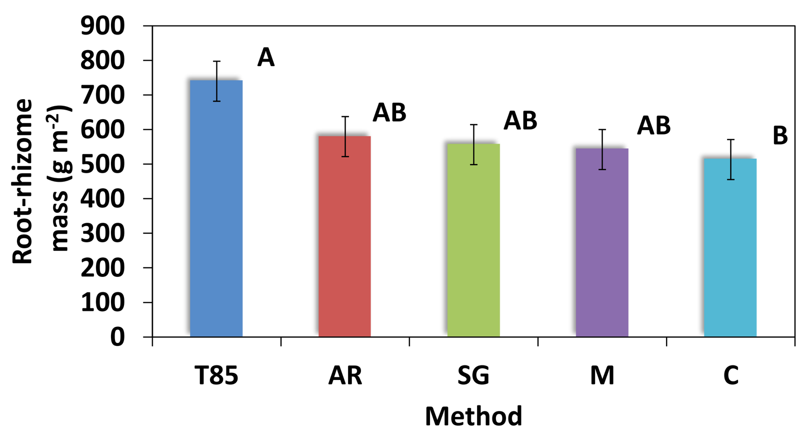


Fig. 8. Removal method effect†

†= Mean comparisons ($P < 0.05$)

Tifton Root-Rhizome TNC

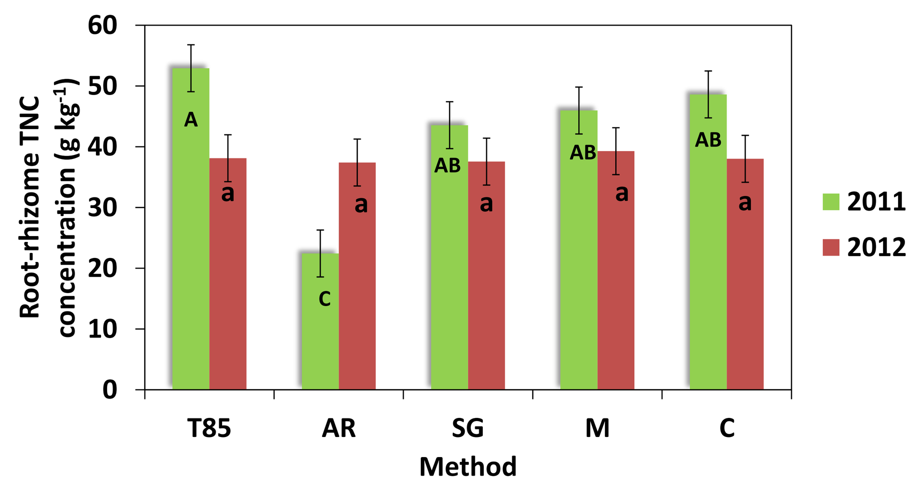


Fig. 9. Year x method effect†

†= Mean comparisons ($P < 0.05$)

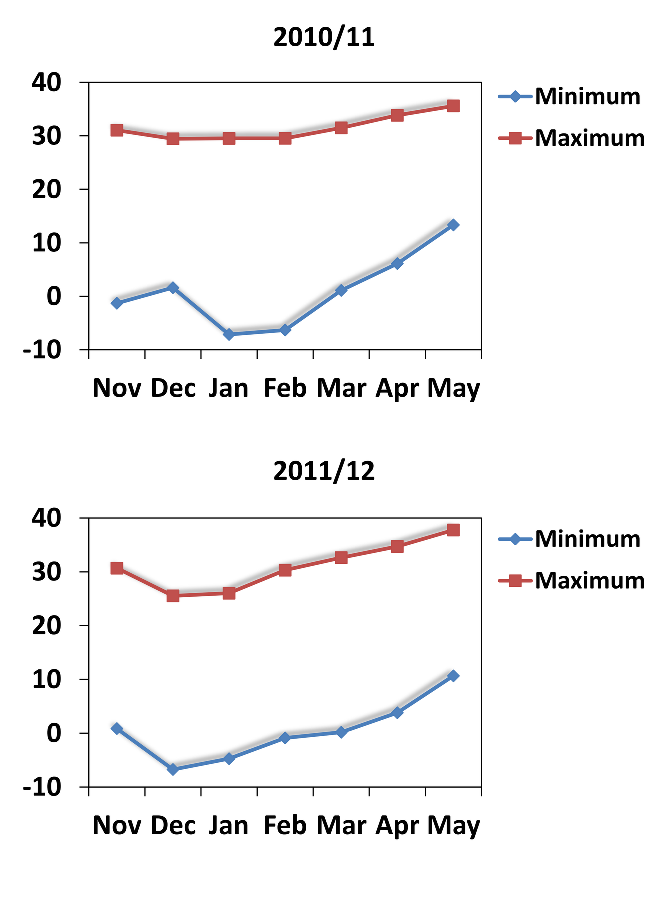


Fig. 10. Average minimum and maximum monthly temperatures

Weather Data

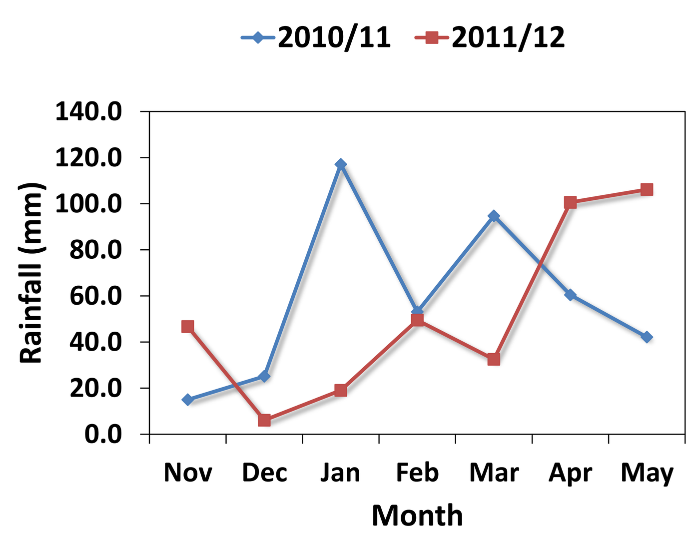


Fig. 11. Monthly precipitation

Conclusions

- Early spring removal resulted in highest Tifton 85 light interception.
- Chemical removal resulted in higher Tifton 85 cover compared to mowing, grazing, or harvested annual ryegrass plots.
- Tifton 85 root-rhizome mass was the highest when not overseeded, but did not differ among other removal methods. However, root-rhizome mass decreased with date of removal.

Implications

- Warm spring temperatures will require early removal of annual ryegrass to favor Tifton 85 bermudagrass rapid regrowth during the spring.
- Removal method of choice has tremendous impact on Tifton 85 regrowth during early spring.

Acknowledgments

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