

# Land-Preparation Techniques and Weed Management Strategies for Successful Establishment of Strip-Planted Rhizoma Peanut in Bahiagrass Pastures

Miguel S. Castillo<sup>1</sup>, Lynn E. Sollenberger<sup>1</sup>, Jason A. Ferrell<sup>1</sup>, Ann R. Blount<sup>2</sup>, Andre D. Aguiar<sup>1</sup>, Chaein Na<sup>1</sup>, Mary J. Williams<sup>3</sup>, and Cheryl L. Mackowiak<sup>2</sup>  
<sup>1</sup>Agronomy Department, University of Florida, <sup>2</sup>North Florida Research and Education Center, Quincy, FL, <sup>3</sup>USDA-NRCS, Gainesville, FL



## Introduction

Rhizoma peanut (*Arachis glabrata* Benth.; RP) is a warm-season legume that is persistent under grazing and spreads laterally. These are ideal characteristics for sustainable forage-livestock systems in the southeastern USA. However, due to costly establishment and post-plant management required, the use of RP has been limited to production of hay.

Planting RP in strips into existing bahiagrass (*Paspalum notatum* Flüggé) pastures may reduce costs and allow forage utilization during the year of establishment. Strategies are needed to control competition to RP when strip-planted and to enhance rate of establishment and spread into adjacent grass strips.

## Objectives

To quantify the effects of: 1) seedbed preparation techniques, and 2) weed management strategies on establishment of RP strip-planted into bahiagrass.

## Materials and Methods

**Location:** Beef Research Unit, Gainesville, FL.

**Planting methodology:** 4-m wide strips planted to RP. Nine rows of RP (0.5 m between rows) per strip. First- and last-outermost rows were 0.25 m from the undisturbed bahiagrass sod.

**Experimental design:** Split-plot arrangement (main-plot = four seedbed preparation techniques; sub-plot = four weed management strategies).

### Treatments:

- Seedbed preparation: 1) Glyphosate + Conventional tillage (G-CT); 2) Conventional tillage (CT); 3) No-till (only glyphosate; NT); 4) Sod lifted (SL).
- Weed management strategy: 1) Imazapic (0.07 kg a.i. ha<sup>-1</sup>); 2) mix of Imazapic + 2,4-D (0.07, and 0.28 kg a.i. ha<sup>-1</sup>, respectively); 3) Mowing (every 28 d to 10-cm stubble height); and 4) Control (untreated).

## Results and Discussion

### Canopy cover and frequency

Seedbed preparation did not have an effect on RP cover or frequency, but there was a weed management treatment × sampling date interaction effect for both responses (Fig. 1).

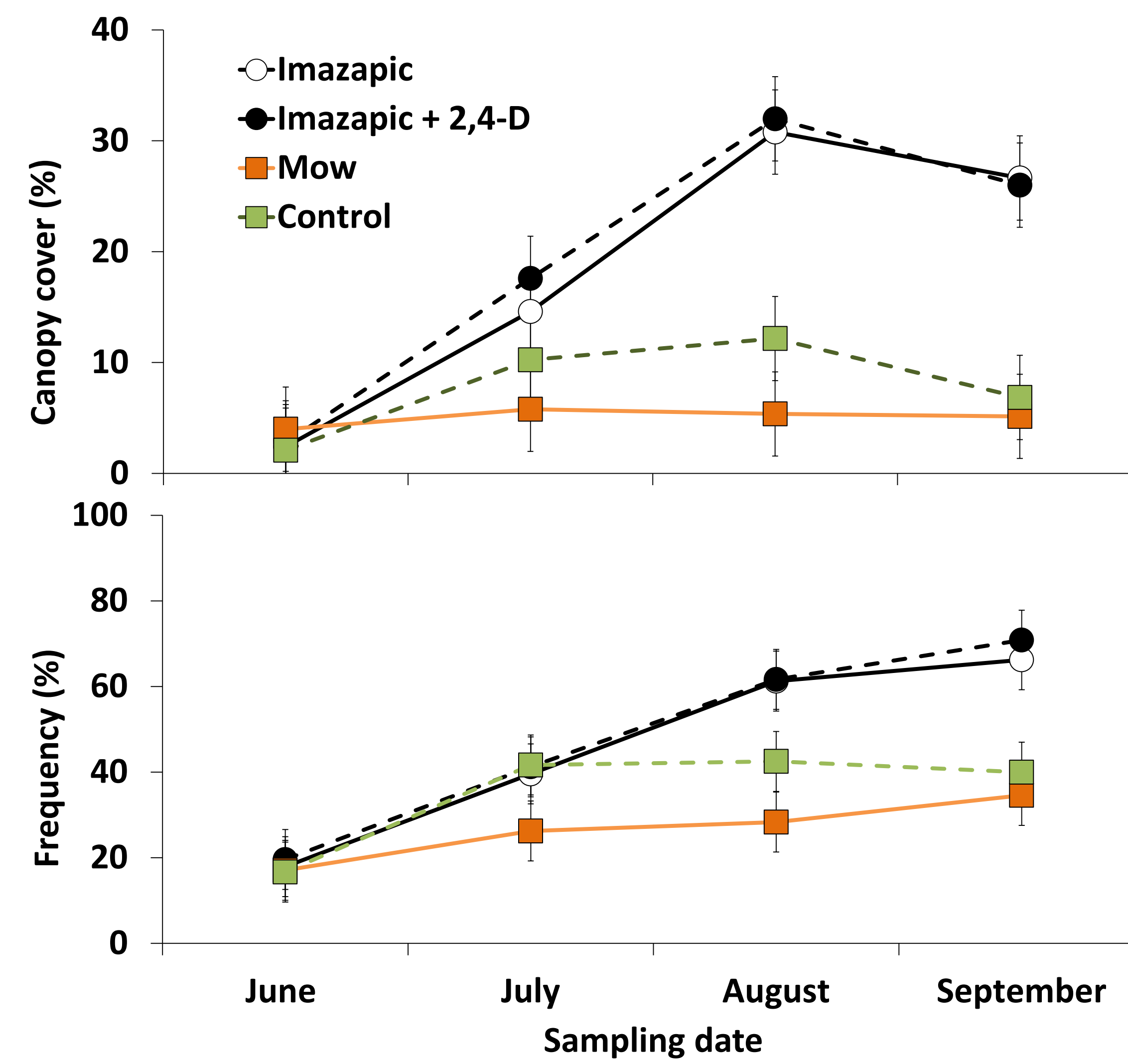


Fig. 1. Rhizoma peanut cover and frequency responses to weed management strategy and sampling date.

### Spread

Spread from the center of the strip to the farthest point where RP plant parts were found growing into the bahiagrass sod was least for SL and greatest or tended to be greatest for treatments involving tillage (Fig. 2).

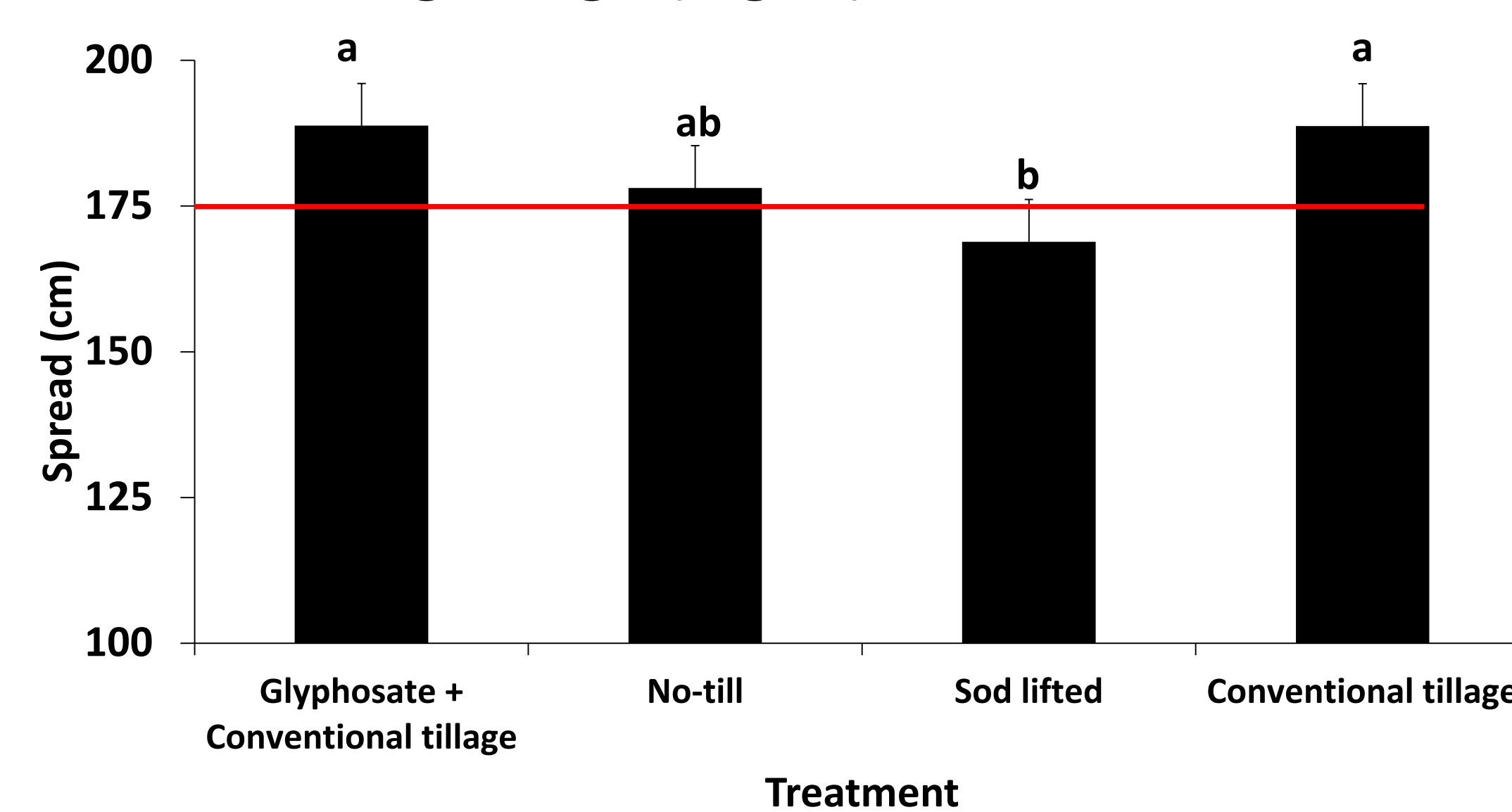


Fig. 2. Lateral spread of rhizoma peanut during the year of establishment following various seedbed preparation procedures.

### Light environment and height of RP canopy

For G-CT and CT seedbed preparation treatments, RP was shaded to a greater degree when no imazapic was applied (Fig. 3). In response to less light, RP canopy height was or tended to be taller when no imazapic was applied (Fig. 3).

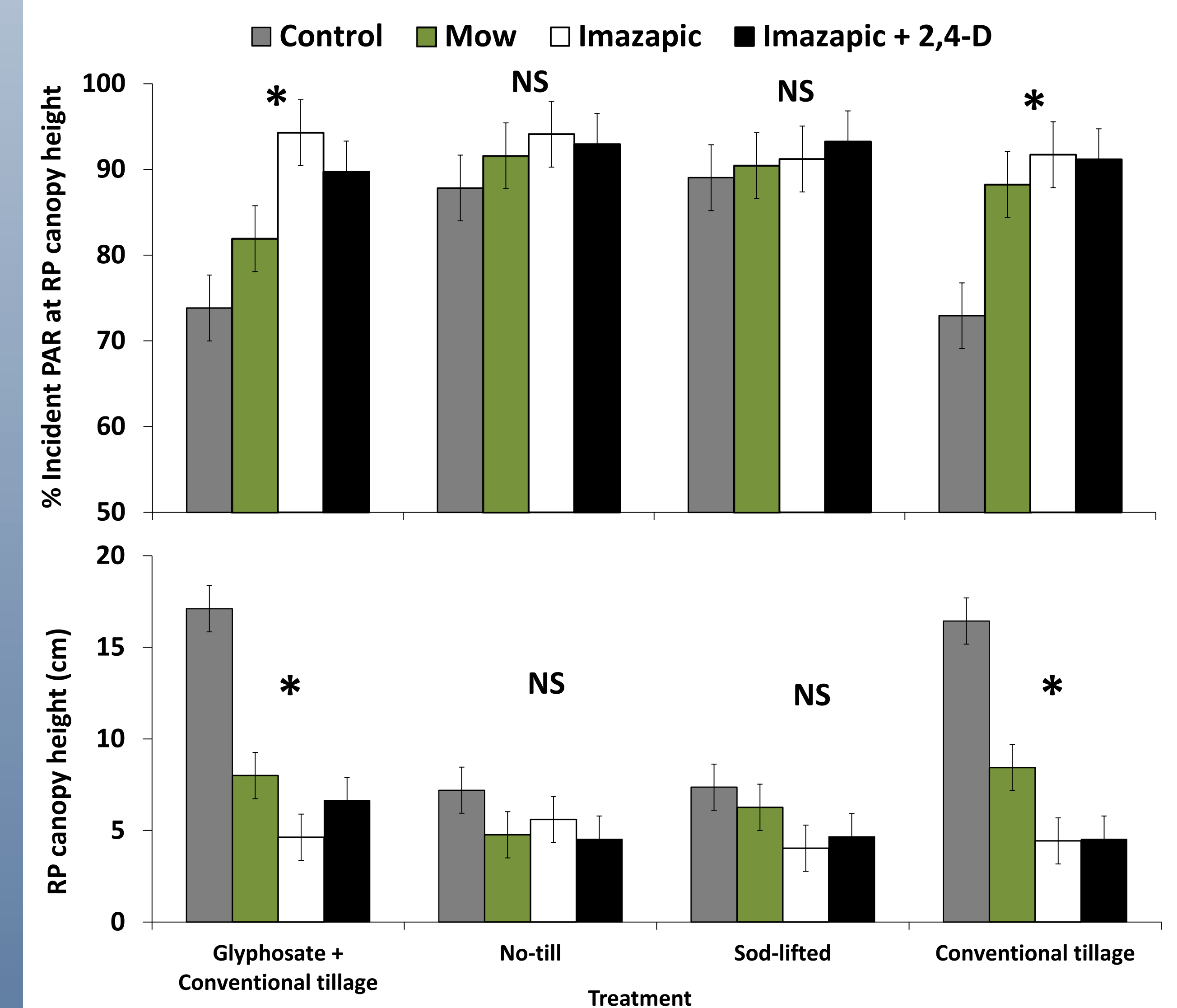


Fig. 3. Effect of weed management strategy on light environment at the top of the RP canopy and RP canopy height. \* = significant interaction effect ( $P < 0.05$ ); NS = not significant interaction effect.

## Conclusions and Implications

- Spread of RP in the establishment year is generally favored by seedbed preparation strategies that include conventional tillage.
- Planting should be followed by application of Imazapic or Imazapic + 2,4-D to control competition from weeds and bahiagrass.
- Strip planting RP in existing bahiagrass pastures is a viable option, but weed management to control competition for nutrients and light is critical to RP establishment success.

