Seedbed Preparation Techniques and Weed Control Strategies for Strip-Planting Rhizoma Peanut into Bahiagrass Pastures

Miguel S. Castillo A, Lynn E. Sollenberger B, Ann R. Blount C, Jason A. Ferrell B, Mary J. Williams D and Cheryl L. Mackowiak C
A Crop Science, North Carolina State University, B Agronomy, University of Florida, C North Florida Research and Education Center, University of Florida, D USDA, NRCS, Gainesville, FL

Introduction

Despite the demonstrated potential of rhizoma peanut (Arachis glabrata Benth.; RP) for grazing in the southeastern USA, high establishment cost has limited its use to primarily hay production systems. Planting RP in strips into bahiagrass (Paspalum notatum Flügge) pastures may be a lower-cost alternative to achieve a grass-legume mixture, but research is needed to determine the best seedbed preparation methods. The objectives were to quantify the effects of four seedbed preparation techniques and four post-emergence weed control strategies on RP establishment when strip-planted into existing bahiagrass pastures.

Materials and Methods

Location: Beef Research Unit, Gainesville, FL.

Treatments:

**Seedbed preparation techniques:**
1) Glyphosate + tillage; 2) tillage only; 3) glyphosate + no-till; and 4) sod removal

**Weed control strategies:**
1) Control (no herbicide, no mowing); 2) mowing (every 28 d to 10-cm stubble height); and single application of herbicides 3) imazapic (0.29 L ha⁻¹); and 4) imazapic (0.29 L ha⁻¹) + 2,4-D amine (0.58 L ha⁻¹).

Results and Discussion

**Sprout emergence** was greater in treatments where tillage occurred (119, 90, 58 and 54 sprouts m⁻² for glyphosate + tillage, tillage only, no-till and sod lifted, respectively) (Fig. 1).

**Canopy cover** of RP in glyphosate + tillage, no-till, and sod removal continued to increase through August compared with tillage only which plateaued in July (Fig. 2). In September, canopy cover in no-till was greater than the other seedbed preparation techniques. In the control treatment canopy cover of RP remained ~7%, while in the mowing treatment it increased to a max. of ~11% in July and to ~25% for imazapic and imazapic + 2,4-D in September (Fig. 2). By the end of the season there was no difference in canopy cover for imazapic and imazapic + 2,4-D amine treatments, but both treatments were greater than the control and mowing. **Frequency of RP** followed the same pattern as canopy cover (Fig. 2).

Conclusions and Implications

- In spite of the advantages of tillage for sprout emergence, there was a strong trend (P = 0.06) for RP canopy cover to be greater for the no-till treatment (21%) than for glyphosate + tillage (14%), tillage only (14%), or sod removal (12%) treatments by September of the establishment year.

- Weed control strategies imazapic and imazapic + 2,4-D resulted in greater RP canopy cover and frequency than the control or mowing.

- Post-planting control of weeds or bahiagrass with imazapic or imazapic + 2,4-D was beneficial regardless of seedbed preparation treatment, but under the conditions of this experiment there was no additional benefit of imazapic + 2,4-D vs. imazapic alone.