Injury to Peanut Cultivars from Postemergence Herbicide Tank-Mixtures with Paraquat

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INTRODUCTION

- In the Southeast, paraquat is a commonly used herbicide for postemergence (POST) control of broadleaf and grass weed species in peanut (Arachis hypogaea L.).
- Paraquat has a short window of application and can cause significant foliar injury to peanut vegetation (Wilcut and Swann, 1990).
- While foliar injury does occur, this damage does not correlate to peanut yield loss (Wilcut et al., 1989).
- Bentazon is antagonistic toward paraquat when used in a tank-mixture and reduces foliar injury while increasing the flexibility of the window for applications (Wehtje et al., 1992).
- Further research is needed to determine the effects of tank-mixing paraquat with other POST herbicides on peanut.

OBJECTIVES

- Establish a level of injury for and determine the effects on pod yield and grade from POST herbicide tank-mixtures including paraquat on runner-type peanut cultivars.

MATERIALS AND METHODS

Locations: Southwest REC – Plains, GA & UGA Ponder Farm – Ty Ty, GA
Years: 2016 & 2017

Experimental Design: Split-Plot design with 4 replications

Main-Plot Effect (Herbicide Treatments)
1. PRE² + paraquat (0.21 kg ai/ha) + non-ionic surfactant (0.25 % v/v)
2. PRE + paraquat + (bentazon [0.56 kg ai/ha] + acifluorfen [0.28 kg ai/ha])
3. PRE + paraquat + (bentazon + acifluorfen) + S-metolachlor (1.47 kg ai/ha)
4. PRE + paraquat + (bentazon + acifluorfen) + acetochlor (1.26 kg ai/ha)
5. PRE + handweed (PRE)
6. Non-Treated Control (NTC) (handweed only)

Sub-Plot Effect (Cultivars)
- Georgia-06G
- Georgia-14N
- TUFRunner™ ‘511’
- FloRun™ ‘157’

Data Measurements:
- Crop injury – Leaf Burn (visual %) & Stunting (visual %)
- Yield (kg/ha)
- Grade (% total sound mature kernel (TSMK))

Crop Management: Irrigated & following UGA Extension recommendations

RESULTS AND DISCUSSION

- Paraquat alone caused the greatest amount of injury at both locations (Figs. 1-3). This injury had no effect on yield (Fig. 4).
- Georgia-06G and TUFRunner™ ‘511’ have the greatest yield at both locations (Fig. 5).
- Georgia-14N and FloRun™ ‘157’ had the least amount of yield at their respective locations (Fig. 5).
- The paraquat + (bentazon + acifluorfen) + acetochlor treatment may cause a grade reduction in a heavier soil type (Table 1).

REFERENCES


CONCLUSIONS

- In Ty Ty, all herbicide treatments including paraquat yielded greater than the PRE & non-treated controls.
- In Plains, the paraquat & paraquat + (bentazon + acifluorfen) treatments yielded less than the acetochlor tank-mixture.