

CONTROLLING HERBICIDE RESISTANT PALMER AMARANTH (*Amaranthus palmeri*) IN FIELD CORN WITHOUT GLYPHOSATE OR ATRAZINE

E.P. Prostko and J.M. Kichler
Associate Professor/Extension Weed Specialist and Macon County Extension Coordinator, The University of Georgia

INTRODUCTION

The recent confirmation of glyphosate, ALS, and atrazine resistant Palmer amaranth in central Georgia has field corn growers searching for alternative control strategies. Several herbicides with different modes of action are available but have not been routinely used in Georgia. The objective of this research was to evaluate herbicide resistant weed control programs without using glyphosate or atrazine.

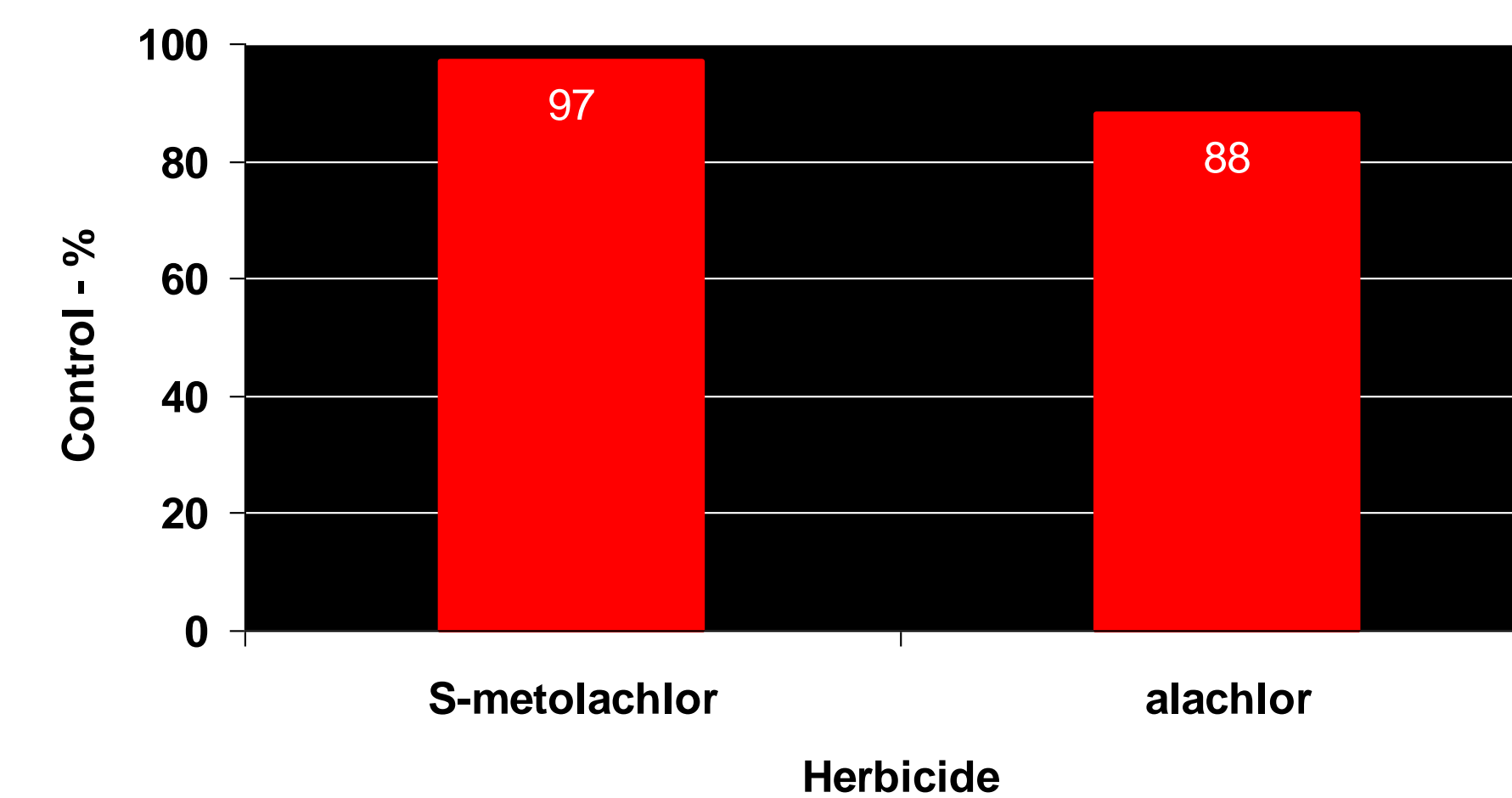
MATERIALS AND METHODS

An on-farm field trial was conducted in 2009 in a field with a confirmed population of glyphosate-resistant (GR) Palmer amaranth. Traditional small-plot techniques were utilized. Preemergence (PRE) treatments evaluated in the study included S-metolachlor @ 1.42 kg/ha (Dual II Magnum 7.64EC) and alachlor @ 2.24 kg/ha (Micro-Tech 4ME). The PRE treatments were applied immediately after planting and received 1.25 cm of irrigation one day after planting (DAP). Postemergence (POST) treatments included the following: dicamba + diflufenzopyr @ 0.14 + 0.06 kg/ha (Status 56WG); tembotrione @ 0.09 kg/ha (Laudis 3.5SC); topramezone @ 0.02 kg/ha (Impact 2.8SC); and mesotrione @ 0.11 kg/ha (Callisto 4SC). All POST treatments included labeled adjuvants and were applied 18 DAP to Palmer amaranth plants that were 2.5 to 7.5 cm tall. All treatments were arranged in a randomized complete block design with three replications. All data were subjected to ANOVA (P = 0.10).

RESULTS AND DISCUSSION

- 1) S-metolachlor and alachlor provided >85% control of Palmer amaranth 65 days after treatment (Figures 1 and 2). There were no statistical differences in Palmer amaranth control between these herbicides.
- 2) Mesotrione, tembotrione, and dicamba + diflufenzopyr provided at least 85% control of Palmer amaranth 47 days after treatment (Figures 3 and 4). Topramezone provided only 72% control at this time.

Figure 1. GR-Palmer amaranth control 65 days after treatment with S-metolachlor and alachlor applied preemergence.



LSD 0.10 = 11

Figure 2. GR-Palmer amaranth control 65 days after treatment with S-metolachlor and alachlor applied preemergence.

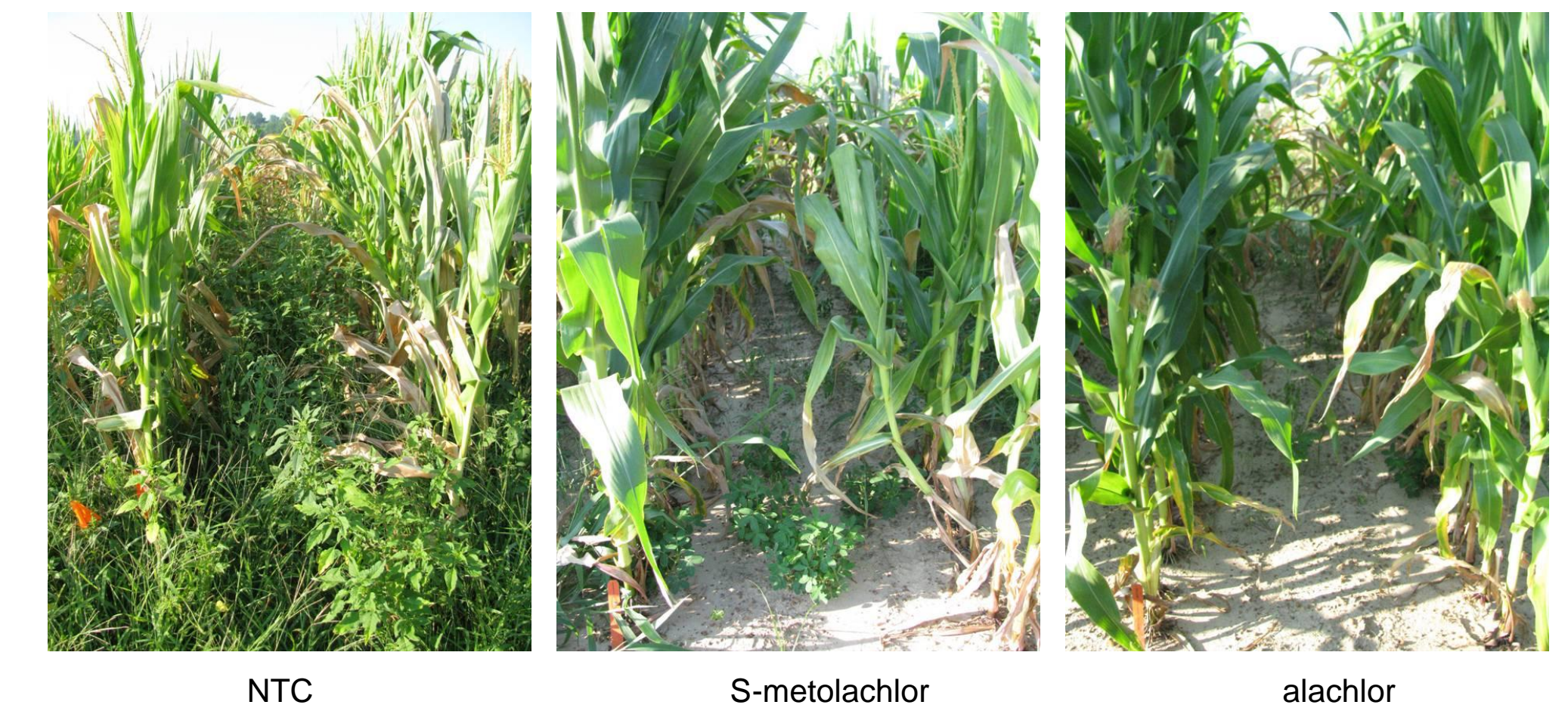
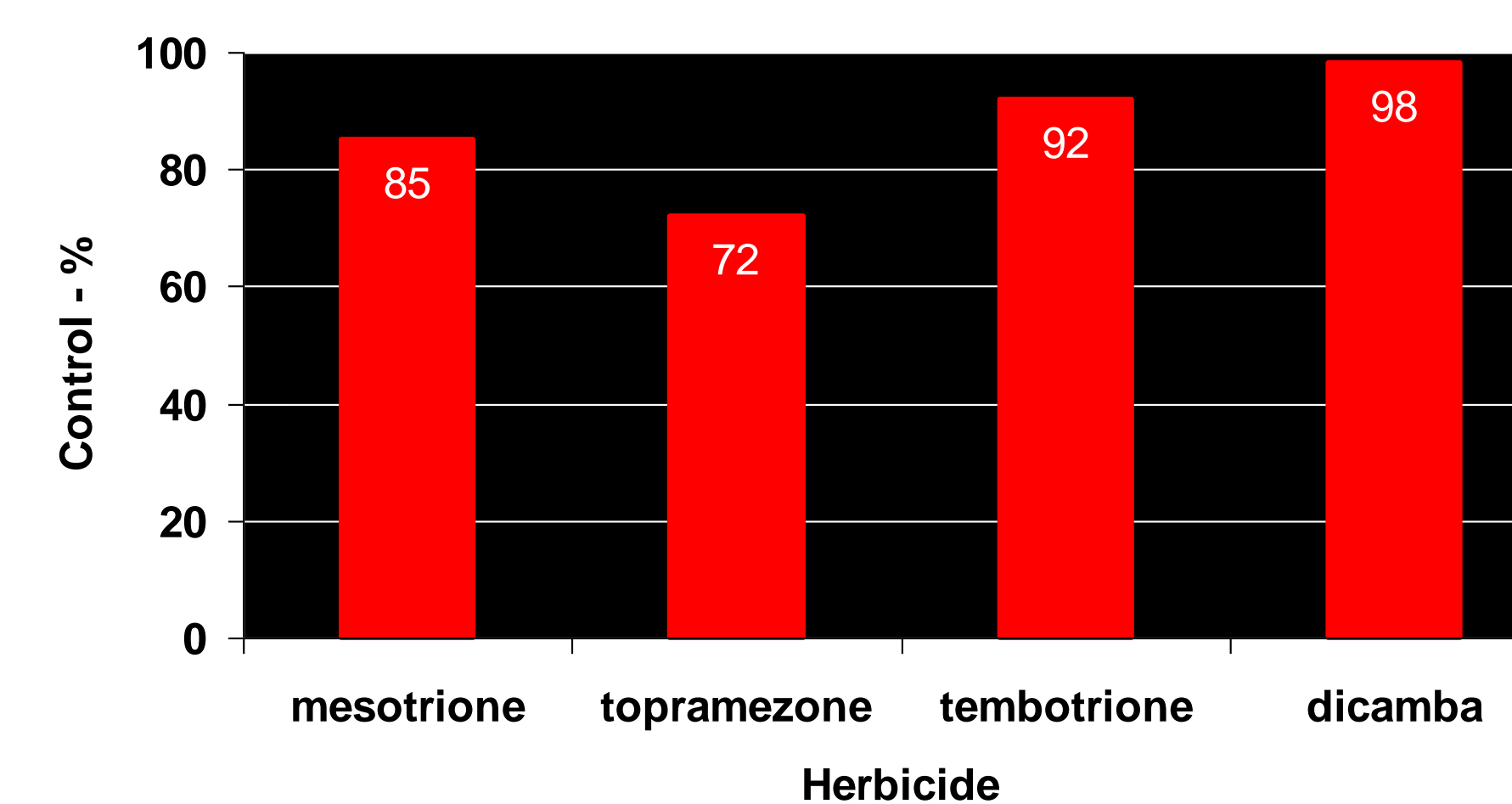
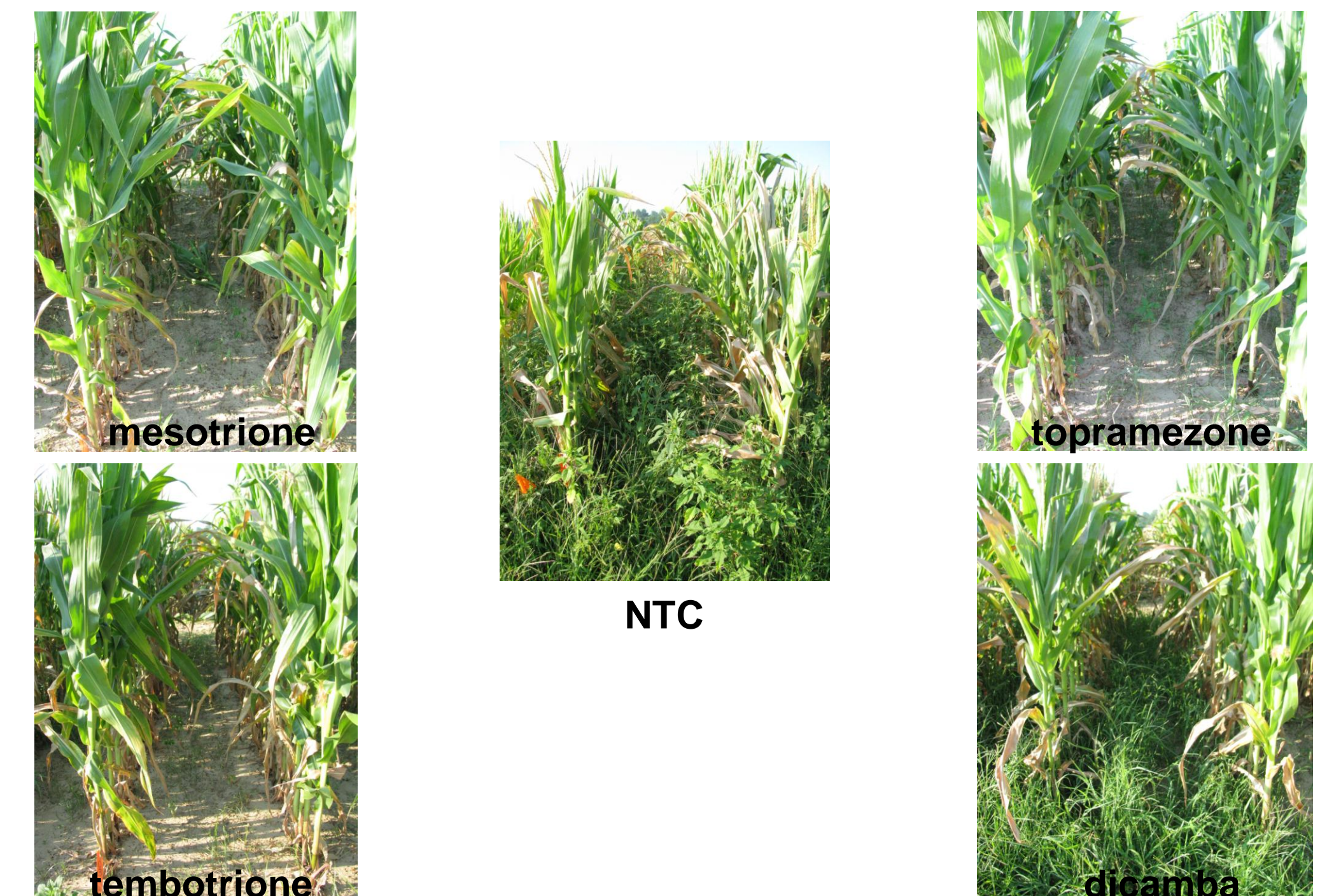


Figure 3. GR-Palmer amaranth control 47 days after treatment with mesotrione, topramezone, tembotrione, and dicamba + diflufenzopyr applied postemergence.



LSD 0.10 = 11

Figure 2. GR-Palmer amaranth control 45 days after treatment with mesotrione, topramezone, tembotrione, and dicamba + diflufenzopyr applied postemergence.



CONCLUSION

PRE applications of S-metolachlor or alachlor followed by timely POST applications of mesotrione, tembotrione, or dicamba + diflufenzopyr will be a very effective management program for the control of Palmer amaranth in corn fields with a history of glyphosate and/or atrazine resistance.