

Introduction

- Glyphosate-Resistant giant ragweed (*Ambrosia trifida* L.) is a problematic and difficult to control weed in corn and soybean (Johnson et al. 2006).
- Glyphosate-Resistant giant ragweed competitive due to its early emergence, rapid growth rate and greater genetic diversity.
- Currently, limited POST herbicide options are available for effective control of glyphosate-resistant giant ragweed; and glufosinate is an alternate POST herbicide option in glufosinate tolerant corn.
- The next generation of herbicide tolerant corn being build on Roundup Ready platform with additional herbicide tolerances including growth regulators (2, 4-D, dicamba) and glufosinate, will provide new tools for management of weeds including glyphosate-resistant giant ragweed.

Objective

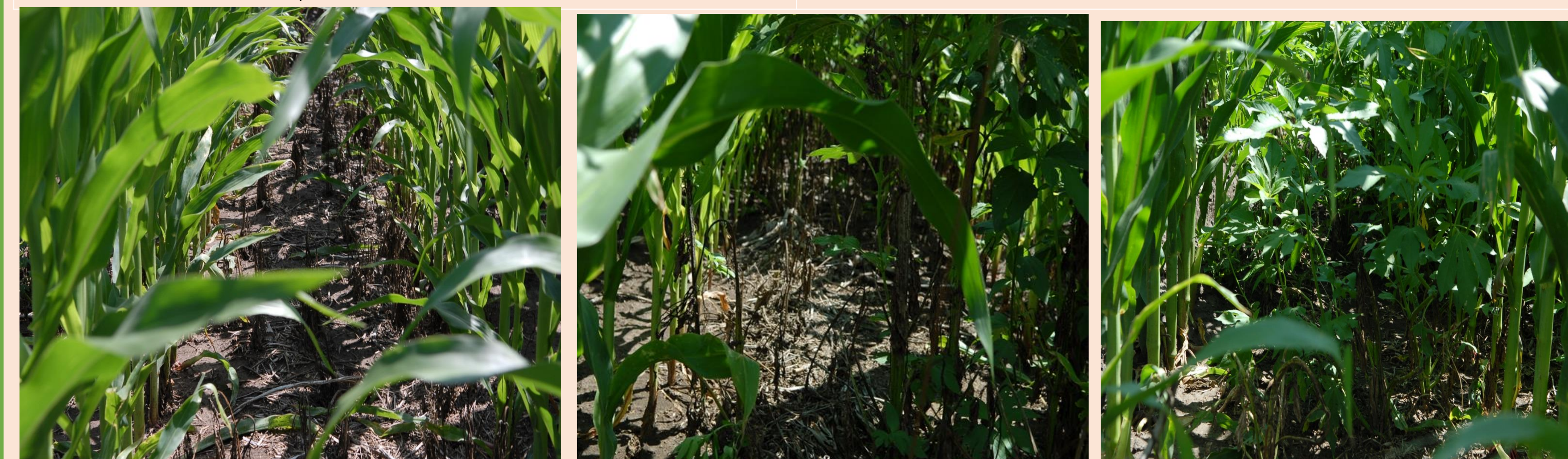
- To evaluate efficacy of tank-mixing growth regulator herbicides with glufosinate for control of glyphosate-resistant giant ragweed in glufosinate-resistant corn.

Materials and Methods

- Field experiment was conducted at Clay Centre (40.52° N, 98.05° W), NE in 2013 and at David City (41.25° N, 97.12° W), NE in 2014 in a grower's field infested with glyphosate-resistant giant ragweed.
- The treatments included POST application of glufosinate, 2,4-D, and dicamba alone and in tank-mixes at varying rates.
- The treatments were applied between 20-30 DAP and giant ragweed plants were <30 cm tall.
- The observations were recorded for visual weed control, weed density, weed biomass and yield.
- Data were subjected to ANOVA using PROC GLIMMIX procedure in SAS.

Table 1. Herbicide treatments and application rate

Herbicide treatment	Application rate (kg ae or ai ha ⁻¹)
Nontreated Control	
Glufosinate + Dicamba	0.59 + 0.28
Glufosinate	0.59
Dicamba	0.56
2,4-D	0.28
2,4-D	0.56
Glufosinate + 2,4-D	0.45 + 0.56
Dicamba + 2,4-D	0.28 + 0.14
Glufosinate + Dicamba + 2,4-D	0.59 + 0.56 + 0.14



Results and Discussion

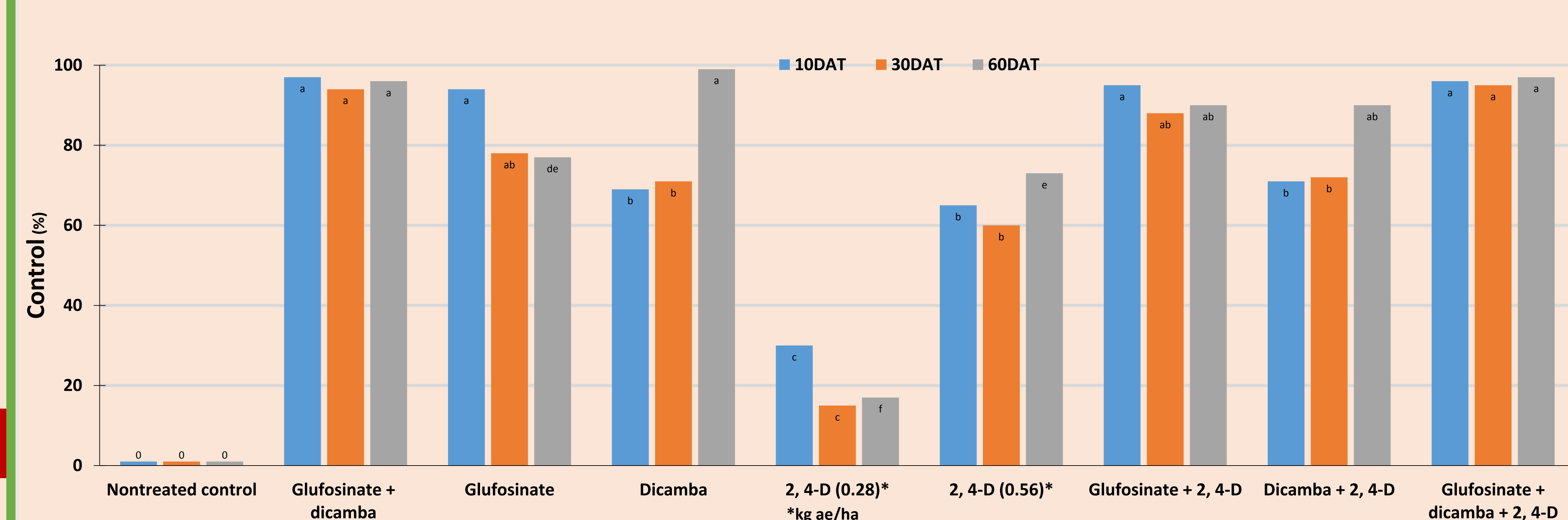


Fig. 1. Giant ragweed control at 10, 30 and 60 DAT

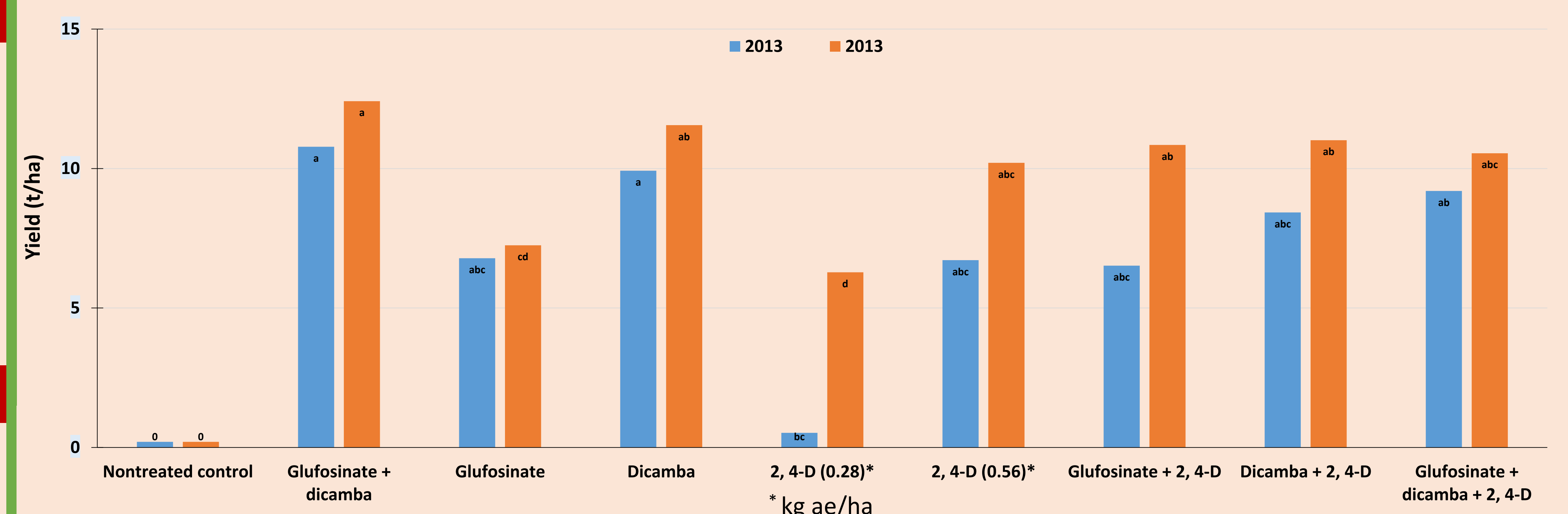


Fig. 2. Corn yield (t/ha)

- Glufosinate applied in tank-mix with 2,4-D and/ or dicamba provided $\geq 90\%$ control of glyphosate-resistant giant ragweed at 10 d after treatment (DAT) compared to dicamba (<70%) or 2,4-D (<66%) applied alone.
- Control of glyphosate-resistant giant ragweed was consistently $\geq 90\%$ with either two-way tank-mixture of glufosinate and dicamba or three-way tank-mixture of glufosinate, dicamba, and 2,4-D.
- Control of glyphosate-resistant giant ragweed with glufosinate was $\leq 84\%$ irrespective of application rate, whereas control improved with dicamba to $\geq 95\%$.
- Control of glyphosate-resistant giant ragweed with glufosinate and 2,4-D tank-mix at all rates was in the range of 81% to 90%, however 2,4-D alone provided an unacceptable control ($\leq 77\%$).
- All herbicide treatments reduced glyphosate-resistant giant ragweed density and –biomass compared to nontreated control, except 2,4-D at 0.28 kg ae ha⁻¹.

Conclusions

- All the tank-mixes, glufosinate + dicamba, glufosinate + 2,4-D, dicamba + 2,4-D and glufosinate + dicamba + 2,4-D provided better control of glyphosate-resistant giant ragweed ($\geq 87\%$) compared with alone applications of 2,4-D ($\leq 77\%$) and glufosinate ($\leq 84\%$ except at 10 DAT).
- Results suggested that efficacy of growth regulator herbicides for control of glyphosate-resistant giant ragweed enhanced when tank mixed with glufosinate compared to when applied alone.

Future Research

- Use of diverse management options such as preplant tillage and cover crops along with the herbicide mixtures are required for effective management of glyphosate-resistant giant ragweed.
- Integrated weed management options are urgently required for sustainable management of weeds including glyphosate-giant ragweed.

Literature Cited

- Johnson B, Loux MM, Nordby D, Sprague C, Nice G, Westhoven A, Stachler J (2006) Biology and Management of Giant Ragweed. West Lafayette, IN: Purdue Extension Publication GWC-12