

# Weed Management in Dicamba/Glufosinate-Tolerant Cotton

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## Introduction

The development of transgenic dicamba/glufosinate tolerant (DGT) cotton combined with glyphosate-tolerance could improve control of many problem annual and perennial weed species including horseweed, Russian thistle, kochia, morningglory, field bindweed, woollyleaf bursage and Texas blueweed compared to Roundup PowerMax (RUPM) applied alone. Emerging glyphosate-resistant Palmer amaranth populations could be effectively managed in DGT cotton. Field studies were conducted in 2010 and 2011 near Lubbock to evaluate Palmer amaranth control and crop tolerance in DGT cotton.

## Objectives

- Evaluate dicamba (Clarity) applied preemergence and postemergence alone or in combination with glufosinate (Ignite) or RUPM for Palmer amaranth control in DGT cotton.
- Compare Palmer amaranth control with Clarity-based treatments in DGT cotton to standard weed management programs.
- Determine crop response and lint yields in DGT cotton.

## Materials and methods

Applic. Timing	Treatment	Rate (oz/A)
PPI	Trifluralin	24
PRE	Cotoran, Clarity	32, 16
EPOST	Clarity, Ignite, RUPM	16, 29, 22
Delayed-EPOST	Clarity, Ignite, RUPM, Staple	16, 29, 22, 1.3
MPOST	Ignite, RUPM	29, 22
Layby	Direx+MSMA	32, 42
Application Timing	2010	2011
PPI	Apr 1	Apr 1
PRE	May 12	May 23
EPOST	Jun 4	Jun 10
Delayed-EPOST	Jun 14	Jun 21
MPOST	Jun 21	Jul 5
Layby	Jul 19	Jul 26

PPI = preplant incorporated; PRE = preemergence; EPOST = early-postemergence; MPOST = mid-postemergence

## Results-2010

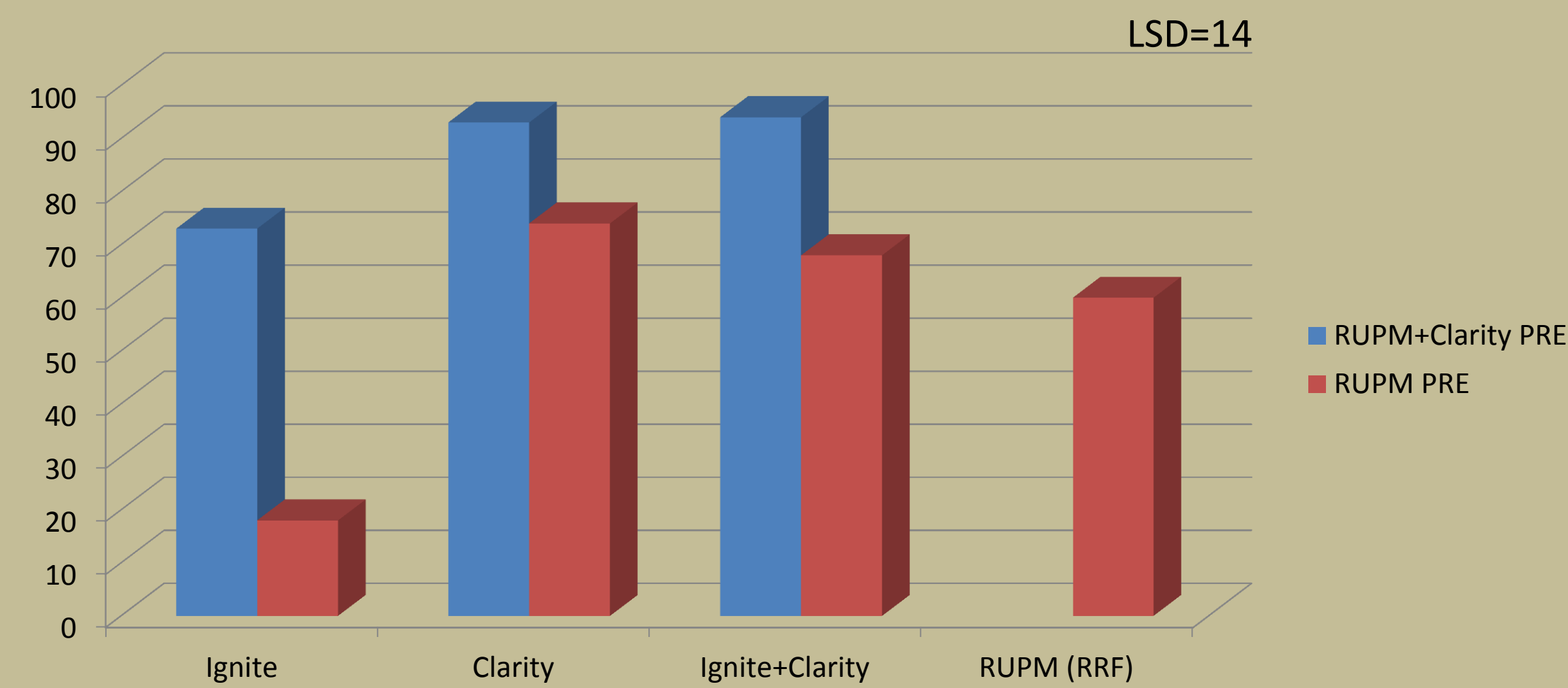


Fig. 1 Palmer amaranth control 14 days after EPOST treatment.

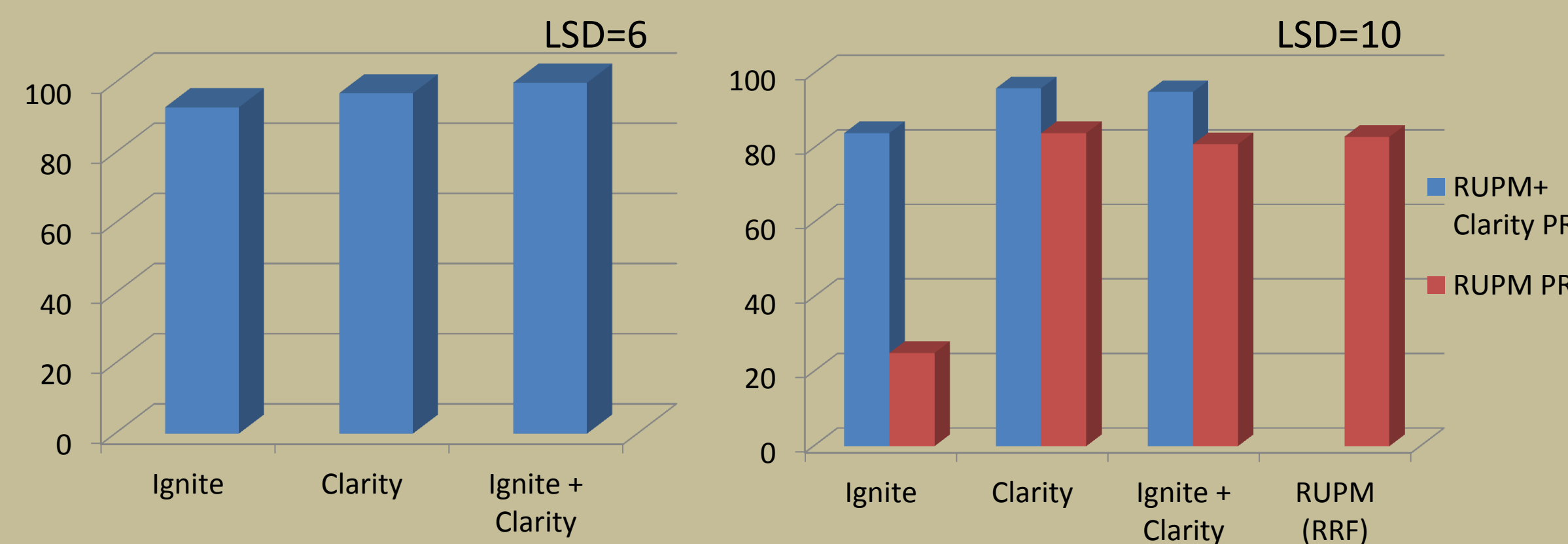


Fig. 2 Palmer amaranth control 14 days after D-EPOST following RUPM+Clarity PRE.

Fig. 3 Palmer amaranth control 14 days after MPOST treatments.

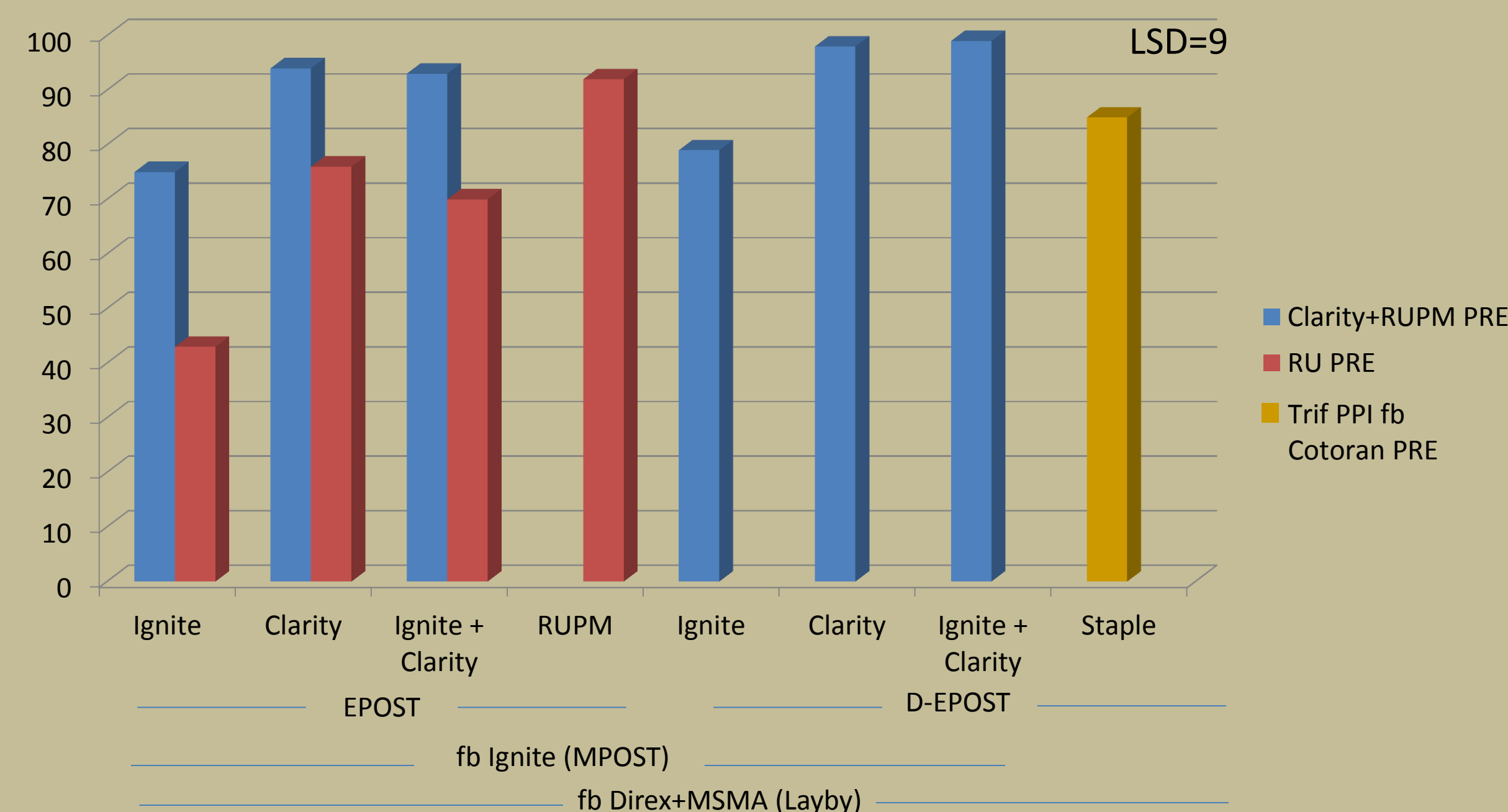


Fig. 4 End-of-season Palmer amaranth control as affected by PPI, PRE, POST, and Layby treatment combinations.



Palmer amaranth control 14 days after treatment following: A – Untreated; B – trifluralin PPI fb Cotoran PRE fb Staple D-EPOST; C – Clarity PRE fb RUPM+Clarity EPOST.

## Results-2011

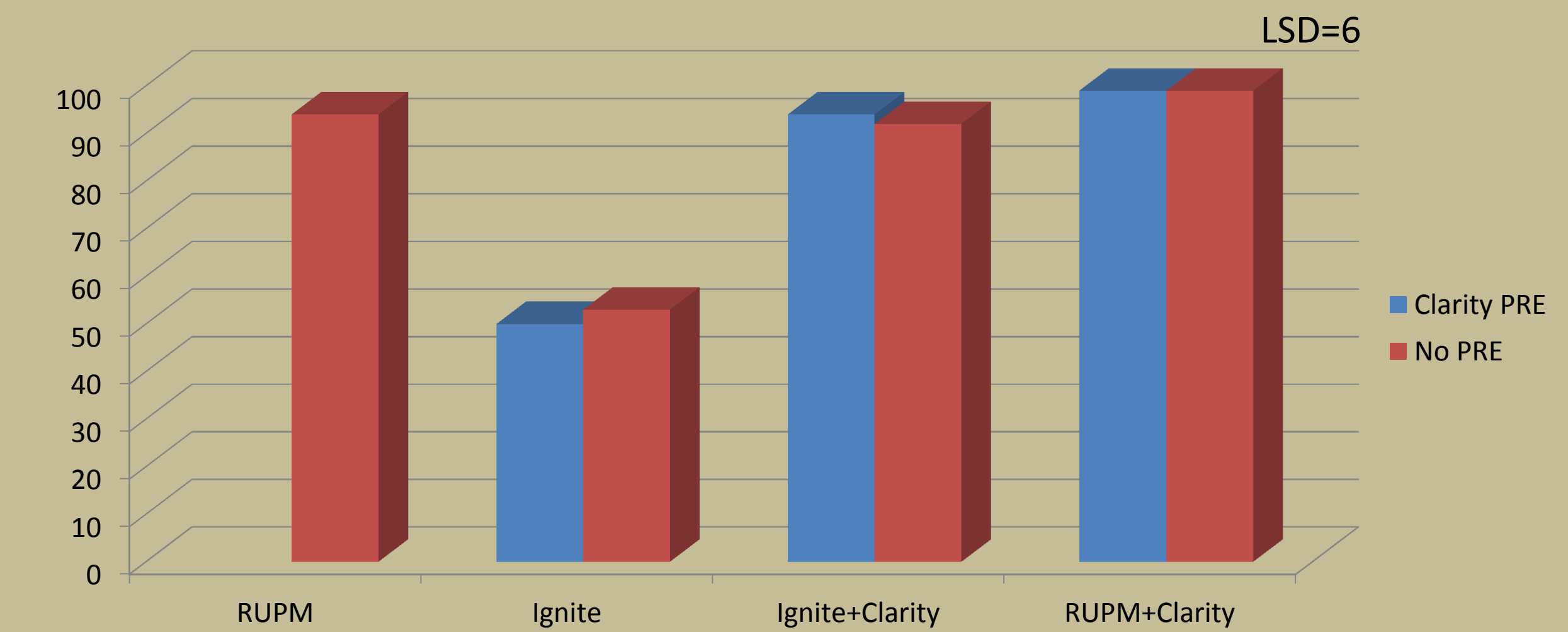


Fig. 5 Palmer amaranth control 14 days after EPOST treatment.

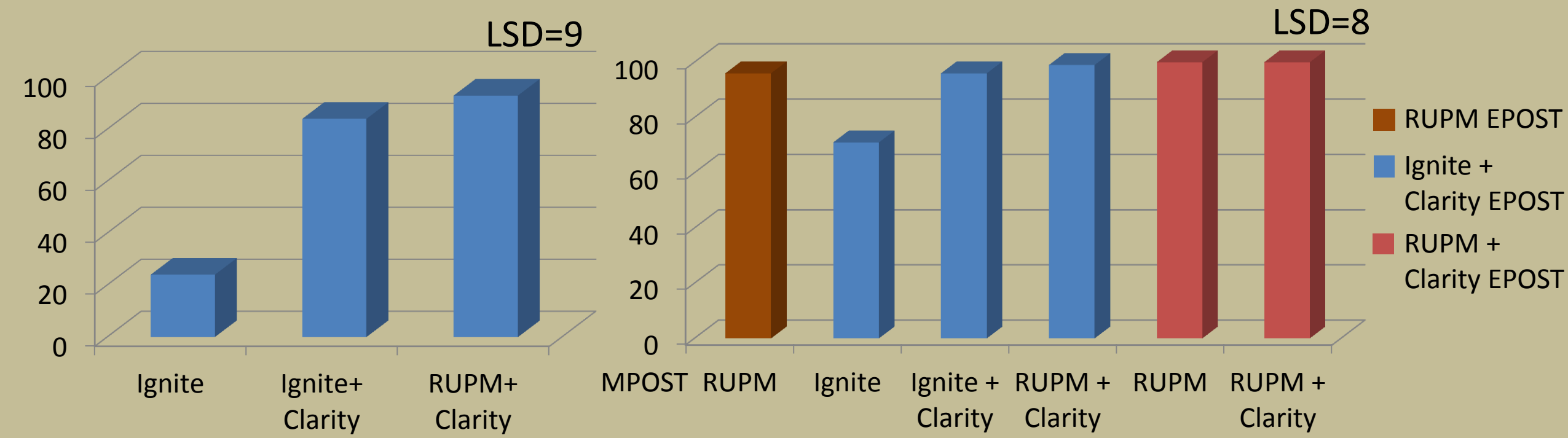


Fig. 6 Palmer amaranth control 14 days after D-EPOST following Clarity PRE.

Fig. 7 Palmer amaranth control 14 days after MPOST following EPOST treatments.

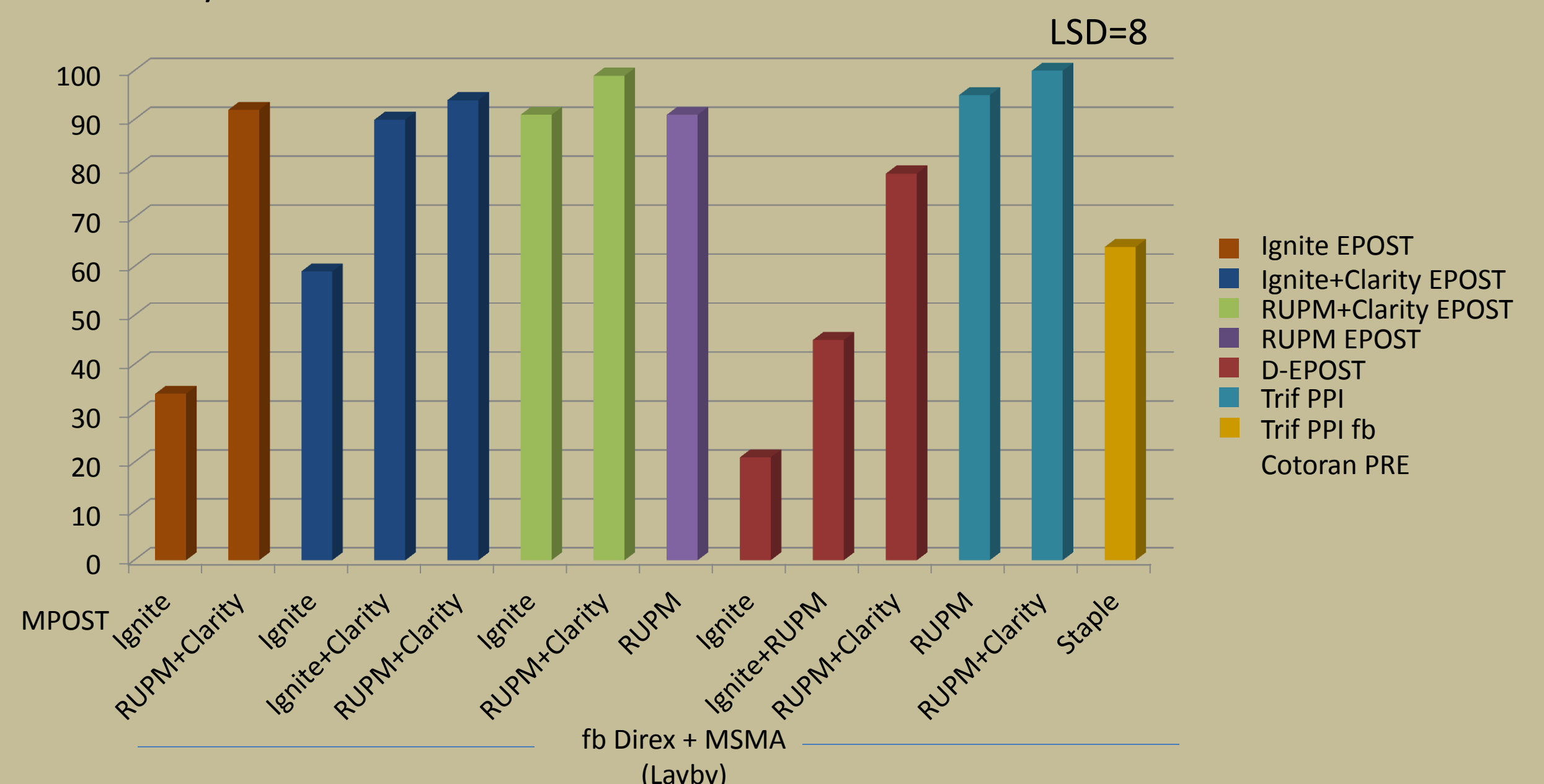


Fig. 8 End-of-season Palmer amaranth control as affected by PPI, PRE, POST, and Layby treatment combinations.

## Summary

- In 2010, Clarity PRE controlled Palmer amaranth for 21 to 28 days after planting.
- Following Clarity PRE, Clarity or Ignite+Clarity EPOST controlled Palmer amaranth >90%. Without Clarity PRE, Palmer amaranth control ranged from 68 to 74%.
- Ignite, Clarity, or Ignite+Clarity applied at delayed EPOST timings controlled Palmer amaranth 93 to 100% following Clarity PRE.
- Clarity or Ignite+Clarity controlled Palmer amaranth 95 to 96% following Clarity PRE and 83 to 84% without Clarity PRE following Ignite MPOST.
- Treatments that controlled Palmer amaranth >90% season-long included Clarity or Ignite+Clarity. When Clarity was applied PRE, control was similar when treatments were applied either EPOST or delayed EPOST. Sequential RUPM applications provided similar control.
- In 2011, due to lack of activating rainfall, little to no activity was observed with Clarity PRE.
- RUPM, Ignite+Clarity or RUPM+Clarity EPOST controlled Palmer amaranth 92 to 96%.
- Ignite+Clarity or RUPM+Clarity applied delayed-EPOST controlled Palmer amaranth >90%.
- Ignite+Clarity, RUPM+Clarity, or RUPM applied MPOST controlled Palmer amaranth >90%.
- RUPM+Clarity, Ignite+Clarity and RUPM followed by Direx+MSMA layby controlled Palmer amaranth >90% season-long.
- In either year, no cotton injury from any herbicide treatment was observed; these results indicate that Clarity and Ignite can be safely and effectively used in DGT cotton.