

Introduction

Few herbicides are available that can be used for preemergence (PRE) control of broadleaf weeds in sorghum. Troublesome weeds in sorghum include Russian thistle (*Salsola iberica*) and kochia (*Kochia scoparia*) prior to planting and Palmer amaranth (*Amaranthus palmeri*) in-season. Saflufenacil (Sharpen™), a new herbicide under development by BASF, is a protoporphyrinogen IX oxidase (PPO) inhibitor and belongs to the pyrimidinedione class of herbicides. Studies were conducted at Lubbock, Lamesa, and Halfway in 2008 and 2009.

Objectives

- 1) compare early preplant (EPP) burndown control of kochia and Russian thistle with saflufenacil (Sharpen™) or Roundup PowerMax
- 2) evaluate Palmer amaranth control with Sharpen and saflufenacil + dimethenamid (Integrity™)
- 3) evaluate sorghum tolerance on an Amarillo fine sandy loam and Pullman clay loam soils

Materials and Methods

Design: Randomized complete block with 4 replications

Plot Size: 4 rows by 30 feet

Application Equipment: CO₂ pressurized backpack sprayer

Spray Volume: 10 gallons/A

Sorghum Varieties: Pioneer 85G01, Dekalb 44-20

Weed Size: Russian thistle: 2 to 5 inches
kochia: 2 to 3 inches

Application Dates: EPP: May 2, 2008; May 1, 2009
PRE: May 13, 2008; May 14, 2009
Halfway
May 14, 2008; May 21, 2009
Lamesa
May 21, 2008; May 22, 2009

Planting Date: Halfway
May 14, 2008; May 21, 2009
Lamesa
May 21, 2008; May 21, 2009

Harvest Date: Halfway
September 23, 2008; September 25, 2009
Lamesa
September 30, 2008; September 3, 2009

Treatments:
Preplant Burndown
Sharpen (0.02, 0.07 lb ai/A)
Roundup PowerMax (0.75 lb ae/A)

Preemergence
Integrity (0.65, 0.78 lb ai/A)
Sharpen (0.06, 0.07, 0.08 lb ai/A)
Atrazine (+ Sharpen at 0.07, 0.08 lb ai/A)
Outlook (0.59, 0.7 lb ai/A)

Sorghum Tolerance Lamesa
Sharpen (0.03, 0.06, 0.12 lb ai/A)
Integrity (0.28, 0.57, 1.13 lb ai/A)

Sorghum tolerance Halfway
Sharpen (0.04, 0.09, 0.18 lb ai/A)
Integrity (0.44, 0.87, 1.74 lb ai/A)

Results

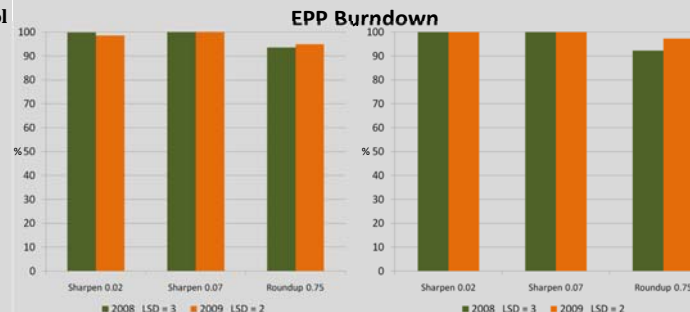


Figure 1. Kochia control EPP

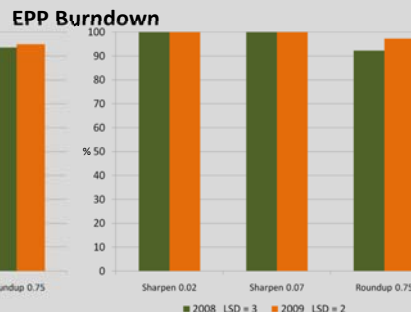


Figure 2. Russian thistle control EPP

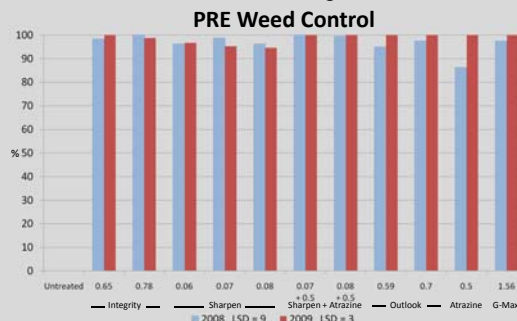


Figure 3. Palmer amaranth control PRE

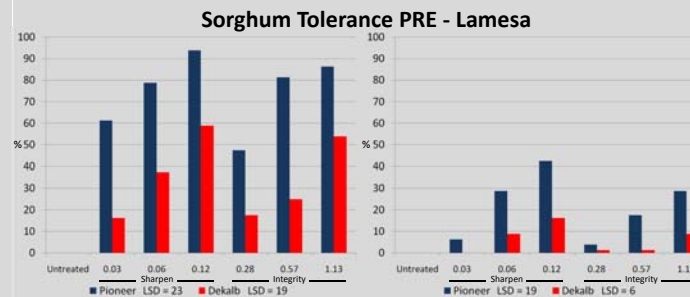


Figure 4. Sorghum injury in 2008

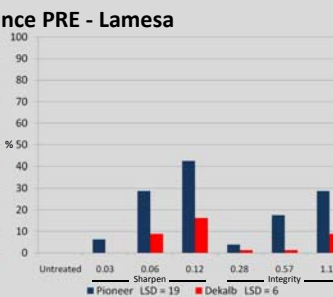


Figure 5. Sorghum injury in 2009

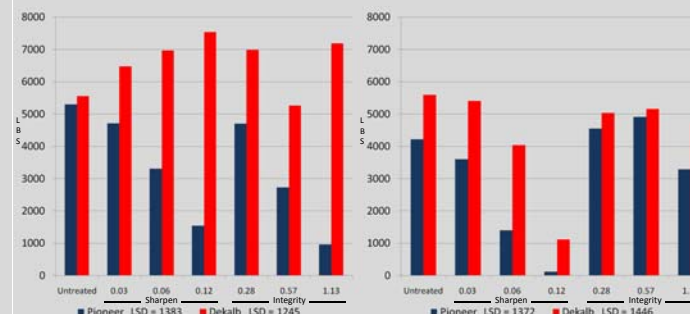


Figure 6. Sorghum yield in 2008

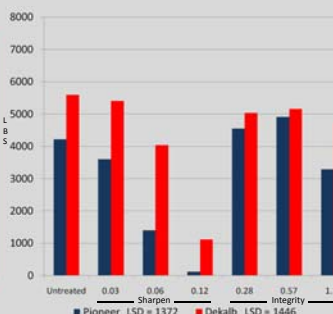


Figure 7. Sorghum yield in 2009

Sorghum Tolerance PRE - Halfway

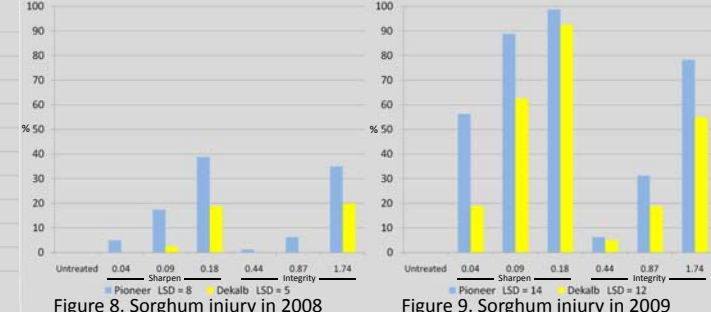


Figure 8. Sorghum injury in 2008

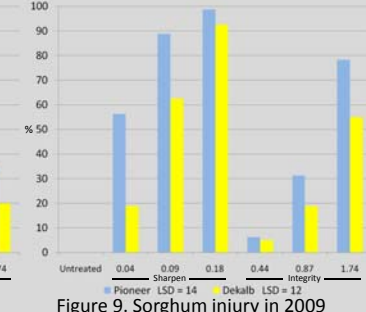


Figure 9. Sorghum injury in 2009

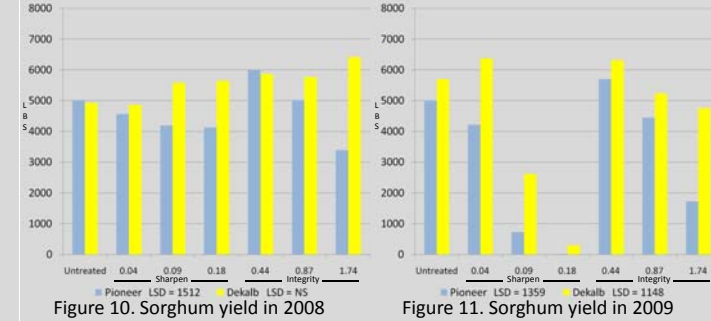


Figure 10. Sorghum yield in 2008

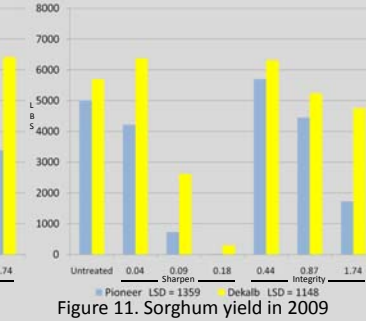


Figure 11. Sorghum yield in 2009



A.) Russian thistle and kochia control with Sharpen



B.) Palmer amaranth control with Sharpen

Summary

- Sharpen applied 14 days before planting controlled kochia and Russian thistle 99 to 100% compared to 90 to 95% control with glyphosate
- When applied PRE, Sharpen controlled Palmer amaranth 96 to 100%
- Sorghum injury was observed at both locations in both years with Sharpen PRE with increased injury with increased rates and differential response with two sorghum hybrids.

Conclusions

Sharpen offers potential to control weeds both preplant and in-season in sorghum. However, potential for sorghum injury exists with PRE applications. Further research is needed to identify hybrid susceptibility and define optimum use rates in sorghum.

Kochia control EPP 2008 and 2009



Russian thistle control EPP 2008 and 2009



Lamesa sorghum injury 2008



Lamesa sorghum injury 2009

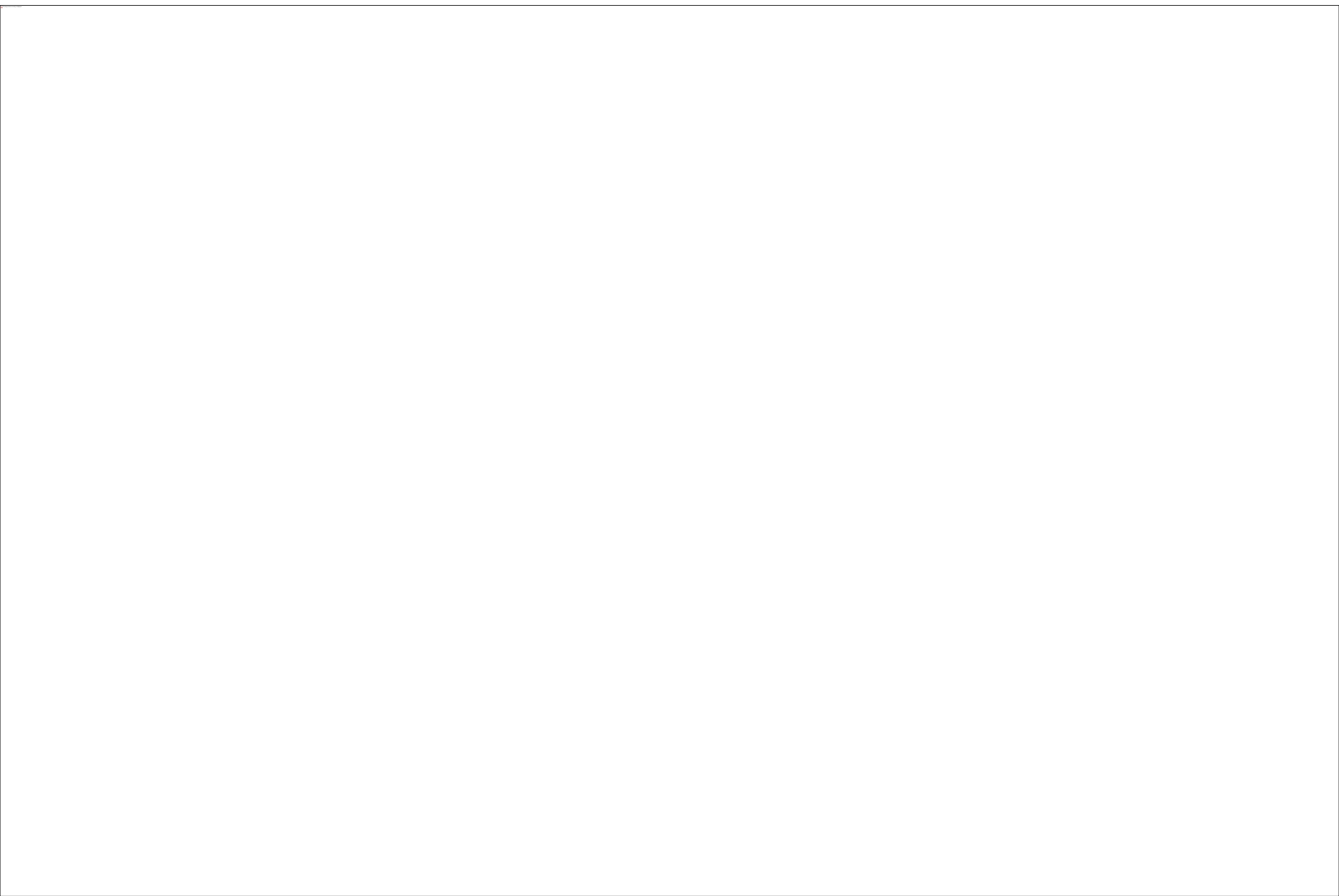
Halfway sorghum injury 2008



Halfway sorghum injury 2009



Lamesa sorghum yield 2008



Lamesa sorghum yield 2009



Halfway sorghum yield 2008



Halfway sorghum yield 2008



Palmer amaranth control 2008 and 2009

