

Cotton Tolerance and Weed Management with Sharpen

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Introduction

Sharpen (saflufenacil) is a new protoporphyrinogen-IX-oxidase (PPO) inhibitor herbicide that was registered in 2009 for use in corn, soybeans, sorghum and cotton. Field studies were conducted to evaluate cotton tolerance and preplant and in-season weed control with Sharpen. Weeds evaluated included Russian thistle (*Salsola iberica*), kochia (*Kochia scoparia*), woollyleaf bursage (*Ambrosia grayii*), Texas blueweed (*Helianthus ciliaris*), field bindweed (*Convolvulus arvensis*), and ivyleaf morningglory (*Ipomoea hederacea*).

Objectives

- Evaluate Sharpen applied preplant for control of problem annual and perennial weeds.
- Evaluate Sharpen applied postemergence for volunteer cotton and ivyleaf morningglory control.
- Determine cotton tolerance to Sharpen applied 42 days before planting

Materials and Methods

Design: RCBD with 3 replications
Plot Size: 4 rows x 30 feet
Application Equipment: CO₂ backpack sprayer
Spray Volume: 10 GPA

Treatments

| | product rate/A |
|--|----------------|
| Preplant Burndown | |
| Sharpen | 1 - 6 oz |
| Roundup | 22, 32 oz |
| Postemergence | |
| Sharpen | 0.75 - 2 oz |
| Sharpen* | 0.75 oz |
| Caparol* | 38.4 oz |
| Direx* | 32 oz |
| Roundup | 22 oz |
| *applied in combination with glyphosate at 22 oz/A | |
| Cotton Tolerance | |
| Sharpen | 0.75 - 2 oz |



Results

Preplant Burndown

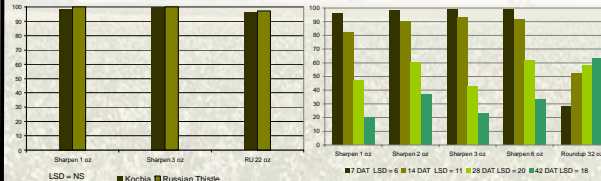


Fig. 1: Kochia and Russian thistle control (%) with Sharpen 14 days after treatment (DAT).

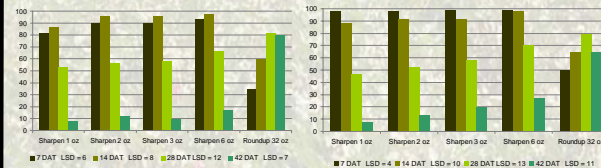


Fig. 2: Texas blueweed control (%) with Sharpen evaluated 7, 14, 28, and 42 DAT.

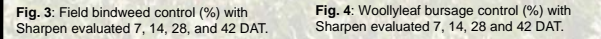


Fig. 3: Field bindweed control (%) with Sharpen evaluated 7, 14, 28, and 42 DAT.



Fig. 4: Woollyleaf bursage control (%) with Sharpen evaluated 7, 14, 28 and 42 DAT.

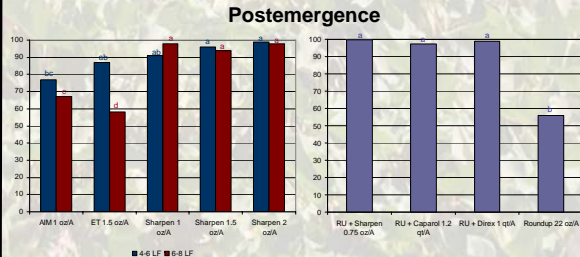


Fig. 5: Volunteer cotton control (%) with Sharpen applied at two growth stages.

Postemergence

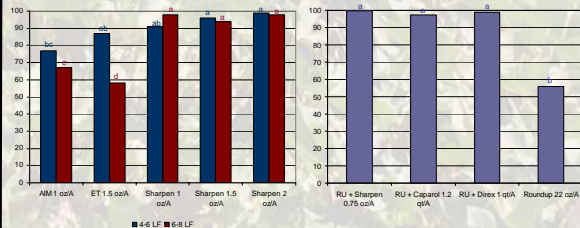


Fig. 6: Ivyleaf morningglory control (%) 14 DAT.

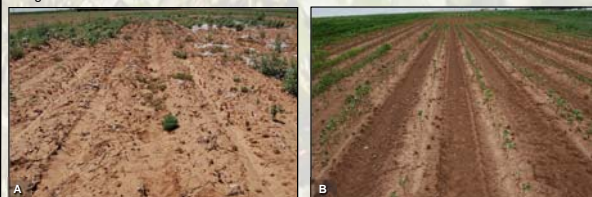


Fig. 7: Cotton injury with Sharpen applied 42 DBP.

Cotton Tolerance

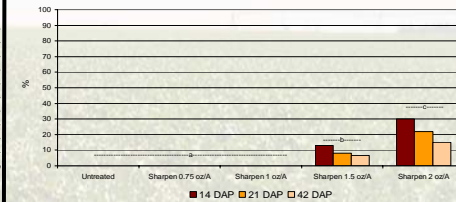


Fig. 7: Cotton injury with Sharpen applied 42 DBP.



Fig. 8: Cotton population as affected by Sharpen applied 42 DBP.

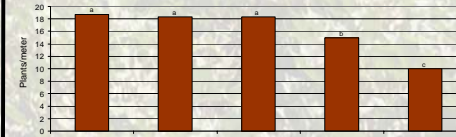


Fig. 8: Cotton population as affected by Sharpen applied 42 DBP.

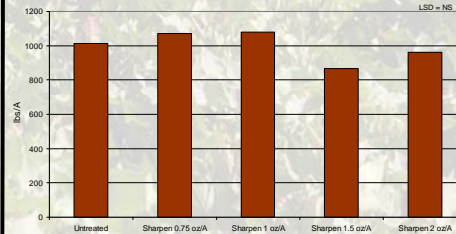


Fig. 9: Cotton lint yields as affected by Sharpen applied 42 DBP.

Summary

- Sharpen controlled kochia and Russian thistle greater than 98% at 1 oz/A.
- Sharpen controlled field bindweed, woollyleaf bursage, and Texas blueweed 80-95% at 7-14 DAT. At 28-42 DAT, control declined to <30%.
- Sharpen controlled volunteer cotton >90% applied to 4-6 or 6-8 leaf cotton.
- When combined with glyphosate, similar morningglory control was achieved with Sharpen, Caparol, or Direx.
- When applied 42 DBP, Sharpen at 0.75 or 1.0 oz/A did not injure cotton, reduce stands, or affect yield. Higher rates injured cotton and reduced stands, but did not reduce lint yield.