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
Preplant Burndown
<table>
<thead>
<tr>
<th>product rate/A</th>
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<tbody>
<tr>
<td>Sharpen</td>
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<td>Roundup</td>
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Postemergence
<table>
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<th>product rate/A</th>
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<tbody>
<tr>
<td>Sharpen</td>
</tr>
<tr>
<td>Sharpen*</td>
</tr>
<tr>
<td>Caparol*</td>
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<tr>
<td>Direx*</td>
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<td>Roundup</td>
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*applied in combination with glyphosate at 22 oz/A

Cotton Tolerance
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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: Ivyleaf morningglory control (%) 14 DAT.

Postemergence

Fig. 6: Volunteer glyphosate-resistant cotton control (%) with Sharpen applied at two growth stages.

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.

Fig. 7: Cotton injury with Sharpen applied 42 DBP.
Fig. 8: Cotton population as affect by Sharpen applied 42 DBP.
Fig. 9: Cotton lint yields as affected by Sharpen applied 42 DBP.