

COTTON TOLERANCE AND WEED MANAGEMENT WITH SHARPEN

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Abstract

Sharpen (saflufenacil) is a new protoporphyrinogen-IX-oxidase (PPO) inhibitor herbicide developed by BASF that was registered in 2009 for use in corn, soybeans, sorghum and cotton. Field studies were conducted in 2009 to 1) evaluate Sharpen applied postemergence (POST) prior to planting for control of several troublesome annual and perennial weeds, 2) evaluate Sharpen applied postemergence for volunteer glyphosate-resistant cotton and ivyleaf morningglory control, and 3) determine cotton tolerance to Sharpen applied 42 days before planting.

In all trials treatments were arranged in a randomized complete block design with three replications. Treatments were made with a backpack CO₂ sprayer calibrated to deliver 10 GPA. Crop oil concentrate or methylated seed oil were added at 1% v/v to all treatments. Annual weeds evaluated in the preplant burndown trials included Russian thistle (*Salsola iberica*), and kochia (*Kochia scoparia*). Perennial weeds included woollyleaf bursage (*Ambrosia grayii*), Texas blueweed (*Helianthus ciliaris*), and field bindweed (*Convolvulus arvensis*). Sharpen was applied POST to kochia and Russian thistle at 1 and 3 oz/A and compared to Roundup PowerMax at 22 oz/A. Visual control ratings were made 7 and 14 days after treatment (DAT). Sharpen was applied POST at 1, 2, 3, and 6 oz/A and compared to Roundup PowerMax at 32 oz/A for the three perennial weeds. Visual control ratings were made 7, 14, 28 and 42 DAT. In the volunteer glyphosate-resistant cotton trial, Sharpen at 1-2 oz was compared to Aim (1 oz/A) and ET (1.5 oz/A) applied at the 4-6 and 6-8 leaf growth stages. POST ivyleaf morningglory (*Ipomoea hederacea*) control with Sharpen (0.75 oz/A), Caparol (1.2 qt/A) and Direx (1 qt/A) tank-mixed with Roundup PowerMax (22 oz/A) was compared Roundup PowerMax (22 oz/A) alone. Cotton tolerance to Sharpen applied at 0.75-2 oz/A 42 days before planting (DBP) was evaluated for cotton injury, stand loss, and lint yield.

Sharpen controlled kochia and Russian thistle >98% at 1 oz/A. Sharpen at 1 oz/A also controlled field bindweed, woollyleaf bursage, and Texas blueweed 80-95% at 7 and 14 DAT. At 42 DAT, control declined to <30%. Sharpen controlled volunteer glyphosate-resistant cotton >90% when applied at either the 4-6 or 6-8 leaf stage. Ivyleaf morningglory control was similar with Sharpen, Caparol, or Direx applied in combination with glyphosate. When applied 42 DBP, Sharpen at 0.75 or 1.0 oz/A did not injure cotton, reduce stands, or affect yield. Sharpen at 1.5 oz/A or 2 oz/A injured cotton and reduced stands, but did not significantly reduce lint yield.