

HORSEWEED CONTROL IN OKLAHOMA COTTON

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Abstract

The widespread adoption of no-till cotton production (typically relying upon glyphosate based weed control programs) has magnified the frequency of difficulty producers experience when trying to chemically control horseweed. The lack of both pre-season and in-season tillage requires producers to primarily depend on hormone-type herbicides (2,4-D or dicamba) for effective control of horseweed due to the in-effectiveness of glyphosate applied alone. Unfortunately, horseweed control programs including either 2,4-D or dicamba must be initiated several days before planting in order to avoid potential carryover issues. Often times, new horseweed may re-emerge in this period prior to planting. In order to achieve effective long-term, pre-plant control of horseweed, 2,4-D or dicamba must be tank-mixed with products providing effective residual control of horseweed without the potential for carryover or injury to newly planted cotton. There are currently very few chemical options that fit these criteria. Sharpen (saflufenacil) is a new product introduced by BASF which has the potential to provide both burn-down (post-emergence) as well as residual activity on horseweed. In addition, saflufenacil also belongs to a class of chemistry (pyrimidinediones) which currently has no documented cases of chemical resistance. Two replicated experiments were conducted in the spring of 2009 in order to explore the effectiveness of this product on horseweed when tank-mixed with either glyphosate, 2,4-D or dicamba. The objective was to compare current horseweed control programs to programs including Sharpen (saflufenacil) herbicide applied prior to planting in no-till cotton production.

Field studies were conducted in 2009 in both Jackson and Tillman counties in order to evaluate the effectiveness of Sharpen (saflufenacil) herbicide for the control of horseweed in no-till cotton. Treatments were arranged in a randomized complete block design with four replications on clay loam soils. Broadcast over-the-top herbicide applications were made with a compressed air, high-clearance, sprayer applying 15 gallons of water per acre at 4 mph. Six treatments were applied on March 26th, 2009 (42 days before planting) at the Jackson county location. The horseweed was still in the rosette stage at the time of application. Five treatments were applied on April 2nd, 2009 at the Tillman county location. The horseweed had already begun to bolt and was 2-5 inches in height at application timing. The treatments for each location are listed below.

Jackson County Location

1. Glystar Original + NIS	32 oz/A + 0.25% v/v
2. Glystar Original + 2,4-D + NIS	32 oz/A + 8 oz/A + 0.25% v/v
3. Glystar Original + Sharpen + MSO	32 oz/A + 1 oz/A + 1% v/v
4. Glystar Original + Sharpen + 2,4-D + MSO	32 oz/A + 1 oz/A + 8 oz/A + 1% v/v
5. Glystar Original + Clarity + NIS	32 oz/A + 8 oz/A + 0.25% v/v
6. Glystar Original + Clarity + Sharpen + MSO	32 oz/A + 8 oz/A + 1 oz/A + 1% v/v

Tillman County Location

1. Glystar Original + Clarity + NIS	32 oz/A + 8 oz/A + 0.25% v/v
2. Glystar Original + Clarity + Valor	32 oz/A + 8 oz/A + 2 oz/A + 0.25% v/v
3. Glystar Original + Clarity + Sharpen + MSO	32 oz/A + 8 oz/A + 1 oz/A + 1% v/v
4. Glystar Original + 2,4-D + Valor + NIS	32 oz/A + 21 oz/A + 2 oz/A + 0.25% v/v
5. Glystar Original + 2,4-D + Sharpen + MSO	32 oz/A + 21 oz/A + 1 oz/A + 1 % v/v

Horseweed control evaluations were taken at 7, 14 & 28 days after treatment at each location. At the Jackson county location 7 days after treatment (DAT) only treatments including Sharpen (Saflufenacil) provided acceptable control (>75%). However by 28 DAT treatment 2 (Glystar Original + 2,4-D) and treatment 5 (Glystar Original + Clarity) controlled horseweed 86-90%, while treatments including Sharpen controlled horseweed 100%. Treatment 1 (Glystar Original alone) provided less than 30% control 7 DAT and less than 50% control 28 DAT. At the Tillman county location 7 DAT, only treatments including Sharpen controlled horseweed 70-78%. All other treatments observed 7 DAT controlled horseweed $\leq$ 62%. By 28 DAT treatments including Sharpen controlled horseweed 98-100%. The remaining treatments which included Glyphosate with either 2,4-D or Clarity with or without Valor controlled horseweed 78-82%. Although Sharpen (saflufenacil) does have the potential for residual control of horseweed, neither location had a post-application flush of new horseweed after the initial application dates. Therefore residual control of horseweed from either Valor or Sharpen was not observed in 2009. At both locations, good uniform stands of cotton were established with no signs or symptoms of herbicide carryover (stunting, malformation, discoloration, etc.) from either Valor or Sharpen. Further studies will be conducted in 2010 to compare residual control provided by Sharpen to that of Valor and to revisit the burn-down properties of Sharpen on horseweed in Oklahoma.