

## **Preplant Burndown, Weed Management and Cotton Response to Saflufenacil**

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### **Abstract**

Saflufenacil (Sharpen™) is currently registered as a preplant burndown treatment prior to cotton planting and during the fallow period following harvest. Previous studies have shown saflufenacil can effectively control kochia (*Kochia scoparia*), Russian thistle (*Salsola iberica*) and horseweed (*Conyza canadensis*) when applied as a preplant burndown (PPBD) and Palmer amaranth (*Amaranthus palmeri*), morningglory (*Ipomoea spp.*), and volunteer cotton (*Gossypium hirsutum*) when post-directed (PDIR). There are concerns that saflufenacil injury to cotton can occur when organophosphate or carbamate insecticides are applied in-furrow at planting. Studies were conducted in 2010 near Lubbock, TX to 1) evaluate saflufenacil in combination with other herbicides for PPBD weed control, 2) compare saflufenacil PPBD application rates and dates and combinations with in-furrow insecticides for effects on stand establishment and cotton growth, and 3) determine weed efficacy and crop response to saflufenacil applied PPBD or PDIR.

In all trials, treatments were arranged in a randomized complete block design with three replications. Treatments were applied with a backpack CO<sub>2</sub> sprayer calibrated to deliver 10 GPA. Dry ammonium sulfate and methylated seed oil (1%) were added to all saflufenacil treatments. Annual weeds evaluated in the PPBD trial included Russian thistle and kochia. Saflufenacil was applied alone at 1 and 2 oz/A, as well as 1 oz saflufenacil tank-mixed with glyphosate, dicamba, or 2,4-D 42 days before planting (DBP). Cotton planted in these plots received an in-furrow seed treatment of aldicarb or phorate at planting and was compared to no in-furrow treatment. To evaluate cotton crop response to various saflufenacil rates and timings, saflufenacil was applied 42, 28, and 14 DBP at 1 and 2 oz/A at two locations. Visual injury was estimated at two timings after planting. Cotton injury was also evaluated for saflufenacil applied at 1 and 2 oz/A in a normal PDIR manner and with the hoods raised slightly to simulate a “sloppy” PDIR treatment.

Saflufenacil applied 42 DBP controlled kochia and Russian thistle 95-100%. The addition of 2,4-D, dicamba, or glyphosate was not needed to achieve effective control. No cotton injury was observed when saflufenacil was applied 42 DBP at 1 oz/A, but injury (27-32%) was observed when saflufenacil was applied at 2 oz/A at this timing. Saflufenacil applied at 1 oz/A 14 or 28 DBP injured cotton 30-38%. The use of in-furrow insecticides at planting did not affect cotton response to saflufenacil applied 42 DBP. Saflufenacil applied PDIR controlled volunteer glyphosate-tolerant cotton 92-95% with no injury to planted cotton when applied at 1 oz/A. Slight injury (5-10%) was observed with “sloppy” PDIR treatments, with increased injury at the 2 oz rate.