Preplant Burndown and In-Season Sharpen Use in Cotton

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Abstract

Sharpen (saflufenacil) is currently registered as a preplant burndown treatment prior to cotton planting and during the fallow period following harvest. Previous studies have shown Sharpen 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 Sharpen 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 Sharpen in combination with other herbicides for PPBD weed control, 2) compare Sharpen 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 Sharpen applied PPBD and PDIR.

In all trials, treatments were arranged in a randomized complete block design with three replications. Treatments were made with a backpack CO_2 sprayer calibrated to deliver 10 GPA. Appropriate adjuvants such as crop oil concentrate, methylated seed oil, or a non-ionic surfactant were added to each treatment. Annual weeds evaluated in the PPBD trial included Russian thistle, and kochia. Sharpen was applied alone at 1 and 2 oz/A, as well as 1 oz Sharpen tank-mixed with Roundup PowerMax, Clarity, or 2,4-D 42 days before planting (DBP). Cotton planted in these plots received an in-furrow seed treatment of Temik (3.5 lb/A) or Thimet (5.0 lb/A) and was compared to no in-furrow treatment. To evaluate cotton crop response to various Sharpen rates and timings, Sharpen was applied 42, 28, and 14 DBP at 1 and 2 oz/A at two locations. Visual injury was determined at two timings after planting. To determine efficacy of PDIR applications on volunteer glyphosate-tolerant cotton, Sharpen applied at 1 oz/A was compared to Aim applied at 1 oz/A, ET at 1.5 oz/A, Gramoxone Inteon at 32 oz/A and cultivation. Cotton injury was also evaluated for Sharpen applied at 1 and 2 oz/A in a normal PDIR manner and with the hoods raised slightly to simulate a “sloppy” PDIR treatment.

Sharpen 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 Sharpen was applied 42 DBP at 1 oz/A. Injury (27-32%) was observed when Sharpen was applied at 2 oz/A at this timing. Sharpen 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 Sharpen applied 42 DBP. Sharpen applied PDIR controlled volunteer glyphosate-tolerant cotton 92-95% with no injury to planted cotton when applied at 1 oz/A.