

UTILITY OF ENVOKE IN COTTON WEED CONTROL PROGRAMS
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Abstract

The introduction of transgenic crops followed by glyphosate applications has provided adequate weed control in early-season in cotton; however, there is a cotton size limitation with applying glyphosate POST while providing no residual activity. The introduction of Envoke (trifloxysulfuron sodium) and its recent labeling should provide not only early-season POST weed control but also provide residual activity. Weed control should be further enhanced when Envoke is mixed with other herbicides labeled for cotton. The use of several chemistries in cotton weed control should provide broad spectrum weed control while reducing the possibility of weed resistance.

Field studies were conducted in 2003 at Alexandria and St. Joseph, La., to evaluate the efficacy and cotton tolerance of a four-component herbicide approach in cotton. POST applications of Sequence (Dual Magnum + Touchdown IQ), Envoke (trifloxysulfuron sodium), and Suprend (Envoke + Caparol) were made. Sequence was applied at 42 oz/A early POST (4 lf cotton), Envoke applied mid POST (5-8 lf cotton) at 0.1 and 0.15 oz/A and Suprend was applied POST directed (10-12 lf cotton) at 16, 20, and 24 oz/A. Comparison treatments included Staple (pyrithiobac) applied early POST at 1.2 oz/A plus Touchdown IQ at 32 oz/A and a nontreated control. Experimental design was a randomized complete block with four replications. Treatments were applied at 15 GPA POST and 7.5 GPA POST directed to each four-row, 12' x 40' plot. Crop assessment included efficacy and visual injury at 7, 14, 28, and 42 d after early POST application (the rating used) and seedcotton yield. A nonionic surfactant at 0.25% was included with all treatments except tank mixtures with Touchdown IQ.

A second study at Alexandria was initiated in 2003 to determine the effects of late applications of Envoke on cotton. At the 13-node stage, Envoke at 0.1 oz/A and Pix Plus at 16 oz/A were applied alone and in combination. A non-ionic surfactant at 0.25% v/v was included with the Envoke and Pix Plus treatments. An untreated control was also included. Experimental design was a randomized complete block with four replications. Crop injury was rated 3, 7, and 14 days after application. Plant height was recorded 14 days after application, and plots were harvested to determine final seedcotton yield. Data were subjected to analysis of variance and means separated with an LSD.

Results from the St. Joseph location indicate that no differences existed among treatments when evaluating morningglory control. Differences in control did exist following treatments and when evaluating remaining weeds. These differences could be attributed to weeds being too tall for adequate herbicide coverage or inadequate soil residual activity to provide extended weed control. Differences were seen when measuring cotton plant heights, which could be attributed to either weed competition that resulted from poor weed control or cotton injury occurring following treatment. At Alexandria, morningglory and smellmelon control was less following only the Touchdown IQ sequential treatment. This difference could be caused by lack of soil residual weed control. Also, two applications of Touchdown IQ followed by Suprend PD provided less smellmelon control, which could have resulted from inadequate coverage due to larger weed size. Cotton injury occurred following treatments that contained Envoke. This injury consisted of internode shortening and leaf discoloration.

When Envoke was applied to 13-node cotton, with and without Pix Plus, significant cotton injury was noted at 3, 7, and 14 DAT. Soil moisture could be characterized as adequate in this experiment. Injury was yellow discoloration of the leaves and some reddening of leaf veins. Plant height was also reduced compared to the non-treated following Envoke application with and without Pix Plus. Seedcotton yields were reduced compared to the non-treated following application of Pix Plus, Envoke, or a combination of the two. Pix Plus can sometimes reduce yield when applied to pre-bloom cotton, and this may explain part of the negative yield response. The negative yield response noted with Envoke is a reason for concern, however, and could be related to the observed injury. The data indicate that Envoke has the potential to injure cotton and reduce yield, although further research is needed to characterize the conditions under which injury is likely.