

COTTON RESPONSE TO TRIFLOXYSULFURON IN ARKANSAS.
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Abstract

Trifloxysulfuron-sodium, marketed under the brand name Trifloxysulfuron-sodium, is mainly used for broadleaf and sedge weed control in cotton. Trifloxysulfuron-sodium causes the leaves of susceptible plants to turn yellow, red or purple subsequent to application followed by necrosis and death of the growing point. In some instances crop response may occur. The purpose of this paper is to examine the data collected over the past five years concerning cotton injury due to Trifloxysulfuron-sodium in Arkansas, to evaluate the environmental conditions affecting Trifloxysulfuron-sodium injury, and to determine the best recommendations for Trifloxysulfuron-sodium use on cotton. Thirty-nine field experiments were conducted over the past five years across three locations: Marianna, Fayetteville, and Rohwer. Thirteen experiments evaluated crop response following preemergence applications, 19 early postemergence (cotyledon to 4 leaf) applications, 15 mid-post (5-6 leaf) applications, and 11 late postemergence (7 leaf and above) applications. Most crop injury occurred following preemergence or early postemergence applications. In all studies, cotton injury dissipated by 50 days following application. The most severe crop injury observed at each stage is as follows: preemergence 48%, early postemergence 48%, mid-post 30%, and late postemergence 25%. Yields were not affected by any Trifloxysulfuron-sodium injury at any application timing. Two greenhouse/growth chamber studies were conducted in Monticello, AR in 2001. Study one examined crop response due to Trifloxysulfuron-sodium applications and effects of cool versus warm temperatures four days prior to and four days subsequent to application. Two rates of 0.0094 and 0.0142 lb ai/a were sprayed at the 3-4 leaf growth stage. Cooler temperatures resulted in increased crop injury 5 days after treatment. By 19 DAT, no difference in crop injury existed for any temperature regime. There was also no difference in dry weights when compared to the check. The second greenhouse/growth chamber study examined injury due to two temperature regimes (cool vs. warm) superimposed upon two moisture regimes (dry vs. flooded). At fourteen days after treatment, the cooler temperatures had significantly more injury than the warmer temperatures. Soil moisture did not appear to have an effect on injury. There was no difference in dry weights when compared to the check. Although injury ratings were high, no yield differences were seen at any rate at any application timing. The least amount of injury was seen when Trifloxysulfuron-sodium was applied at the mid-post to late-post application timings. Cotton plants generally recovered from injury within three weeks following over the top applications. Greenhouse/growth chamber studies were somewhat inconclusive but indicated that cool temperatures may be more detrimental than wet soils. If crop response cannot be predicted, this herbicide may have limited acceptance as a postemergence over the top herbicide.