YELLOW NUTSEDGE CONTROL PROGRAMS IN COTTON

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Abstract

Yelllow nustedge control systems were evaluated for three years to determine the effect of preemergence and postemergence cotton herbicides with yellow nutsedge activity on yellow nutsedge control, populations, and cotton yield. In all systems examined, yellow nutsedge populations were reduced with three annual applications of the same herbicide program when compared to a control without yellow nutsedge control present. In general, systems that included preemergence and postemergence control of yellow nutsedge provided better yellow nutsedge control than preemergence or postemergence only systems. Staple provided approximately 85% control of yellow nutsedge when applied preemergence. Reflex provided excellent (>95%) yellow nutsedge control for the entire study period. Command did not provide adequate control of yellow nutsedge. Zorial applied as a split application of 0.8 lb/A applied preplant incorporated and 0.8 lb/A applied preemergence provided better overall yellow nutsedge control than Zorial applied preemergence at 1.5 lb/A. The addition of Staple to MSMA significantly improved yellow nutsedge control as compared to MSMA applied alone. Roundup with and without cultivation provided approximately 95% yellow nutsedge control in 1997 under optimal conditions for activity. However, in 1998, when poor conditions for Roundup activity were present, Roundup without cultivation control was 75-80% depending upon rate applied.

Introduction

Weeds cost Georgia growers approximately $120 million dollars each year in cotton yield and quality losses. Current weed management systems often fail to adequately control the most troublesome and common weeds in Georgia cotton production such as Texas panicum (*Panicum texanum* Buckl.), sicklepod (*Senna obtusifolia* L.), and common cocklebur (*Xanthium strumarium* L.). Currently, growers must utilize inefficient weed management strategies such as post-directed and shielded herbicide applications. The introduction of glyphosate -resistant cotton has the potential to improve weed management systems and the profitability of Georgia cotton production.

Materials and Methods

Research was conducted in 1996 - 1998 at Plant Sciences Farm near Athens, GA on a Cecil sandy loam (clayey, kaolinitic, thermic, Typic Hapludults) with 76% sand, 16% silt, 8% clay, 0.9% organic matter, and pH was 5.9. 'Coker 312 x 1445RR" cotton was planted in 1996 'DPL 90 RR' in 1997, and 'Paymaster 1220 BG/RR' in 1998.

The experimental design was a randomized complete block with four replications for the tillage experiment and three replications for the systems experiment. Individual plots consisted of six rows, spaced 91-cm apart, 6.1 m long. Cotton was planted May 18, 1996, May 16, 1997, and May 12, 1998. Yellow nutsedge (*Cyperus esculentus* L.) was at an approximate density of 50 plants/m^2 when the experiment was initiated.

All herbicide treatments were applied with a tractor-mounted or backpack CO_2-pressurized sprayer, calibrated to deliver 170 L/ha at 220 kPa. PRE herbicides were applied the same day as planting. Trifluralin (Treflan®) applied at 0.6 kg a.i./ha preplant incorporated followed by fluometuron (Cotoran®) applied at 1.6 kg a.i./ha at planting was applied to all plots except for those receiving glyphosate (Roundup).

Weed control was visually estimated on a 0 to 100% scale where 0 = no control and 100 = complete control. Cotton injury was visually estimated on a 0 to 100% scale where 0 = no injury and 100 = complete kill. Visual estimates of weed control and cotton injury were taken 84 DAP and 10 wk after planting. Yellow nutsedge population counts (yellow nutsedge/10 ft) were taken in August in the last two years of the study. The cotton crop was mechanically harvested on October 25, 1996; November 14, 1997, and October 14, 1998.

All weed control data were subjected to arcsine transformations before analysis. Significance of differences in treatment means for weed control ratings, cotton yield was determined with Fisher's Protected Least Significance Difference Test at the 5% level of probability. Visual estimates of weed control are expressed as untransformed data for reader clarity.

Results and Discussion

In all systems examined, yellow nutsedge populations were reduced with three annual applications of the same herbicide program when compared to a control without yellow nutsedge control present. In general, systems that included preemergence and postemergence control of yellow nutsedge provided better yellow nutsedge control than preemergence or postemergence only systems. Staple provided approximately 85% control of yellow nutsedge when applied preemergence. Reflex provided excellent (>95%) yellow nutsedge control for the entire study period.

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 1:750-751 (1999)
National Cotton Council, Memphis TN

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In 1996, cotton treated with a yellow nutsedge control component yielded better than cotton not treated with a yellow nutsedge control component. Cotton treated with both a preermergence and postemergence yellow nutsedge herbicides yielded higher than those with preemergence or postemergence only systems. In 1997 and 1998, as yellow nutsedge populations had been reduced by the previous years treatment program, yield differences due to yellow nutsedge control were not as obvious.

Acknowledgments

The author wishes to give thanks to Monsanto Agricultural Co. and the Georgia Commodity Commission for Cotton for financial assistance.