COTTON AND WEED RESPONSE TO PROPAZINE / GLYPHOSATE POSTEMERGENCE COMBINATIONS

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Abstract

Roundup Ready Flex cultivars were planted on approximately 70% of the cotton acres grown on the Texas Southern High Plains in 2008. Because of the widespread adoption of these cultivars and the continuous use of glyphosate-only herbicide programs, populations of glyphosate-resistant Palmer amaranth have been identified in several states. Previous research conducted on the Texas Southern High Plains has evaluated different residual herbicides for improved Palmer amaranth and ivyleaf morningglory control. Although not currently labeled for use in cotton, it is believed that propazine in combination with glyphosate would make a valuable tank-mix for cotton producers. The objectives of this study were to evaluate postemergence (POST) applications of glyphosate alone or in combination with propazine for improved Palmer amaranth and ivyleaf morningglory control, compare POST application timings and propazine rates in combination with glyphosate in Roundup Ready Flex cotton, and determine the effects of propazine alone and in combination with glyphosate on cotton growth and yield as affected by soil type**.**

All treatments received a base application of trifluralin (preplant incorporated). Glyphosate was applied alone at an early and mid POST timing. Glyphosate was applied alone or in combination with three rates of propazine at an early or mid POST timing. Propazine rates were 0.5, 0.75, and 1.0 lb ai/A. Percent weed control and cotton injury was assessed 7, 14, and 28 days after treatment and at the end of the season.

In 2007 there was no difference in residual Palmer amaranth control between glyphosate applied alone or any propazine rates in combination with glyphosate. All of the glyphosate or glyphosate/propazine treatments provided 100% control. In 2008 the addition of propazine to glyphosate improved Palmer amaranth control over glyphosate applied alone at the early post timing. The glyphosate only treatment controlled 80 to 85%. When propazine was added to the glyphosate, control increased to 97 to 100%. In 2007, all treatments controlled morningglory greater than 85%. The end of season ivyleaf morningglory rating indicated no difference between the glyphosate alone and the glyphosate/propazine combinations. In 2008, because of the lack of timely rainfalls morningglory control was only 50 to 75% following the early-POST timing, and between 75 to 80% at the mid-POST timing. In 2007 and 2008 early-season leaf chlorosis (<10%) was observed in the cotton tolerance study, but no injury was apparent by 28 days after treatment. In 2008 the same early-season chlorosis was observed at the Lubbock location (Acuff loam soil), but no differences in yield or fiber quality were observed. The Lamesa tolerance study (Amarillo fine sandy loam soil) exhibited the same leaf chlorosis observed at Lubbock, but slight stunting occurred as well. These results indicate that although consistent improvements in residual Palmer amaranth and ivyleaf morningglory control were not observed with propazine/glyphosate tank mixes compared to glyphosate alone, propazine could be an effective weed management option in Roundup Ready Flex cotton**.**