EVALUATION OF WEED CONTROL PROGRAMS IN GLYTOL®LIBERTYLINK® COTTON

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Abstract

The evolution of glyphosate-resistant Palmer amaranth has forced weed management decisions in cotton to be centered on controlling this troublesome weed. As this and other herbicide-resistant weeds continue to spread across the Cotton Belt, new technologies are needed to achieve effective control. The stacked trait technology present in Glytol® LibertyLink ® cotton provides growers with an option for difficult-to-control and herbicide-resistant weed species by allowing over-the-top applications of glufosinate and glyphosate. An experiment was conducted in 2014 at the University of Arkansas Northeast Research and Extension Center located in Keiser, AR to evaluate herbicide programs in Glytol® Libertylink ® cotton. A systems approach was evaluated utilizing preemergence followed by postemergence herbicide applications or total postemergence control programs for the management of glyphosate-resistant Palmer amaranth and other troublesome weeds. Preemergence treatments consisted of diruon, fluometuron, and diuron + fluometuron. Postemergence treatments consisted of glyphosate and glufosinate applied alone or in combination with current herbicide standards. The first application was made at planting, second application at the 2- to 3-leaf growth stage of cotton, third application at the 5- to 6-growth leaf stage, and the fourth application was directed at layby. Visual ratings of crop injury and broadleaf signalgrass and Palmer amaranth control were taken 2 to 3 weeks after each application timing. Early-season broadleaf signalgrass and Palmer amaranth control was the highest in programs that received a preemergence herbicide. Palmer amaranth control was 95% or higher 2 to 3 weeks after the layby application in all herbicide programs that utilized a preemergence followed by (fb) glufosinate alone or glufosinate in combination with glyphosate or *S*-metolachlor fb a layby application. Crop injury was less than 5% for all treatments. The use of Glytol® LibertyLink ® cotton provides a valuable technological tool to growers, allowing them to implement herbicide programs capable of controlling difficult-to-manage weeds such as glyphosate-resistant Palmer amaranth. In order to achieve effective season-long control, growers should continue to apply preemergence residual herbicides prior to applying glufosinate for the best stewardship of this technology.