GLYPHOSATE AND GLUFOSINATE APPLICATION TIMING FOR GLYTOL® + LIBERTY LINK® SYSTEMS

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Abstract

As glyphosate resistance (GR) continues to be a problem, Mid-South producers are looking to Ag industry leaders to help combat GR species. There are now no less than ten GR weed species in the Mid-South and no less than six confirmed GR species in Tennessee, with Palmer amaranth (*Amaranthus palmeri*) being the most difficult of these to control. In a perfect world, applying PRE-emergence (PRE) herbicides, overlaying residual chemistries, and making timely applications of POST-emergence (POST) herbicides is an effective management scheme. Unfortunately, rainfall to activate residuals is sporadic at best and cannot always be predicted. Therefore, timely applications of POST herbicides are essential for many producers to grow a profitable crop. Bayer CropScience is marketing the first technology that encompasses a full tolerance glyphosate and glufosinate in cotton, Glytol®-Liberty Link®. The Glytol®-Liberty Link® technology shows great promise in being an effective tool in controlling problematic weeds in the Mid-South. This technology will allow producers to achieve POST weed control benefits from both glyphosate and glufosinate. Since this is the first technology available to producers with full tolerance to both glyphosate and glufosinate, a better understanding of application timing and order is going to be essential for producers to make effective applications. Thus a study was conducted in 2012 to investigate Palmer amaranth and annual grass control in a Glytol®-Liberty Link® cotton system where applications of glyphosate and glufosinate were applied as a stand-alone treatment, tank-mixed and sequentially. Applications were first made when Palmer amaranth populations were 4-6 inches in height. Treatments receiving a sequential application did so 7 days after application (7DAA). Palmer amaranth and annual grass control was assessed 7, 14, 21, and 28 DAA. Experimental design was a randomized complete block design with four replications. Means were separated using Fisher's Protected LSD at $P \leq 0.05$. Annual grass control at 7 and 14 DAA and Palmer amaranth control at 28 DAA proved to have no statistical differences. Palmer amaranth control was increased at 7, 14, and 21DAA by utilizing glufosinate, either as a stand-alone treatment or from tank-mixing. Glyphosate added little control of Palmer amaranth as much of the Palmer population was GR. Results suggest that when making sequential applications it is better to apply glufosinate prior to glyphosate for more consistent control of Palmer amaranth. No antagonism between the two herbicides was observed when tank-mix applications were applied to Palmer amaranth or annual grasses. Annual grasses were adequately controlled with both herbicides, regardless of application order, timing, and combinations. In summary, effective control of Palmer amaranth and annual grass species is attainable in a Glytol®-Liberty Link® cotton system when using glyphosate and glufosinate POST applied in a timely manner.