CROP TOLERANCE AND WEED CONTROL PROGRAMS IN ENLIST™ COTTON

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Abstract

Glyphosate-resistant Palmer amaranth (*Amaranthus palmeri*) has forced cotton growers to seek herbicides other than glyphosate for control of this devastating weed. 2,4-D, a synthetic auxin (Group 4) herbicide available in a variety of salt and ester formulations, controls many broadleaf weeds, including glyphosate-resistant Palmer amaranth. Recently, DOW AgroSciences released a choline formulation of 2,4-D known as Enlist One. This product is less likely to volatize than other forms of 2,4-D such as ester formulations; however, weed control and tolerance data with this formulation is limited. Therefore, a study was conducted to test the tolerance of cotton to Enlist One when applied with other cotton herbicides such as Interline (glufosinate) and Moccasin (*S*-metolachlor). The study was conducted in Crawfordsville, Arkansas in a production field during the summer of 2017. The test area, excluding the untreated checks, received a standard preemergence application of Cotoran at 1 qt/A. Herbicide programs were comprised of early-postemergence (EPOST) and mid-postemergence (MPOST) treatments. All programs received a layby application consisting of Direx at 1 pt/A and MSMA at 2.4 pt/A. At 7 days after the EPOST application, programs containing both Enlist One, Interline, and Moccasin showed increased injury compared to treatments containing only Enlist One tank mixed with Interline or Moccasin. No MPOST program showed injury over 10% even with Moccasin, Interline, and Enlist One tank-mixed at this timing. Based on these findings, cotton appears to tolerate a tank mix of more than two herbicides when applied MPOST better than a tank mix of more than two herbicides applied EPOST. Glyphosate-resistant Palmer amaranth control for all programs never fell below 96% for any treatment. It is concluded that Enlist cotton provides growers several effective options for controlling glyphosate-resistant Palmer amaranth. The ability to apply multiple modes of action to Enlist cotton reduces selection pressure on any one particular herbicide thus slowing resistance development.