

Evaluation of application program and timing in herbicide-resistant corn

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Field studies were conducted from 2007 to 2009 in East Lansing, Michigan, to evaluate three residual herbicide programs, three postemergence (POST) herbicide application timings, and two types of POST herbicides in glyphosate- and glufosinate-resistant corn. Herbicide programs included a residual preemergence followed-by (fb) POST herbicide application (residual fb POST), a residual herbicide tank-mixed with a POST herbicide (residual + POST), and a non-residual POST. Three POST herbicide application timings included early POST (EP), mid-POST (MP), and late POST (LP) at an average weed canopy height of 7, 14, and 21 cm, respectively. The two herbicides evaluated included glyphosate and glufosinate. Control of common lambsquarters, redroot pigweed, giant foxtail, and common ragweed was visually evaluated 28 days after the LP application. Weed control was generally greatest when glyphosate or glufosinate was applied in combination with a residual herbicide. Glyphosate and glufosinate gave similar weed control when used in combination with a residual herbicide, but glyphosate tended to provide greater weed control than glufosinate when applied without a residual herbicide. Later application timings resulted in greater weed control, which may be attributed to control of late-emerging weeds. The effect of residual herbicide program, POST herbicide, and POST application timing on corn grain yield varied by year. In 2007, the use of glyphosate resulted in greater grain yield compared to glufosinate. In 2008, corn grain yield was the greatest in the PRE fb POST program and with POST applications at EP and MP. A PRE fb POST program applied at MP should provide the most consistent weed control and minimize the likelihood of grain yield reductions.

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