MANAGEMENT OF PROBLEMATIC WATERHEMP IN GLYPHOSATE-RESISTANT CORN. Christopher L. Schuster and Reid J. Smeda, Graduate Research Assistant and Assistant Professor, Agronomy Department, University of Missouri, Columbia, MO 65211.

Common waterhemp is a significant weed problem in crop production systems in the central United States. Recent adoption of glyphosate resistant crops has led to widespread dependence upon glyphosate for control of common waterhemp. Despite its sensitivity to glyphosate, waterhemp continues to increase in severity. The release of glyphosate-resistant corn will also impact waterhemp; full season management may necessitate a multi-program approach. Several herbicide programs are available to control waterhemp in glyphosate-resistant corn, but each may require additional management considerations. Field studies were established at two locations in northeast Missouri to evaluate multiple herbicide programs for effective season-long control of waterhemp in corn. This study assessed one-pass preemergence (PRE) and postemergence (POST) applications, two-pass POST applications, and two-pass PRE followed by POST applications. Waterhemp response was evaluated visually at 2 and 5 weeks after treatment (WAT) and by recording waterhemp suppressed by PRE herbicides at the time of POST applications. Results indicated that herbicide programs which included a PRE of acetochlor or acetochlor + atrazine suppressed waterhemp emergence for an additional 7 – 24 days compared to treatments with no PRE herbicide. Waterhemp was suppressed for 54 days at Novelty in 2001 with a combination of metolachlor, atrazine, and isoxaflutole. Results show that when averaged over both locations a single POST application of glyphosate + atrazine resulted in 92 and 75% control of waterhemp 2 and 5 WAT, respectively. Metolachlor + atrazine followed by diflufenzopyr + dicamba, dicamba + atrazine, or mesotrione provided season-long control of waterhemp (>95%). A split application of glyphosate + atrazine followed by glyphosate resulted in 99% waterhemp control 5 WAT. PRE applications of acetochlor or acetochlor + atrazine followed by glyphosate or glyphosate + atrazine resulted in >97% control of waterhemp 5 WAT. Results indicate that effective management of waterhemp in glyphosate-resistant corn should include a PRE followed by POST or multiple POST (two-pass program).

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