MANAGEMENT OF PROTOX RESISTANT WATERHEMP IN A CORN AND SOYBEAN ROTATION. Scott E. Cully and Donald J. Porter, Syngenta Crop Protection Inc., Greensboro, NC 27419-8300.

Waterhemp is a very diverse plant species as is evidenced by the selection of biotypes resistant to ALS inhibitors, triazines, and now, protox inhibitor herbicides. Weed scientists in Kansas, Missouri, and Illinois have identified Protox resistant waterhemp biotypes. Protox resistant waterhemp plants were no longer controlled postemergence by once effective protox inhibiting herbicides such as fomesafen, acifluorfen, and lactofen. Glyphosate remains as the only option for total postemergence control of protox resistant waterhemp in soybeans. Research on other management systems in a typical corn and soybean rotation were examined for control of Protox resistant biotypes. In soybeans, as was expected, fomesafen applied postemergence as a conventional standard provided a low level of control of protox resistant waterhemp. Two-pass programs of *S*-metolachlor, or *S*-metolachlor plus metribuzin applied preemergence followed by fomesafen postemergence proved to be a good management system for conventional soybeans, however failed to consistently provide greater than 90% control of protox resistant waterhemp. Two-pass applications of *S*-metolachlor, or *S*-metolachlor plus metribuzin applied preemergence followed by glyphosate applied postemergence proved to be the most effective method of control of protox resistant waterhemp in Roundup Ready® soybeans. In corn, both a one-pass preemergence application of LUMAX™ herbicide and a two-pass program of Bicep II MAGNUM® applied preemergence followed by mesotrione plus atrazine applied postemergence provided excellent control of protox resistant waterhemp.

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