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Glyphosate and Manganese Interactions in Roundup Ready Soybean

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Abstract

Shortly after the introduction of Roundup Ready soybean, questions arose whether these varieties and/or glyphosate applications to them alter manganese relations compared to conventional soybean varieties. It is well documented that glyphosate forms complexes with manganese and other metal cations. These complexes reduce glyphosate activity when the antagonistic cations are present in water used as a carrier.

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Glyphosate and Manganese Interactions in Roundup Ready Soybean

Bob Hartzler, Department of Agronomy

Shortly after the introduction of Roundup Ready soybean, questions arose whether these varieties and/or glyphosate applications to them alter manganese relations compared to conventional soybean varieties. It is well documented that glyphosate forms complexes with manganese and other metal cations. These complexes reduce glyphosate activity when the antagonistic cations are present in water used as a carrier.

Research investigating interactions between Roundup Ready varieties, glyphosate and manganese has produced conflicting results. It is important to note that most interactions between Roundup Ready soybean and manganese have been observed in areas with soils known to be deficient in manganese. There have not been reports of manganese deficiency in Iowa.

Although there has been research indicating Roundup Ready soybean may respond differently to manganese than conventional varieties, the majority of research does not support this observation. The best recommendation remains to manage Roundup Ready soybean similar to conventional varieties in terms of fertility management. For more details about the research investigating manganese relations of Roundup Ready varieties, refer to the complete [Glyphosate-Manganese Interactions in Roundup Ready Soybean](#) article, on the ISU Extension weed science Web page.

Bob Hartzler is a professor of agronomy with extension, teaching and research responsibilities.

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