

**USE OF DIFFERENT SOURCES AND RATES OF FOLIAR POTASSIUM WITH
GLYPHOSATE TO OVERCOME ENVIRONMENTAL- AND MANAGEMENT-
INDUCED K DEFICIENCY IN SOYBEANS**

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ABSTRACT

The incidence of potassium (K) deficiency in soybeans [*Glycine max* (L.) Merr] has increased over the last few years in Missouri and other Midwestern states. Postemergence application of foliar K fertilizer would have the potential advantage of increased flexibility for growers to respond to K deficiency that may occur during the growing season. In addition, increasing use of postemergence applications of glyphosate for weed control in glyphosate-tolerant soybeans provides the opportunity for applying foliar K fertilizer with glyphosate. The objectives of this research were to determine soybean response to several rates of different foliar K sources mixed with and without glyphosate under different types of soil, soil test K, soil water content, soil compaction and climatic conditions and to evaluate use of the chlorophyll meter for quickly measuring plant K deficiency in the field. Minimal leaf injury caused by applications of foliar K fertilizer sources mixed with glyphosate indicated the possibility of tank mixing. However, soybean grain yield and plant growth were not significantly improved. The level of nutrients in soybean leaf tissue including potassium, phosphorus, magnesium, calcium, boron, zinc, sulfur, iron, and copper were little affected. No correlation between SPAD chlorophyll meter readings and total K content in the plant was found. Therefore, further research is needed to better assess other soil characteristics and environmental conditions affecting soybean response to foliar K fertilization.

