

ENHANCED EFFICIENCY PHOSPHORUS APPLICATION FOR CORN

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ABSTRACT

Farmers are interested in the use of enhanced efficiency phosphorus (P) fertilizer applications or treatments. The objectives of this research are (1) to determine the effects of tillage/fertilizer placement [no-till (NT)/surface broadcast or strip-till (ST)/deep banding], monoammonium phosphate rate [0, half the recommended rate, and the recommended rate], and the presence and absence of two enhanced phosphorus efficiency products [Avail[®] (Specialty Fertilizer Products, Leawood, KS) and P₂O₅-Max[®] (Rosen's Inc., Fairmont, MN)] for corn conducted at Novelty and Albany, MO; and (2) to determine the effect of lime application (0 and recommended rate), P source [non-treated control and a broadcast application of diammonium phosphate or triple superphosphate], and the presence and absence Avail[®] or P₂O₅-Max[®] for corn conducted at Novelty and Portageville, MO. The two P enhanced efficiency products did not consistently increase corn grain yield, including apparent P recover efficiency, in interaction with several fertilization, liming, and tillage practices at the sites and environmental conditions evaluated in this research. Triple superphosphate treated with Avail[®] increased P uptake 8.6 kg ha⁻¹ compared to the non-treated control at Novelty, but not at Portageville. Strip-till/deep banding increased plant populations 15,500 plants ha⁻¹ at Novelty and 3,500 plants ha⁻¹ at Albany compared to NT/broadcast. Yields increased 1.57 Mg ha⁻¹ with use of ST/deep banding over NT/broadcast at Novelty. The recommended amount of lime increased grain yields 0.77 Mg ha⁻¹ at Portageville.