PHOSPHORUS AND POTASSIUM PLACEMENT FOR NO-TILL SOYBEANS

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Abstract

More information is needed concerning P and K placement for no-till soybeans [*Glycine max* (L.) Merr.]. This study compared the early dry weight and grain yield responses of no-till soybean to broadcast, deep-band, and planter-band P and K fertilizer placements under Iowa soil and weather conditions. Long-term P and K trials were established in 1994 at five research centers and were evaluated for 4 years. Eleven short-term P-K trials were established in farmers' fields from 1995 to 1997. Treatments were various P (0 to 56 kg P ha^{-1}) and K (0 to 132 kg K ha^{-1}) rates broadcast, banded with the planter 5 cm beside and below the seeds, and deep-banded at a 15- to 20-cm depth before planting. Early dry weight was measured in plants at the V5 growth stage. Mean soil-test P (STP) at the 0- to 15-cm depth ranged from very low to very high across sites and soil-test K (STK) ranged mostly from optimum to very high. Phosphorus fertilization increased yields only in soils that tested very low and low in STP, while K also increased yields in some soils that tested optimum or higher in STK. The two P banded placements methods were superior at one site and the broadcast was superior at the another site. Grain yields were increased by K fertilization at five sites, banded K at one site and broadcast K at another one. Responses to K fertilization and placement were poorly related to soil STK. Fertilization and placement seldom influenced soybean early dry weight.

Abbreviations: STP = soil-test P, STK = soil-test K.

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