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INFORMATION**

POTASSIUM FERTILITY FOR SOYBEANS FACT SHEET

This is one in a series of fact sheets from the Mississippi Soybean Promotion Board and the soybean checkoff. Each sheet presents a brief overview of a topic important to Mississippi soybean production. More information on each topic can be accessed through the link at the bottom of the sheet. To see other fact sheets, click [here](#).

Potassium (K) is an essential nutrient for plant growth, and is categorized as a macronutrient for crop production. Potassium is highly mobile in soil, and its mobility is strongly related to soil texture; its movement is greatest in sandy soils and least in clay soils. In fact, it is likely to build up in clay soils because of its attachment to the clay particles.

Soybeans remove more K from the soil than any other major crop in Mississippi, and K is the essential nutrient element that is most often deficient in all areas of Mississippi soybean production. Thus, it is critical that soybean producers conduct soil tests to determine soil K levels to ensure that a K deficiency does not limit yield.

Soybeans remove approximately 1.20 lb of potash (K_2O) or about 1 lb of actual K for each bushel of harvested seed. On most fields, at least this removed amount of K should be replaced to maintain adequate K fertility for maximum yield potential. K uptake from soil by crops is several times greater than phosphorus uptake.

The need for K fertilization should be based on soil test recommendations. Soil test results are given in terms of pounds of K per acre. The results also include a K value based on the soil cation exchange capacity (CEC), which is a measure of the soil's ability to store positively charged nutrients such as K. In the MSU system, the CEC represents soil texture since sandier soils typically have a lower CEC and clayey soils typically have a higher CEC. The CEC is important because crops respond differently to K based on soil CEC. Soil test K levels (pounds of K per acre) and corresponding indices from MSU for soybeans grown on soils with varying CEC, plus recommended amount of K fertilizer (expressed as pounds of K_2O per acre) for each index category, are shown in the following table.

Soil test index rating for pounds K/acre present for each CEC category, with recommended fertilizer rates of pounds of K_2O per acre for each index category shown in parentheses.

Index	CEC < 7	CEC 7 - 14	CEC 14 - 25	CEC > 25
Very low	0 - 70 (120)	0 - 90 (120)	0 - 120 (120)	0 - 150 (120)
Low	71 - 150 (90)	91 - 190 (90)	121 - 240 (90)	151 - 260 (90)
Medium	151 - 200 (60)	191 - 240 (60)	241 - 290 (60)	261 - 320 (60)
High	201 - 350 (0)	241 - 420 (0)	291 - 510 (0)	321 - 560 (0)
Very high	>350 (0)	> 420 (0)	>510 (0)	> 560 (0)

Today's high soybean yields in the Midsouth will remove nutrients from the soil in greater amounts than in previous years when the region's yields were lower. Therefore, producers should be aware of just how much K is removed from a field with a recorded

yield history so that the amount of K fertilizer applied to a field can be adjusted accordingly. This is important to ensure that a field is neither under- nor over-fertilized. For more information on K fertility for soybean production, click [here](#).

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