

**ASSESSING THE FERTILITY STATUS OF
LONG-TERM NO-TILLAGE COTTON SOILS:
IN-ROW VERSUS BETWEEN-ROW SAMPLING**
D.D. Howard*, M.E. Essington and D.D. Tyler
University of Tennessee
Agricultural Experiment Stations
Jackson, TN

Abstract

Information regarding nutrient stratification of long-term no-tillage (NT) crops is limited. This study was conducted to evaluate nutrient stratification relative to the planted row and soil depth on three soils having broadcast K applied for six years to NT cotton. Rows were planted within a few cm of the previous year's row. The selected soils were Memphis silt loam, Lexington silt loam and Loring silt loam. Potassium rates of 0, 28, 56, and 112 kg/ha broadcast annually. Experimental design was a RCB with five replications. Sub-samples were collected from the row (IR) and between rows (BR) to a depth of 30 cm. Sub-samples was divided into 0-8, 8-15, and 15-30 cm depths. Soil pH and Mehlich-I extractable P (EP) and K (EK) were evaluated. Soil pH varied between the IR and BR positions and among depths; however variation was small to insignificant. EP varied with soil, sampling position and soil depth. Differences in EP due to sampling position would not affect soil test ratings; therefore sampling position would not affect fertilizer recommendations. EK was greater in the IR position than the BR position of the 0-8 cm sampling depth for the three soils. Sampling only the BR position may in some instances give a lower soil test value, resulting in a higher fertilizer recommendation. These differences varied with soil-applied K rates.