

**TEMPORAL VARIABILITY IN SOIL TEST
ANALYSIS IN CONVENTIONAL
AND NO-TILL COTTON**

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Abstract

This study was conducted to evaluate nutrient stratification relative to soil depth in no-tillage (NT) and conventional tillage production. The selected fields were in Winchester, AR on a Rilla silt loam. The NT field has been in continuous no-tillage production since 1992. The conventional tillage (CT) field is disked two times each in the fall and spring, field cultivated two times and bedded two times.

Samples were collected from the same two locations in the NT and CT fields every two months for a sixteen month period. Samples were collected at 0-3", 3-6", 6-9", and 9-12" depths. Soil pH, phosphorus (lbs/A), and potassium (lbs/A) were evaluated.

In the NT field soil pH increased as soil depth increases. Both phosphorus and potassium levels were considerably higher at the 0-3" than at the deeper depths. Below the 0-3" depth phosphorus and potassium levels were relatively close, but fertility levels decreased as soil depth increased.

In the CT field soil pH was variable across sample depths and sampling periods. The phosphorus levels are stratified with fertility levels decreasing as soil depth increases. The CT potassium levels are higher at the 0-3" depth, but below the 0-3" sample potassium levels decrease with soil depth.

Although nutrient stratification occurred in the NT field, it also occurred in the CT field to a lesser degree. As long as producers utilize good representative soil samples and sound fertilizer management, NT production should not result in decreased yields.