

# YIELD OF NO-TILLAGE WINTER WHEAT AFTER SURFACE AERATION TILLAGE OF THE PREVIOUS CORN CROP'S RESIDUES – MAURY SILT LOAM

John H. Grove  
Department of Plant & Soil Sciences  
University of Kentucky, Lexington, KY 40546  
PH: (859) 257-5852; Email: jgrove@uky.edu

## **Research Objective:**

Determine the impact of surface aeration tillage on the yield response of otherwise no-tillage wheat to fertilizer nitrogen.

## **Methods:**

Location: Fayette County/Spindletop  
Soil Type and Drainage: Maury silt loam – well drained  
Previous Crop: Corn  
Tillage: No-Tillage (Lilliston 9680)  
Aeration Tillage/No-Tillage  
Cultivar: Southern States 8302  
Planting Date & Rate: Oct. 17, 2005; 41 seed/sq. ft.  
Harvest Date: June 29, 2006  
Fertilizer: Nitrogen –  
30% of all N rates as 34-0-0 on 3/29/06  
70% of all N rates as 34-0-0 on 4/18/06  
Herbicides: Harmony –  
0.5 oz/ac on 4/05/06  
Brominal ME4 –  
0.75 pint/ac on 4/05/06  
Fungicides: Folicur –  
8 fl oz/ac on 5/30/06  
Results: Average of 4 replications – see Table 1.

## **Conclusions:**

Wheat yields were excellent, especially with the lower residue levels associated with a previous 120 bu/acre corn crop. These residues were redistributed with a hay tedder prior to the aeration treatments. Aeration tillage was done with a Genesis Tillage II unit equipped with helical tines and a Phoenix harrow. The aerator was not angled, giving a very passive pass over the corn residues, but clearly pushing a portion of the residue into the soil. There was a large average response (+55 bushels/acre) to fertilizer nitrogen (N), with yields increasing significantly, up to a total fertilizer N rate of 80 lb N/acre. There was no statistically significant interaction between the aeration treatments and fertilizer N rate. Aeration tended to result in greater yields, but this was not statistically significant (at the 90% level of confidence). We continue to examine whether alternate methods of residue management will improve no-till wheat establishment and yield.

**Table 1. No-Till Wheat Yield Response to Surface Aeration and Nitrogen**

Fertilizer N Rate lb N/acre	Surface Aeration?		N Rate Average
	No	Yes	
0	35.4	37.8	36.6 c
40	70.6	78.1	74.4 b
80	81.5	90.7	86.1 a
120	93.3	89.6	91.5 a
Aeration Avg.	70.2 a	74.0 a	