

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

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**Research Objective:**

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

**Methods:**

Location: Fayette County/Spindletop  
 Soil Type and Drainage: Loradale silt loam–well drained  
 Previous Crops: Corn  
 Tillage: No-Tillage (Lilliston 9680)  
 Aeration Tillage/No-Tillage  
 Cultivar: Southern States 8302  
 Planting Date/Rate: Oct. 25, 2006; 30 seed/sq.ft  
 Harvest Date: June 26, 2007  
 Fertilizer: Nitrogen – 0, 35, 75, 105 lb N/acre as 34-0-0 on 3/21/07  
 Herbicides: Gramoxone – 1 quart/ac on 10/30/06  
 Harmony – 0.5 oz/ac on 4/19/07  
 Brominal ME4 – 0.75 pint/ac on 4/19/07  
 Fungicides: Folicur – 8 fl oz/ac on 5/13/07  
 Results: Average of 4 replications - see Table 1, on next page.

**Discussion/Conclusions:**

No-till wheat yields were below average, due in part to freeze injury. The residues of

the previous corn crop were redistributed with a hay tedder prior to the aeration treatments. A Genesis Tillage II unit equipped with helical tines and a Phoenix harrow was used to make the aeration treatments. The helical aerator was gently angled, giving a passive pass over the corn residues, but clearly pushed a portion of the residue into the soil. There was one treatment with the Phoenix harrow engaged and another with the harrow disengaged. There was a large average response (+19 bushels/acre) to fertilizer nitrogen (N), with yields increasing significantly up to a total fertilizer N rate of 70 lb N/acre. There was no interaction between the aeration treatments and fertilizer N rate. On average, aeration did not result in significantly (at the 90% level of confidence) greater yields. After three years of work, without positive yield response, we conclude that aeration offers little improvement to no-till wheat establishment and yield.

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

Aeration/Phoenix Tillage?					
Fertilizer N Rate	aeration? Phoenix?	No No	Yes No	Yes Yes	N Rate Avg.
Lb N/acre		Grain Yield (bu/ac)			
0		42.7	43.6	43.5	43.3c
35		57.5	57.3	57.4	57.4b
70		61.8	61.6	62.6	62.0a
105		61.9	61.4	64.0	62.4a
Aeration/Phoenix Avg.		56.0a	56.0a	56.9a	