

# TILLAGE, PREVIOUS TILLAGE, AND THE NITROGEN REQUIREMENT OF WHEAT FOLLOWING FULL-SEASON SOYBEAN

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## **Research Objective:**

Determine whether the past and present soil management system (no-tillage vs. chisel plowing) will influence the fertilizer nitrogen requirement of wheat following full-season soybean.

## **Methods:**

Location: Fayette County/Spindletop

Soil Type and Drainage:

Maury silt loam – well drained

Previous Crop: Soybean

Tillage: No-Tillage (Lilliston 9680)

Chisel Plow + Secondary Tillage

Cultivar: Southern States 8302

Planting Date/Rate: Oct. 26, 2004;  
41 seed/sq.ft

Harvest Date: July 4, 2005

Fertilizer: Nitrogen – 25% of all N  
rates as 34-0-0 on 3/17/05  
75% of all N rates as 34-0-0 on  
4/11/05

Herbicides: Harmony – 0.5 oz/ac on  
4/04/05

Brominal ME4 – 0.75  
pint/ac on 4/04/05

Fungicides: Folicur – 8 fl oz/ac on  
5/19/05

## **Results:**

Average of 4 replications – see Table 1, next page.

## **Conclusions:**

In this, the eighth year of this experiment, the tillage management did not have a significant effect on the average yield of wheat following soybean residues. Yields were similar, regardless of whether chisel tillage or no-tillage establishment was used. Chisel tillage yields tended to be greater than no-tillage yields, but this was not statistically significant (at the 90% level of confidence). The yield response to tillage is similar to that observed in some earlier years. There was a large average response (+62 bushels/acre) to fertilizer nitrogen (N), with yields increasing up to a total fertilizer N rate of 120 lb N/acre. There was no statistically significant interaction between tillage and fertilizer N rate. Unlike some previous years, there was no trend for no-till wheat to require more N to optimize yield than chisel plow wheat. Lodging and disease pressures were minimal, regardless of high fertilizer N rate or tillage rotation treatment.

**Table 1. Effect of Tillage Sequence and Fertilizer Nitrogen on Wheat Yields**

<b>Annual Tillage Sequence:</b>					
	2003	*CH	NT	NT	
Fertilizer	2004	NT	CH	NT	N Rate
N Rate	2005	NT	NT	CH	Average:
<b>Ib N/acre</b>	<b>Grain yield (bu/acre)</b>				
0		39.0	41.3	48.1	42.8d
40		65.8	70.2	70.7	68.9c
80		91.7	91.4	94.2	92.4b
120		104.8	103.2	106.4	104.8a
Tillage Average:		75.3a	76.5a	79.8a	
*CH = chisel plow; NT = no-tillage					