

**Making No-Till Wheat Production Profitable: On-Farm Testing  
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**Research Objective:**

To determine if carefully managed no-till wheat can be as profitable for Ky growers as carefully managed conventional till wheat.

**Method:**

Each of the three research groups chose a field site, two wheat varieties, and independently managed their own test. Each test included two replications of no-till versus conventional tillage, and each tillage system included two wheat varieties. The preceding crop was corn for all three tests. Plot sizes were a minimum of 3000 square feet.

***UK Test Information:***

Location:	Spindletop Farm, Lexington, KY
Soil type and & drainage:	Maury silt loam, well-drained
Conventional tillage:	chisel plowed, then disked twice
Planting Date:	October 16, 1997
Varieties:	Foster and Pioneer 2540
Fertilizer:	85 #/A on P2540 CT; 90#/A on Foster CT; 105 #/A on P2540 NT; and 110#/A on Foster NT. (applied as ammonium nitrate on April 1, 1998).
Fungicide:	4 oz/A on Foster only on May 12, 1998
Herbicide:	0.6 oz/A on November 12, 1997
Insecticide:	none applied

**Opti-Crop Test Information:**

Location: Carter Road, Owensboro, KY  
Soil type and & drainage: Henshaw silt loam; somewhat poorly drained  
Conventional tillage: ripped, disked, rolled, and cultipacked  
Planting Date: October 23, 1997  
Varieties: Becker and Clark  
Fertilizer: 300 #/A 9:23:30 on September 26, 1997. N split twice  
in spring.  
Fungicide: Tilt at growth stage 10.3  
Herbicide: Roundup at planting time  
Insecticide: Warrior at 2.6 oz/A in both the fall and the spring

**Wheat Tech Test Information:**

Location: Larry Thompson Farm, Allensville, KY  
Soil type and & drainage: Pembroke silt loam, well-drained  
Conventional tillage: disk ripped; disked and rolled twice  
Planting Date: October 20, 1997  
Varieties: Clark and Pioneer 2552  
Fertilizer: 10 # N/A, 50 # P<sub>2</sub>O<sub>5</sub>/A, 50 # K<sub>2</sub>O/A, and 10 # S/A on  
October 1, 1997.  
50 # N/A on Feb. 9, 1998; 30 # N/A on March 6, 1998;  
and  
35 # N/A on April 2, 1998.  
Fungicide: Tilt near heading time in spring  
Herbicide: 0.6 oz/A Harmony Extra on Nov. 12, 1997  
Insecticide: Warrior applied with Harmony

**Results:**

Table 1 shows percent residue cover, stand establishment, and grain yields for the three tests we completed in the 1997-98 wheat season. Residue cover levels were consistently high under no-till management. However, conventional tillage at the Lexington site left considerably more corn residue on the surface than it did at the other two sites. Stand establishment was reasonably good for no-till compared with conventional tillage. Stands could have been a bit better at Lexington. Yields were sharply depressed at Owensboro. Phil felt that hot temperatures during grain fill, coupled with head scab, combined to hurt wheat yields in his test. Head scab was a factor in the other two tests as

well. Across the three tests, no-till averaged 3.7 bushels/acre less than did conventional tillage.

**Table 1. Residue cover, stand establishment, and grain yield for wheat tests done in 1997-98 at three Kentucky locations.**

Location	Residue Cover %		Stand establishment plants/sq. yd.		Grain yield bushels/A	
	No-till	Conv. Till	No-till	Conv. Till	No-till	Conv. Till
Lexington	95	65	201	220	63.9	68.8
Owensboro	99	33	234	243	48.4	48.6
Allensville	98	34	270	234	71.4	77.5

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**Conclusions:**

The most obvious conclusion from these tests is that head scab is a bad thing. It is not clear that head scab was worse in no-till than in conventional tillage. The very warm temperatures in late May and early June were not especially helpful either. Overall, no-till is still behind in terms of yield; however, we would like to collect another year's data in a season which allowed us to do a better job of evaluating the two tillage systems. Each group will re-evaluate their management practices, including the choice of varieties. Ultimately, the acceptability of no-till for our state's wheat farmers will depend on the profit balance between dollars saved and dollars lost by using this system.