

COMPARATIVE PERFORMANCE OF WHEAT VARIETIES IN NO-TILL AND CONVENTIONAL-TILL TRIALS

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RESEARCH OBJECTIVE:

To determine whether wheat varieties that are superior under conventional tillage are also superior under no-tillage.

METHODS:

Location	Logan Co.	Caldwell Co.	Shelby Co.	Fulton Co.
Harvest Year	1998	1999	1998-2000	2000
Cooperator	W. G. Farms	Gilkey Farms	Ellis Farms	Sanger Farms
Previous Crop	Corn	Corn	Corn	Corn
Conventional Tillage	Disk-ripper, Disk, Cultipacker	Disk-ripper, Disk, Cultipacker	Chisel Plow, Disk	Chisel Plow, Disk
Stubble Condition (no-till)	Flail-mowed	Flail-mowed	Standing	Rotary -mowed
Planting Date	10/8/97	10/9/98	10/1/97; 10/12/98; 10/14/99	10/20/99

Entries consisted of 46 commercial and public soft red winter wheat varieties in 1998, 43 in 1999, and 46 in 2000. Seventeen varieties were common to all three years. Each variety was replicated 4 times at each location in all years. Conventional tests were planted with a 6-row cone seeder with double-disk openers in 7 " rows. Plot area was 60 square feet. No-till plots were seeded with a 7-row cone seeder equipped with John Deere 750 openers in a row spacing of 7.5 ". Plot area was 240 square feet. Seeding rates were approximately 325 seeds/sq. yd. for conventional tillage and 365 seeds/sq. yd. for no-till. Inputs such as fertilizer and pesticides were similar to those used by the cooperating farmers on their commercial wheat fields.

RESULTS:

Variety yield means are presented in the following three tables.

CONCLUSIONS:

There was very good agreement between no-till and conventional-till performance in terms of variety mean yield. For example, the correlation between no-till and conventional-till performance over three years at all locations was 0.85 (Table 3). Perfect agreement would have yielded a correlation coefficient of 1.0. It is noteworthy that there was a 3 bushel yield advantage to no-till over conventional till in this study. In last year's Wheat Science report, there was a slight advantage to conventional tillage over no-till when the data were averaged over two years, 1998 – 99. In 2000 at Fulton Co., the average yield in the no-till variety trial exceeded the average yield of the conventional tillage variety trial by 25 bushels (Table 1). We are not sure how to account for this

difference, but it is clearly the exception rather than the rule. Our conclusion after three years is that varieties which perform well under conventional tillage will very likely perform well under no-tillage.

TABLE 1. LOGAN CO. (1998), CALDWELL CO. (1999), FULTON CO. (2000): NO-TILL AND CONVENTIONAL WHEAT VARIETY TRIAL								
WHEAT VARIETY TRIAL	CONVENTIONAL				NO-TILL			
	YIELD (BU/A)				YIELD (BU/A)			
VARIETY	2000	1999	1998	MEAN	2000	1999	1998	MEAN
2552	76.0	95.3	41.2	70.8	101.1	96.8	41.8	79.9
2568	87.0	89.0	45.8	73.9	102.1	76.5	34.5	71.0
25R26	78.5	91.8	40.3	70.2	108.5	78.8	29.3	72.2
AGRIPRO ELKHART	82.0	90.5	42.6	71.7	106.6	84.5	34.5	75.2
AGRIPRO FOSTER	90.3	84.3	36.4	70.3	112.2	81.8	26.2	73.4
AGRIPRO MASON	86.9	88.0	44.2	73.0	102.3	79.8	40.0	74.0
AGRIPRO PATTON	81.1	88.5	53.1	74.2	110.8	80.8	35.8	75.8
CLARK	75.8	67.5	35.8	59.7	93.7	60.5	25.4	59.9
NK COKER 9474	67.0	81.5	43.8	64.1	94.4	74.5	39.4	69.4
NK COKER 9663	80.9	103.8	48.1	77.6	108.9	87.0	46.5	80.8
SS 522	76.8	85.0	35.7	65.8	103.8	74.0	32.6	70.1
SS 555	84.2	87.0	26.5	65.9	111.5	89.3	21.6	74.1
SS 558	78.3	86.5	43.3	69.4	115.6	76.5	28.3	73.5
JACKSON	81.6	100.3	33.7	71.9	103.6	89.8	30.7	74.7
KAS PATRIOT	81.8	93.8	40.0	71.9	104.9	89.5	30.3	74.9
MADISON	86.8	90.3	34.1	70.4	106.3	78.3	31.2	71.9
PATTERSON	74.0	77.8	44.2	65.3	105.1	70.0	29.1	68.1
MEAN	80.5	88.3	40.5	69.8	105.4	80.5	32.8	72.9
Correlation of Conventional, No-Till, 1998 - 2000: 0.81								

**TABLE 2. 1998 - 2000 SHELBY COUNTY NO-TILL AND CONVENTIONAL
WHEAT VARIETY TRIAL**

VARIETY	CONVENTIONAL YIELD (BU/A)			MEAN	NO-TILL YIELD (BU/A)			MEAN
	2000	1999	1998		2000	1999	1998	
2552	97.3	98.3	65.1	86.9	98.3	100.4	64.2	87.6
2568	89.3	90.6	51.9	77.3	91.8	89.9	55.7	79.1
25R26	86.0	88.4	57.4	77.3	86.0	89.3	56.0	77.1
AGRIPRO ELKHART	76.0	78.6	45.8	66.8	92.0	87.6	44.5	74.7
AGRIPRO FOSTER	88.6	79.4	43.2	70.4	99.1	72.7	46.7	72.8
AGRIPRO MASON	80.1	86.5	53.1	73.2	83.5	84.0	49.6	72.4
AGRIPRO PATTON	87.7	94.9	62.3	81.6	75.5	99.5	59.0	78.0
CLARK	80.7	76.1	48.5	68.4	85.6	82.1	40.6	69.4
NK COKER 9474	81.3	70.0	40.5	63.9	85.2	79.6	41.1	68.6
NK COKER 9663	73.7	83.0	52.2	69.6	91.1	93.7	57.4	80.7
SS 522	74.2	75.8	45.8	65.3	79.9	75.2	42.1	65.7
SS 555	98.4	80.6	42.1	73.7	98.2	83.0	47.9	76.4
SS 558	92.5	75.2	44.6	70.8	99.3	79.7	50.0	76.3
JACKSON	85.9	84.1	40.7	70.2	83.3	87.2	42.6	71.0
KAS PATRIOT	87.7	66.2	45.9	66.6	91.8	81.4	41.7	71.6
MADISON	93.6	78.9	47.8	73.4	89.4	90.1	54.3	77.9
PATTERSON	77.0	75.4	48.4	66.9	85.3	83.1	45.7	71.4
MEAN	85.3	81.3	49.1	71.9	89.1	85.8	49.4	74.8
Correlation of Conventional, No-Till, 1998 - 2000: 0.80								

TABLE 3. CONVENTIONAL VS. NO-TILL WHEAT VARIETY TRIAL IN WESTERN AND NORTH CENTRAL KENTUCKY, 1998-2000

VARIETY	1998-2000			1998-2000		
	Conventional Yield (BU/A)			No-Till Yield (BU/A)		
	W. KY	N. Central	Mean	W. KY.	N. Central	Mean
2552	70.8	86.9	78.9	79.9	87.6	83.8
2568	73.9	77.3	75.6	71.0	79.1	75.1
25R26	70.2	77.3	73.7	72.2	77.1	74.7
AGRIPRO ELKHART	71.7	66.8	69.3	75.2	74.7	75.0
AGRIPRO FOSTER	70.3	70.4	70.4	73.4	72.8	73.1
AGRIPRO MASON	73.0	73.2	73.1	74.0	72.4	73.2
AGRIPRO PATTON	74.2	81.6	77.9	75.8	78.0	76.9
CLARK	59.7	68.4	64.1	59.9	69.4	64.7
NK COKER 9474	64.1	63.9	64.0	69.4	68.6	69.0
NK COKER 9663	77.6	69.6	73.6	80.8	80.7	80.8
SS 522	65.8	65.3	65.6	70.1	65.7	67.9
SS 555	65.9	73.7	69.8	74.1	76.4	75.3
SS 558	69.4	70.8	70.1	73.5	76.3	74.9
JACKSON	71.9	70.2	71.1	74.7	71.0	72.9
KAS PATRIOT	71.9	66.6	69.2	74.9	71.6	73.3
MADISON	70.4	73.4	71.9	71.9	77.9	74.9
PATTERSON	65.3	66.9	66.1	68.1	71.4	69.7
MEAN	69.8	71.9	70.8	72.9	74.8	73.8
Correlation	.85					

1998: Logan and Shelby Co.
 1999: Caldwell and Shelby Co.
 2000: Fulton and Shelby Co.