

Comparison of No-Till and Mixed Tillage Farms in Central Kansas

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Using Kansas Farm Management Association (KFMA) data for North Central and South Central Kansas, this article documents cost differences between farms that have adopted a no-till production system, and those with conventional or a reduced tillage system. The characteristics and profitability of no-till and mixed tillage farms are also compared.

The KFMA program provides detailed cost information on a harvested acre basis for each participating farm. These costs are often summarized and compared across farms or groups of farms. Cost comparisons include the following cost breakdowns: labor cost, machinery cost, crop cost, improvement cost, asset charges, and other expenses. In addition to documenting differences in detailed cost categories between no-till and mixed tillage farms, this article examines differences in the following farm characteristics: total acres, crop acres, harvested acres, a crop intensity index, percent of crop acres planted to wheat, percent of crop acres planted to feed grains, percent of crop acres planted to oilseeds, value of farm production, net farm income, labor cost as a percent of value of farm production, value of farm production per worker, expense ratios, operating profit margin, and asset turnover ratio. The crop intensity index is computed by dividing harvested acres by crop acres. Farms that are double cropping would have an index above 1.00.

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Tables 1-2 contain detailed cost comparisons for north central and south central KFMA farms. The no-till farms have more crop acres and a higher crop intensity index than the mixed tillage farms. Total cost per harvested acre for the no-till farms was approximately \$7 to \$8 lower than total cost per harvested acre for the mixed tillage farms in central Kansas. Labor cost, machinery cost, and asset charges per acre were relatively lower for the no-till farms. Crop cost per acre was relatively higher for the no-till farms.

Table 3 contains a comparison of the characteristics of no-till and mixed tillage farms. The no-till farms tend to be larger, as measured using either total acres or value of farm production, farm their ground more intensely, produce less wheat, and produce more feed grains and oilseeds. Crop rotation information is not collected from KFMA farms. However, using the information in Table 3, it appears that the no-till farms are including feed grains and oilseeds in their rotations to a greater extent than the mixed tillage farms.

The no-till farms are relatively more labor efficient (i.e., have a lower labor cost as a percent of value of farm production and a higher value of farm production per worker) and have a lower economic total expense ratio indicating that they are more cost efficient. The no-till farms, on average, have a higher operating profit margin ratio and asset turnover ratio.

Though the no-till farms are on average larger, more cost efficient, and more profitable, it is important to note that these tendencies are not true for all farms. A relatively large percent of the no-till farms, approximately 13%, have a value of farm production below \$250,000. Similarly, approximately 25% of the mixed tillage farms

have a value of farm production above \$500,000. In terms of profitability, approximately 13% of the no-till farms had a negative profit margin and approximately 37% of the mixed tillage farms have above average profit margins.

In summary, the no-till farms in the central KFMA associations have, on average, a cost advantage. Having said that, adopting a no-till system will not necessarily translate into a cost advantage. Every farm has a unique set of resources to work with (see the April 2008 KFMA newsletter article pertaining to the identification of unique resources). Thus, what works for some farms will not necessarily work for other farms. Examining analysis trends is an excellent way to determine the impact of a change in your operation.

Table 1. Detailed Cost per Acre Comparisons for North Central Kansas Farms.^a

Item	No-Till Farms	Mixed Tillage Farms
Number of Farms	72	202
Crop Acres	1,666	969
Harvested Acres	1,772	1,006
Crop Intensity Index	1.064	1.038
<u>Labor Cost</u>		
Hired Labor	6.90	7.74
Operator and Family Labor	23.56	32.87
Sub-Total	30.46	40.61
<u>Machinery Cost</u>		
Repairs	18.60	19.54
Machine Hire	7.25	10.96
Gas, Fuel, and Oil	15.28	19.13
Depreciation	12.71	12.19
Sub-Total	53.84	61.82
<u>Crop Cost</u>		
Seed and Crop Insurance	32.40	26.23
Fertilizer	55.98	51.28
Herbicide	23.89	16.86
Miscellaneous	1.73	1.17
Sub-Total	114.00	95.54
<u>Improvement Cost</u>		
Sub-Total	2.73	3.30
<u>Asset Charges</u>		
Interest Paid	10.28	12.33
Cash Farm Rent	14.48	12.27
Opportunity Charges	26.25	31.71
Sub-Total	51.01	56.31
<u>Other Expenses</u>		
Sub-Total	12.60	15.12
Total Cost per Harvested Acre	264.64	272.70

^a Source: Kansas Farm Management Association Databank, 2008.

Table 2. Detailed Cost per Acre Comparisons for South Central Kansas Farms.^a

Item	No-Till Farms	Mixed Tillage Farms
Number of Farms	39	227
Crop Acres	2,140	1,390
Harvested Acres	2,390	1,406
Crop Intensity Index	1.117	1.012
<u>Labor Cost</u>		
Hired Labor	10.04	8.28
Operator and Family Labor	20.98	31.50
Sub-Total	31.02	39.78
<u>Machinery Cost</u>		
Repairs	17.31	21.27
Machine Hire	11.08	12.52
Gas, Fuel, and Oil	17.18	21.55
Depreciation	18.08	15.59
Sub-Total	63.65	70.93
<u>Crop Cost</u>		
Seed and Crop Insurance	34.10	28.02
Fertilizer	48.07	52.61
Herbicide	30.10	18.39
Miscellaneous	2.31	3.13
Sub-Total	114.58	102.15
<u>Improvement Cost</u>		
Sub-Total	2.91	2.61
<u>Asset Charges</u>		
Interest Paid	7.99	10.01
Cash Farm Rent	9.68	8.05
Opportunity Charges	29.46	30.87
Sub-Total	47.13	48.93
<u>Other Expenses</u>		
Sub-Total	10.27	12.48
Total Cost per Harvested Acre	269.56	276.88

^a Source: Kansas Farm Management Association Databank, 2008.

Table 3. Characteristics of No-Till and Mixed Tillage Farms in Central Kansas.^a

Item	No-Till Farms	Mixed Tillage Farms
Total Acres	2,227	1,591
Crop Acres	1,808	1,199
Harvested Acres	1,966	1,226
Crop Intensity Index	1.087	1.023
Percent of Crop Acres Planted to Wheat	41.70%	52.21%
Percent of Crop Acres Planted to Feed Grains	31.42%	23.85%
Percent of Crop Acres Planted to Oilseeds	25.61%	14.93%
Value of Farm Production (VFP)	\$670,140	\$389,626
Net Farm Income (NFI)	\$197,377	\$96,987
Labor Cost as a Percent of VFP	10.63%	15.52%
Value of Farm Production per Worker	\$415,204	\$298,564
Total Expense Ratio (TER)	0.705	0.751
Adjusted Total Expense Ratio (ATER)	0.784	0.876
Economic Total Expense Ratio (ETER)	0.892	1.014
Percent of Farms with ETER less than 1.000	65.45%	38.60%
Operating Profit Margin Ratio	0.2493	0.1677
Percent of Farms with Negative Profit Margin	12.73%	32.33%
Percent of Farms with Above Average Profit Margin	54.55%	36.98%
Asset Turnover Ratio	0.5265	0.4090
Percent of Farms with VFP less than \$100,000	0.91%	12.09%
Percent of Farms with VFP between \$100,000 and \$250,000	11.82%	30.23%
Percent of Farms with VFP between \$250,000 and \$500,000	35.45%	32.56%
Percent of Farms with VFP greater than \$500,000	51.82%	25.12%

^a Source: Kansas Farm Management Association Databank, 2008.