

# **The Relative Cost Efficiency of No-Till Farms in Central Kansas**

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Using 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.

Tables 1-2 contain detailed cost comparisons for north central and south central KFMA farms. The no-till farms have relatively more crop acres. The no-till farms in south central Kansas had a relatively higher crop intensity index. Total cost per

harvested acre was similar between tillage groups in north central Kansas. In contrast, the no-till farms in south central Kansas had a total cost per harvested acre that was approximately \$13 lower than that of the mixed tillage farms. 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 24%, have a value of farm production below \$250,000. Similarly, approximately 16% of the mixed tillage farms have a value of farm production above \$500,000. In terms of profitability, approximately 19% of the no-till farms had a negative profit margin and approximately 31% 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. As indicated in an earlier newsletter, every farm has a unique set of resources to work with (see the article pertaining to the identification of unique resources in the April 2008 KFMA newsletter). Thus, what works for some farms will not necessarily work for other farms. If a farm decides to reduce tillage, examining analysis trends is an excellent way to determine the impact of the change on the farm operation.

**Table 1. Detailed Cost per Acre Comparisons for North Central Kansas Farms.<sup>a</sup>**

Item	No-Till Farms	Mixed Tillage Farms
Number of Farms	66	195
Crop Acres	1,512	971
Harvested Acres	1,578	1016
Crop Intensity Index	1.044	1.046
<u>Labor Cost</u>		
Hired Labor	6.13	6.52
Operator and Family Labor	26.69	31.62
Sub-Total	32.82	38.14
<u>Machinery Cost</u>		
Repairs	16.83	16.30
Machine Hire	4.45	8.15
Gas, Fuel, and Oil	11.57	14.14
Depreciation	11.38	11.10
Sub-Total	44.23	49.69
<u>Crop Cost</u>		
Seed and Crop Insurance	23.09	19.97
Fertilizer	35.73	32.14
Herbicide	20.49	12.25
Miscellaneous	1.12	1.08
Sub-Total	80.43	65.44
<u>Improvement Cost</u>		
Sub-Total	2.09	2.31
<u>Asset Charges</u>		
Interest Paid	11.14	11.94
Cash Farm Rent	12.18	11.01
Opportunity Charges	24.26	28.26
Sub-Total	47.58	51.21
<u>Other Expenses</u>		
Sub-Total	12.76	13.41
<b>Total Cost per Harvested Acre</b>	<b>219.91</b>	<b>220.20</b>

<sup>a</sup> Source: Kansas Farm Management Association Databank, 2007.

**Table 2. Detailed Cost per Acre Comparisons for South Central Kansas Farms.<sup>a</sup>**

Item	No-Till Farms	Mixed Tillage Farms
Number of Farms	39	256
Crop Acres	2,065	1,416
Harvested Acres	2,203	1,405
Crop Intensity Index	1.067	0.992
<u>Labor Cost</u>		
Hired Labor	8.86	7.12
Operator and Family Labor	22.67	30.61
Sub-Total	31.53	37.73
<u>Machinery Cost</u>		
Repairs	13.51	17.54
Machine Hire	8.58	9.34
Gas, Fuel, and Oil	10.11	16.06
Depreciation	16.63	14.18
Sub-Total	48.83	57.12
<u>Crop Cost</u>		
Seed and Crop Insurance	27.19	24.90
Fertilizer	34.85	35.17
Herbicide	19.03	13.57
Miscellaneous	2.28	2.72
Sub-Total	83.35	76.36
<u>Improvement Cost</u>		
Sub-Total	2.75	2.31
<u>Asset Charges</u>		
Interest Paid	11.12	12.09
Cash Farm Rent	6.54	8.04
Opportunity Charges	26.06	29.76
Sub-Total	43.72	49.89
<u>Other Expenses</u>		
Sub-Total	11.55	11.62
<b>Total Cost per Harvested Acre</b>	<b>221.73</b>	<b>235.03</b>

<sup>a</sup> Source: Kansas Farm Management Association Databank, 2007.

**Table 3. Characteristics of No-Till and Mixed Tillage Farms in Central Kansas.<sup>a</sup>**

Item	No-Till Farms	Mixed Tillage Farms
Total Acres	2,130	1,661
Crop Acres	1,708	1,250
Harvested Acres	1,800	1,264
Crop Intensity Index	1.054	1.011
Percent of Crop Acres Planted to Wheat	43.97%	54.00%
Percent of Crop Acres Planted to Feed Grains	29.92%	23.04%
Percent of Crop Acres Planted to Oilseeds	21.25%	11.92%
Value of Farm Production (VFP)	\$481,842	\$318,880
Net Farm Income (NFI)	\$134,027	\$73,585
Labor Cost as a Percent of VFP	13.82%	17.87%
Value of Farm Production per Worker	\$308,873	\$243,792
Total Expense Ratio (TER)	0.722	0.769
Adjusted Total Expense Ratio (ATER)	0.829	0.915
Economic Total Expense Ratio (ETER)	0.955	1.077
Operating Profit Margin Ratio	0.2226	0.1447
Percent of Farms with Negative Profit Margin	18.69%	36.49%
Percent of Farms with Above Average Profit Margin	47.66%	31.08%
Asset Turnover Ratio	0.4303	0.3422
Percent of Farms with VFP less than \$100,000	0.00%	15.77%
Percent of Farms with VFP between \$100,000 and \$250,000	24.30%	32.88%
Percent of Farms with VFP between \$250,000 and \$500,000	42.99%	35.14%
Percent of Farms with VFP greater than \$500,000	32.71%	16.22%

<sup>a</sup> Source: Kansas Farm Management Association Databank, 2007.