

## Efficiency of No-Till Production in Central Kansas

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Ag Profitability Conference  
Canton, Kansas  
January 18, 2011

## Outline of Presentation

- Kansas Acreage Trends
- Detailed Cost Summaries
- Central KFMA Whole-Farm Data
  - All farms
  - Farms with value of farm production greater than \$500,000

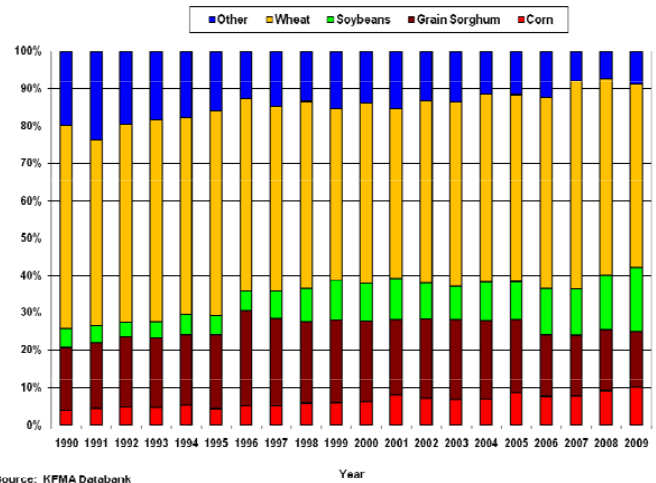
## Kansas Acreage Trends 1990-2009

- Corn and soybean acres have risen steadily
  - Corn trending up 4.5% and soybeans 3%, annually
- Grain sorghum acres have fallen
  - Spiked in 1996 and trended upward through 2001
- Wheat acres have trended downward since 1990
  - Trending down 1.5% annually

## Kansas Acreage Trends 1990-2009

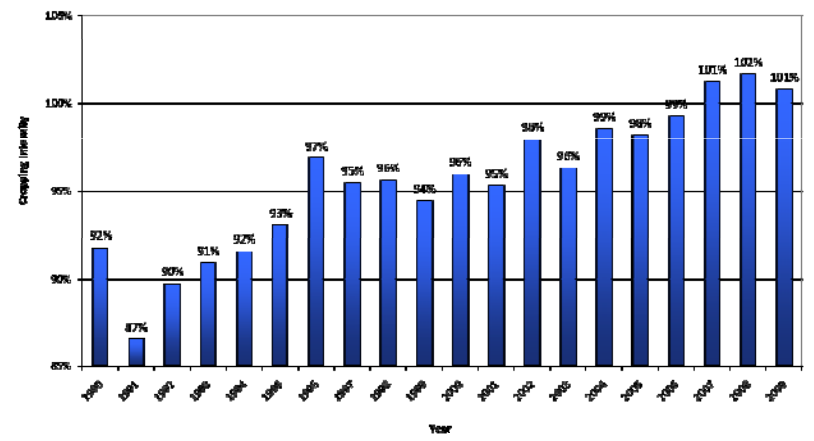
	<u>1990-1994</u>	<u>2005-2009</u>
Avg Corn	1.74 M Acres	3.52 M Acres
Avg GS	2.96 M Acres	2.61 M Acres
Avg Soy	1.94 M Acres	3.09 M Acres
Avg W	11.20 M Acres	8.98 M Acres

Central Kansas Crop Mix



Source: KFMA Databank

Central Kansas Cropping Intensity

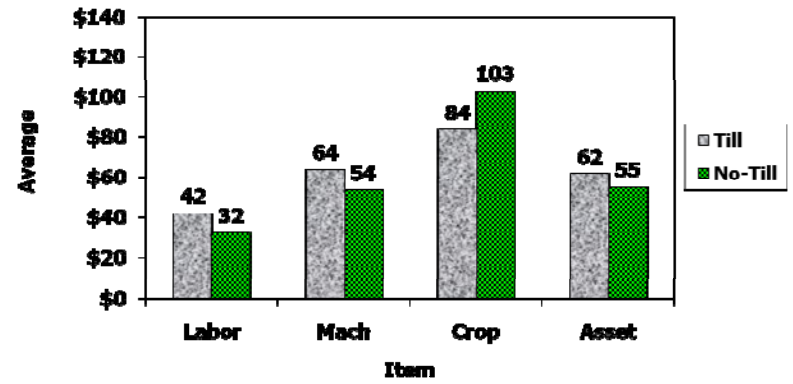


Source: KFMA Databank

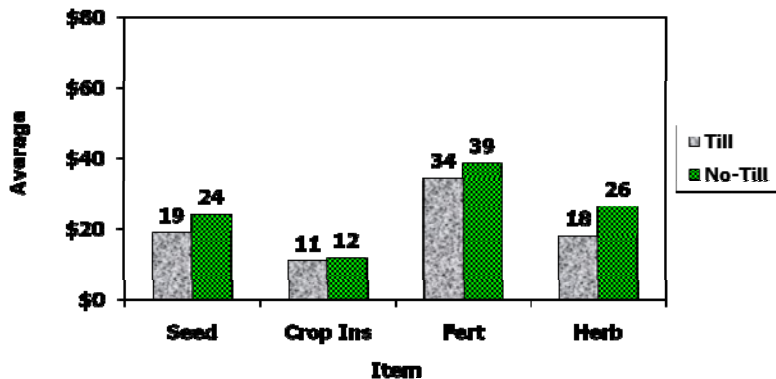
## Detailed Cost Comparisons

- KFMA Data, Central Kansas, 2009
  - Crop Cost Comparisons on a per Harvested Acre Basis
    - Labor
      - Hired labor and opportunity charges on operator and family labor
    - Machinery
      - Repairs on machinery and equipment, machine hire, gas, fuel, oil, and depreciation on machinery and equipment
    - Crop
      - Seed, crop insurance, fertilizer, herbicide, and miscellaneous costs such as irrigation energy, crop storage and marketing, and crop supplies
    - Improvements
    - Asset Charges
    - Other Expenses

## Detailed Cost Analysis Cost Categories: NC KFMA, 2009

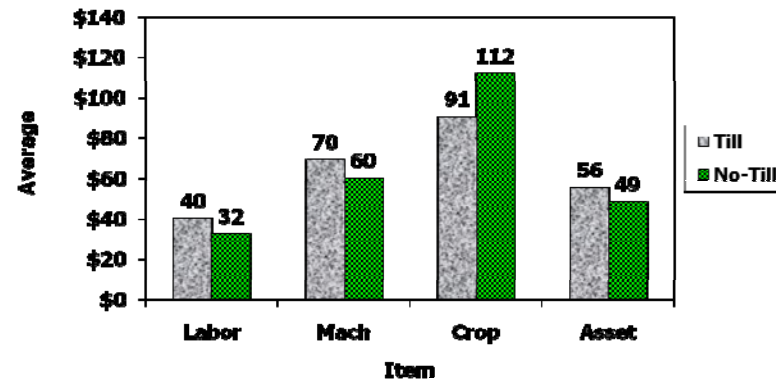


## Detailed Cost Analysis Crop Expense: NC KFMA, 2009



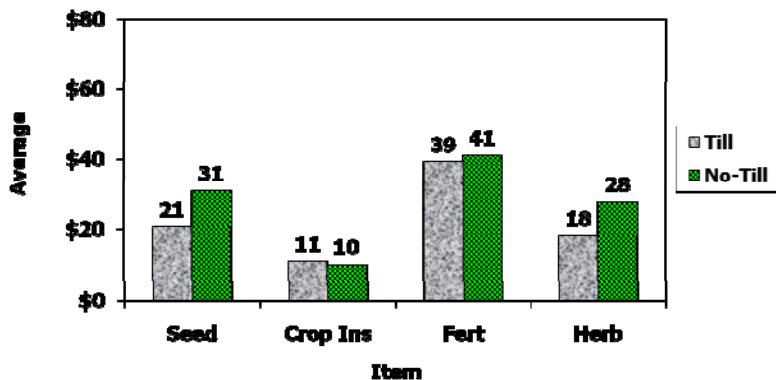
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## Detailed Cost Analysis Cost Categories: SC KFMA, 2009



10

## Detailed Cost Analysis Crop Expense: SC KFMA, 2009



11

## KFMA Data

- Central KFMA farms with continuous data from 2005 to 2009
- Attempt to quantify cropping practices, efficiency, and financial performance gains in no-till production systems
- Farms designated as no-till or mixed tillage
  - 280 mixed tillage farms
  - 85 no-till farms

## Farm Size and Net Farm Income All Farms

Item	No-Till	Mixed Till	Significantly Different
Crop Acres	1,724	1,303	yes
Harvested Acres	1,840	1,304	yes
Value of Farm Production (VFP)	\$485,682	\$328,414	yes
Net Farm Income (NFI)	\$121,743	\$69,244	yes
Gross Crop Value per Acre	\$303.87	\$271.18	yes

## Crop Mix and Intensity All Farms

Item	No-Till	Mixed Till	Significantly Different
Crop Intensity Index	1.067	1.001	yes
% Crop Acres Planted to Wheat	41.94%	52.65%	yes
% Crop Acres Planted to Feed Grains	30.63%	23.25%	yes
% Crop Acres Planted to Oilseeds	23.84%	13.20%	yes

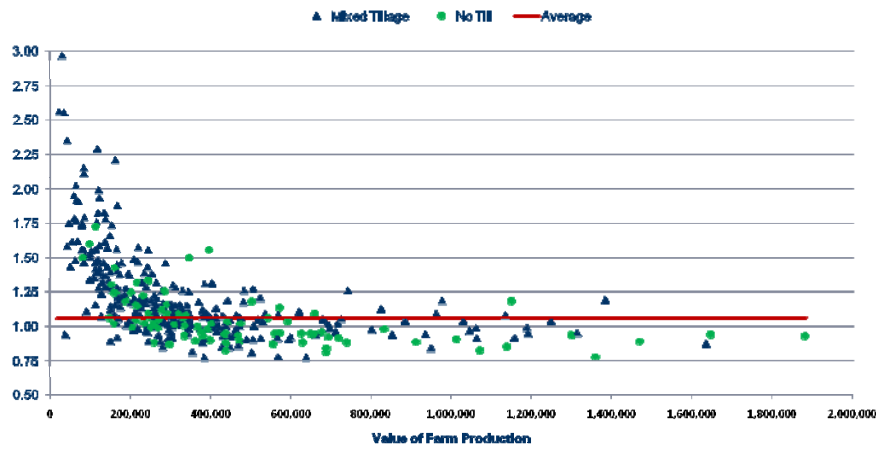
## Cost and Financial Performance All Farms

Item	No-Till	Mixed Till	Significantly Different
Economic Total Expense Ratio (ETER)	0.987	1.098	yes
Operating Profit Margin Ratio	0.1861	0.1232	yes
Asset Turnover Ratio	0.4284	0.3365	no
Machinery Investment per Crop Acre	\$150.06	\$151.47	no
Machinery Cost per Crop Acre	\$57.25	\$66.98	yes
Labor Cost as a Percent of VFP	13.80%	17.07%	yes

## Summary of Results for All Farms

- From the previous three slides it is difficult to determine whether the differences in efficiency and financial performance are due to farm size or the adoption of a no-till production system.
- Efficiency and financial performance vary significantly across farms that are similar in size.

### Economic Total Expense Ratio



### Further Results

- To help determine whether the differences in efficiency and financial performance are due to farm size or the adoption of a no-till production system, only the farms with a value of farm production greater than \$500,000 were examined.
- Number of farms
  - 45 mixed tillage farms
  - 29 no-till farms

### Farm Size and Net Farm Income VFP > \$500K

Item	No-Till	Mixed Till	Significantly Different
Crop Acres	2,738	2,769	no
Harvested Acres	3,021	2,832	no
Value of Farm Production (VFP)	\$865,130	\$816,455	no
Net Farm Income (NFI)	\$217,177	\$158,998	no
Gross Crop Value per Acre	\$333.85	\$319.55	no

### Crop Mix and Intensity VFP > \$500K

Item	No-Till	Mixed Till	Significantly Different
Crop Intensity Index	1.103	1.023	yes
% Crop Acres Planted to Wheat	43.24%	48.75%	no
% Crop Acres Planted to Feed Grains	31.85%	29.40%	no
% Crop Acres Planted to Oilseeds	26.63%	15.17%	yes

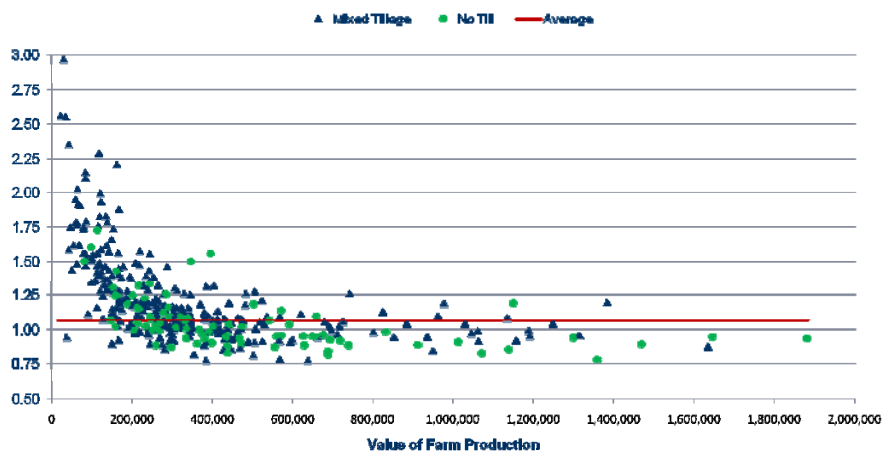
## Cost and Financial Performance VFP > \$500K

Item	No-Till	Mixed Till	Significantly Different
Economic Total Expense Ratio (ETER)	0.936	1.003	yes
Operating Profit Margin Ratio	0.2116	0.1735	no
Asset Turnover Ratio	0.4972	0.4104	no
Machinery Investment per Crop Acre	\$169.08	\$174.33	no
Machinery Cost per Crop Acre	\$59.68	\$73.76	yes
Labor Cost as a Percent of VFP	11.60%	12.05%	no

## Conclusions

- **Efficiency and/or profitability is related to size, not necessarily tillage practices**

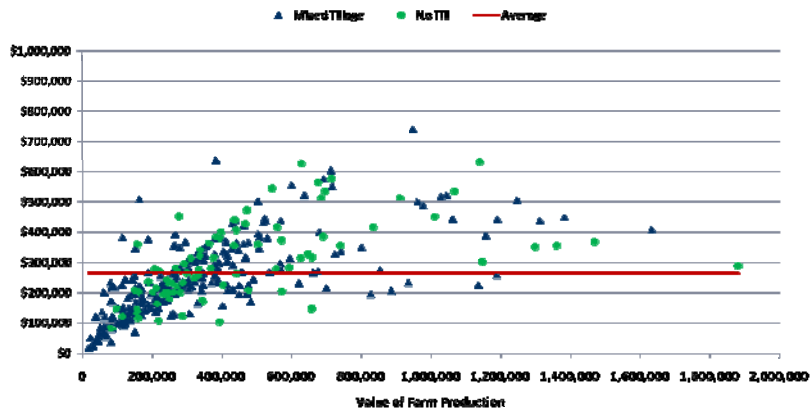
### Economic Total Expense Ratio



## Conclusions

- Efficiency is related to size, not necessarily tillage practices
- **Labor use efficiency varies greatly across all farms**

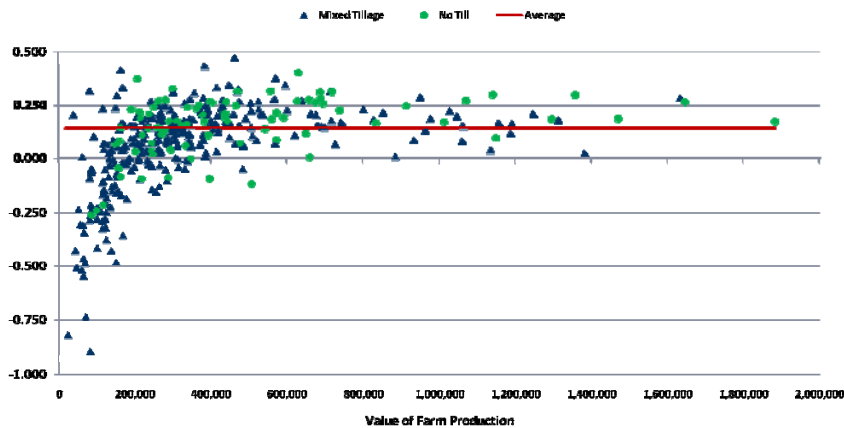
### Value of Farm Production per Worker



## Conclusions

- Efficiency is related to size, not necessarily tillage practices
- Labor use efficiency varies greatly across all farms
- **Larger farms have a tendency to be more profitable**

### Operating Profit Margin



## Conclusions

### Crop mix has changed over time

- Improved hybrids and conservation tillage practices have made corn and soybeans more reliable and profitable crops.
- As farm size increases, more fall crops help in utilizing labor force.

## Conclusions

### No-till is becoming increasingly popular

- Slight increase in efficiency with the adoption of a no-till production system.
- No-till may allow farms to manage labor better.
- Double-cropping in a no-till system helps to generate revenue without expanding land base.
- No-till is a relatively new technology and may gain more advantages in future.

## KFMA Data

- **Web Site**
  - [www.agmanager.info/kfma](http://www.agmanager.info/kfma)
- **Whole-Farm Data**
  - All Farms
  - Farm Type
  - Farm Size
  - Detailed Cost
- **Enterprise**