

13. *The Value and Feasibility of Differentiating Yourself from the Average Crop Producer in Your Region*

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Cooper Morris graduated from Kansas State's Agricultural Economics Master Program in May of 2014. Before Kansas State he earned a B.S. in Economics with a Minor in Mathematics at Dickinson College in Carlisle, Pennsylvania. At Kansas State Cooper studied strategic business management and industry structures and wrote a thesis on the value of management in Kansas crop production. Cooper is currently a credit analyst at Rabo AgriFinance in Wichita, Kansas.

Abstract/Summary

This presentation discusses how crop farms can achieve higher than average net incomes by differentiating their operations from the average farm in their KFMA region. This includes how farms access land (own versus rent), control weeds (herbicides versus tillage), and focus their management efforts (yields versus marketing) compared to the average farm. The performance of 433 crop farms between 2001 and 2010 were analyzed to quantify the value of farming differently than the average in the region. The feasibility of using different than average production practices and marketing crops at higher than average prices will also be discussed.

The Value and Feasibility of Differentiating yourself from the Average Crop Producer in your KFMA Region

By Cooper Morris

Quick Biography

- Grew up in Northwest New Jersey
- Studied Economics and Mathematics at Dickinson College in Carlisle, Pennsylvania
- Went on wheat harvest in 2008
- Started Kansas State's Agricultural Economics Master Program in 2010

Why care about achieving a higher than average net income?

- Achieve the largest possible income for your work
- Be able to produce crops at the same prices as other farms
- Competition for land

Different than Average Net Income per Acre

$$= \text{Function} \left(\begin{array}{l} \text{Different than Average Resources} \\ \text{Different than Average Practices} \\ \text{Different than Average Management} \end{array} \right)$$

Breaking Down a Crop Operation

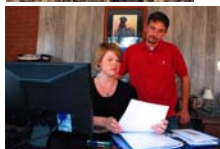
Resources



Practices



Management



Resources

- Land
 - Own or Rent
- Equipment
 - Own, Lease, or Custom Hire
 - Old or New
- Labor
 - Workers per Acre



Practices

- Number of Crops Grown
 - Specialized or Diversified
- Planting Crops and Controlling Weeds
 - Traditional Tillage or No Tillage
- Lands Use
 - High Intensity or Low Intensity



Management

- Cost Management
 - Higher or Lower Input Investments
 - Accounting Practices
- Yield Management
 - Higher or Lower Input Investments
 - Agronomy Focus
- Marketing Management
 - Hedging Strategy or No Hedging Strategy
 - On Farm Storage



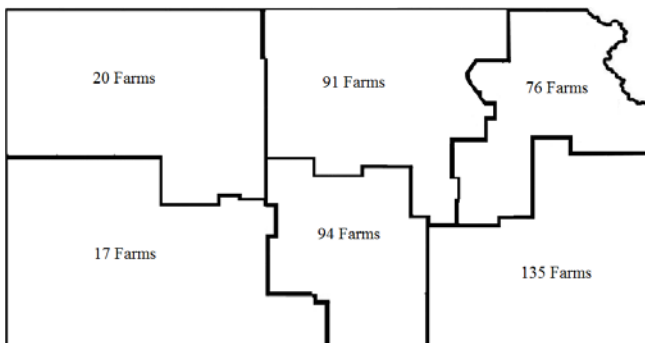
Characteristics	Practices	Management
Farm Size	Crop Specialization	Costs
Share of Rented Acres	Tillage Practices	Yields
Workers per Acre	Planting Intensity	Marketing
Equipment Investments per Acre	Seed Costs	
Use of Custom Hire	Risk	
Government Payments		



Analysis – Two Parts

1. Do differences in farm characteristics, practices, and management performances explain the differences in farms' net incomes?
2. How feasible is it for farms to have different than average characteristics, practices, and management performances?

Sample – 433 Farms



Sample

All farms in the sample have...

1. 10 years of continuous farm level information
2. At least 50% of labor is allocated to crop production
3. At least 50% of acres are planted to wheat, milo, soybeans, corn, and alfalfa

Summary Statistics

	Average	Minimum	Maximum
Farm Size	1,445	224	5,680
Share of Rented Acres	68%	0%	100%
Workers per 1,000 Acres	0.98	0.28	3.45
Equipment Investments	\$157/acre	\$25/acre	\$482/acre
Share of Main Crop Acres	92%	65%	100%

Part 1 – Value

Relative Net Income per Acre

$$= \text{Function} \left(\begin{array}{l} \text{Relative Resources} \\ \text{Relative Practices} \\ \text{Relative Management} \end{array} \right)$$

Net Income per Acre

Income

= Cash Crop Sales + Crop Insurance Payments + Government Payments
+ Feed Income

Expenses

= Cash Rent + Owned Acres Rent + Machine Expenses + Crop Inputs + Crop Labor

Net Income = Income – Expenses

$$\text{Net Income per Acre} = \frac{\text{Net Income}}{\text{Total Planted Acres}}$$

Relative Net Income

The difference between a farm's net income and the average net income in their KFMA region.

Farm's Relative Net Income =

$$\text{Farm}^{(NFI/Acre)} - \text{KFMA Region Average}^{(NFI/Acre)}$$

$$\text{Relative Net Farm Income} = \frac{\sum_{n=1}^{10} \text{Relative Net Farm Income}}{10}$$

Relative Characteristics, Practices, and Management

The difference between a farm's variable and the average in their KFMA region.

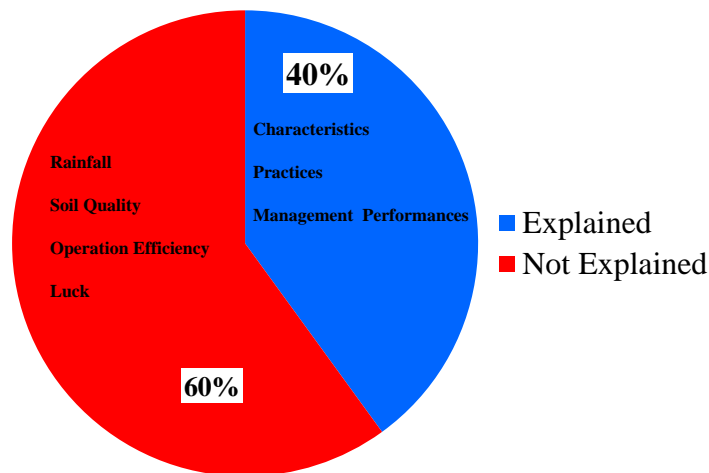
Farm's Relative Size = Farm Size – KFMA Average (Farm Size)

$$\text{Relative Size} = \frac{\sum_{n=1}^{10} \text{Relative Characteristic}}{10}$$

Variables

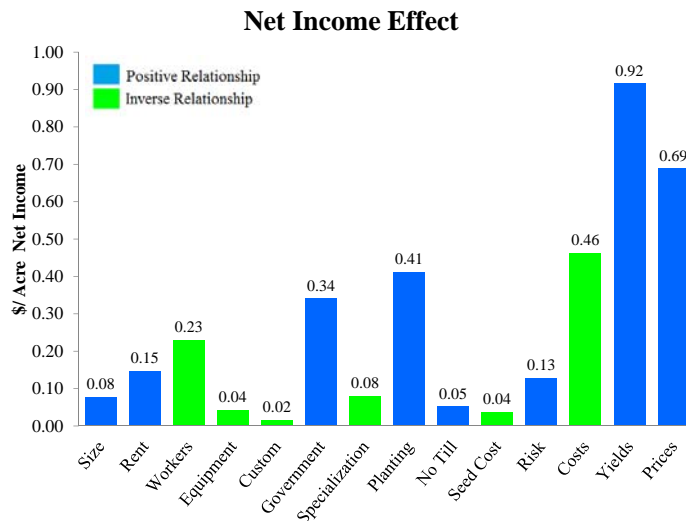
- Size
- Share of Rent Acres
- Workers per Acre
- Equipment Investments per Acre
- Custom Hire Use
- Government Payments
- Specialization Index
- Planting Intensity
- Tillage
- Seed Cost
- Risk
- Costs
- Yields
- Prices

How much of the differences in relative net incomes are explained by the relative variables?



Variable	Estimated Impacts on Net Income
	1% Different than Average
Farm Characteristics	
Size	0.08**
Share of Rented Acres	0.15**
Workers per Acre	-0.23**
Equipment Investments	-0.04
Custom Hire Use	-0.02
Government Payments	0.34**
Farm Practices	
Specialization Index	-0.08
Planting Intensity	0.41**
Tillage Index	0.05
Seed Costs	-0.04
Risk	0.13**
Management Performances	
Costs	-0.46**
Yields	0.92**
Prices	0.69*

*significant at the 0.10 level
 **significant at the 0.05 level



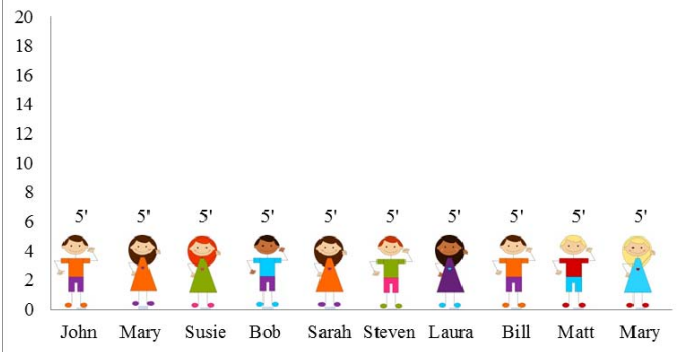
Summary

- Fundamental differences between farms explained 40% of the differences in farms' net income per acre.
- Farm size, share of rent acres, workers per acre, government payments, planting intensity, risk preference, and cost, yield, and price management were all significant.

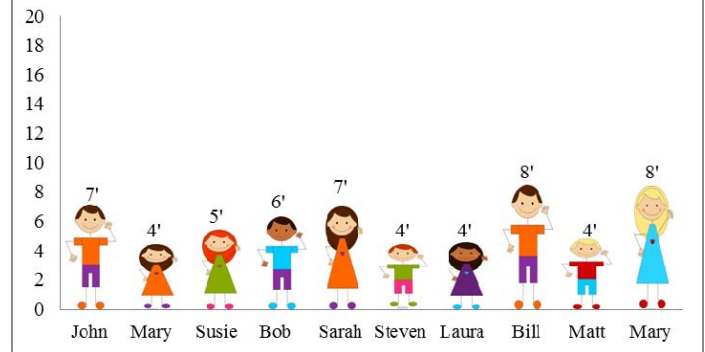
Part 2 - Degree

To what degree do farms distinguish particular parts of their operations from the local average?

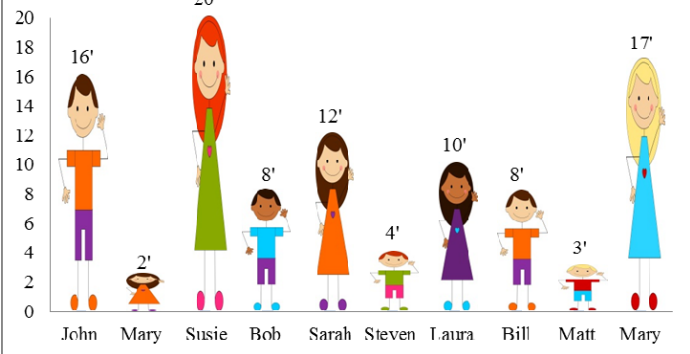
Standard Deviation = 0



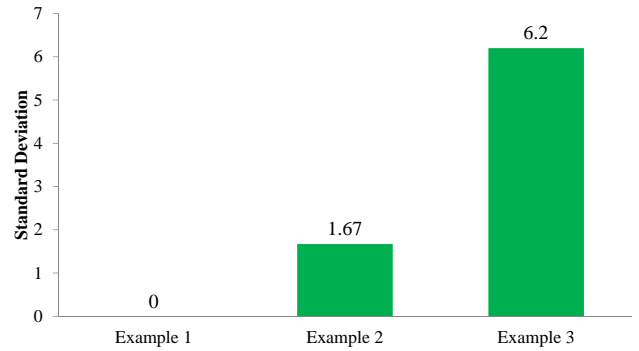
Standard Deviation = 1.67



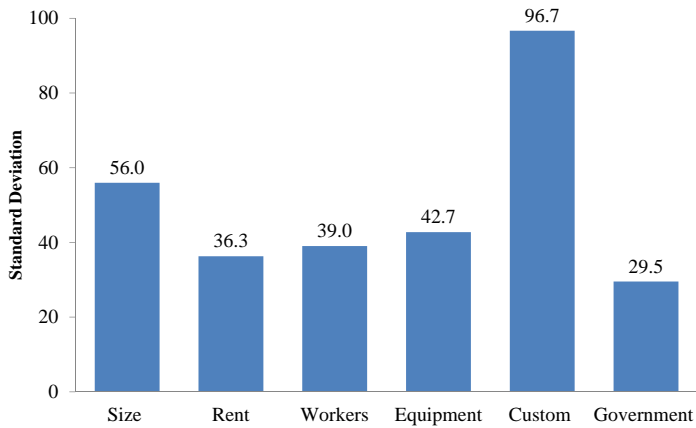
Standard Deviation = 6.2



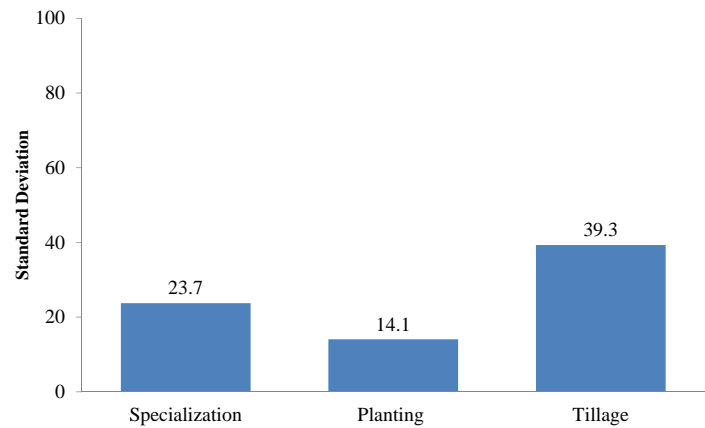
Example Summary



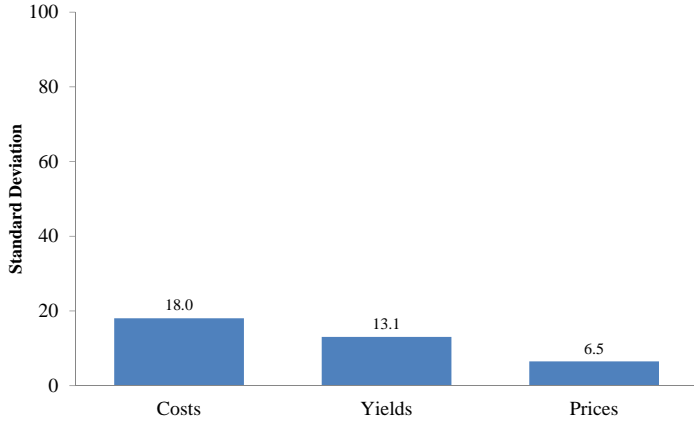
Characteristics



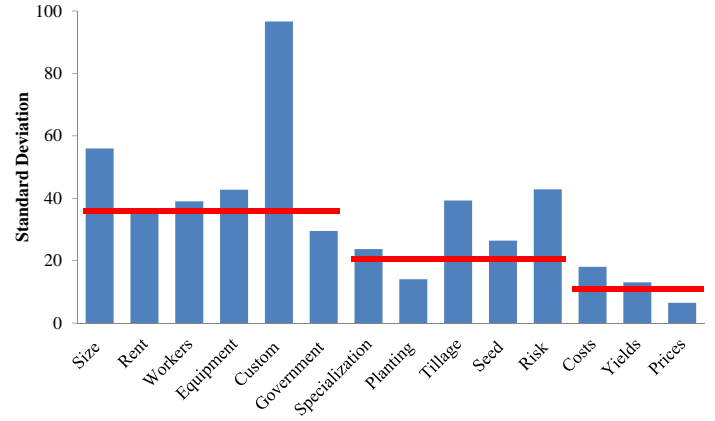
Practices



Management Performances



Summary



Summary

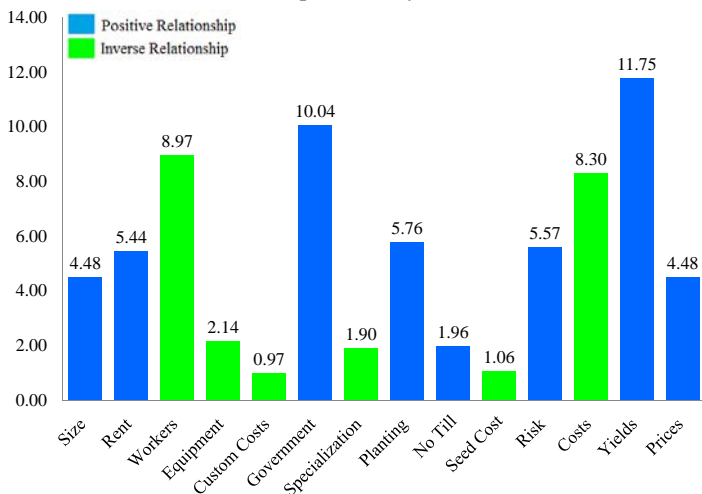
- Farms' characteristics are very different within each KFMA region.
- Farms' production practices and management performances are similar within each KFMA region.

Top 1/3rd Analysis

What is the value of...

- Being one of the largest farms in your KFMA region
- Using one of the highest average planting intensities in your KFMA region
- Having one of the highest average yield performers in your KFMA region

Top 1/3rd Analysis

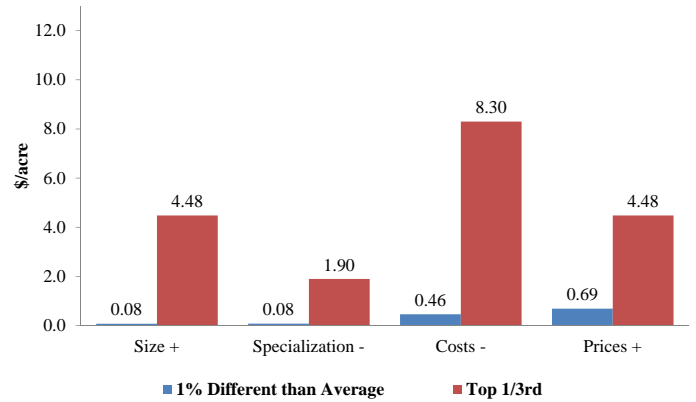


Conclusion

- The fundamental differences between your farm and the local average affects your comparative profitability.
- Farms distinguish their characteristics from the local average to a larger degree than their practices and management performances.
- In the 2001 to 2010 period, top cost managers achieved a higher net income per acre than top market managers.

Questions?

1% Different vs Top 1/3rd



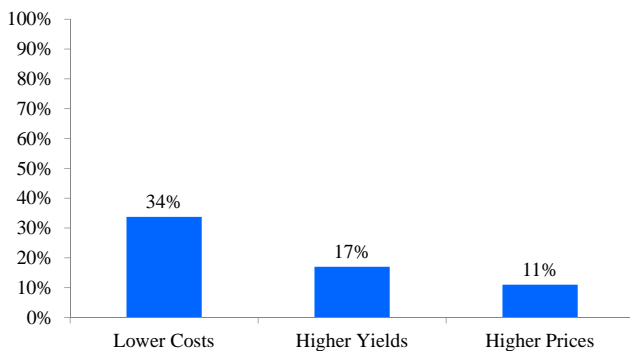
Consistency

How consistently do farms maintain lower costs, higher yields, and higher prices than the average?

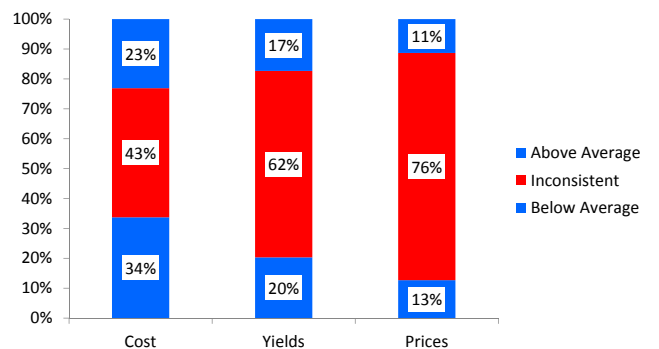
Consistency

2001: Farms' Yield vs Local average
 2002: Farms' Yield vs Local average
 2003: Farms' Yield vs Local average
 ...
 2009: Farms' Yield vs Local average
 2010: Farms' Yield vs Local average

Superior Performance



Management



Net Income

