

## **Staying on Top: Characteristics of Successful Farms<sup>1</sup>**

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### Introduction

Continuous improvement and learning are essential ingredients to success in a competitive industry such as production agriculture. Assessing improvements from an individual farm perspective is only possible if the farm knows where it stands in relation to others in the industry. Benchmarking is one of the comparative analysis tools that can be used to assess improvements in performance.

In a competitive industry, cost of production benchmarks are extremely important. Being a low cost producer in a competitive industry is important for firm growth and survival. Businesses that consistently have above average per unit costs and that can not sell their product for a higher price than competitors will have a difficult time surviving in any industry.

It is a widely established fact that per unit costs vary significantly among farms and ranches (Babcock). There are several dynamic competition theories that can be used to address this fact (Ellig and Lin). One of the most widely discussed theories that can be used to address the wide variability of per unit costs is resource-based theory of the firm (Barney; Hunt). Two of the fundamental axioms of resource-based theory are the heterogeneity of resources among firms

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and imperfect mobility. Resource heterogeneity suggests that every firm has at least some resources that are unique. Imperfect mobility reflects the fact that some resources are difficult to imitate or purchase in the market. An example may be a farm that has specific knowledge and experience in growing no-till wheat. Another example may be a cow-calf producer that effectively uses low cost winter feeds such as corn stalks. The extent to which each of these examples would lead to a cost advantage depends on whether these practices can be effectively imitated by other producers. Identifying and utilizing unique resources that are difficult for other farms to obtain is a key component of sustaining a farm's cost advantage.

The objective of this paper is to examine the persistence of production cost performance for dryland wheat and cow-calf enterprise in Kansas using 1991 to 2000 data. The number of years each farm was in the bottom and top one-third cost of production categories will be documented.

### Conceptual Framework

Cost of production estimates used in this study include cash costs as well as opportunity costs associated with unpaid operator labor and owned assets. Opportunity costs represent the value of resources, such as operator labor and owned assets, measured in terms of their next best alternative use. For discussions of how to compute opportunity costs see Kay and Edwards (1999) and the Kansas Farm Management Guides.

Enterprise costs of production were computed using information for 1991 to 2000 from the Kansas Farm Management Associations. Cost of production estimates were developed for dryland wheat and cow-calf enterprises. Based on these estimates, farms were categorized into bottom one-third, middle one-third, and top one-third cost of production categories. The number

of years each farm was in the bottom one-third and top one-third production cost categories was quantified. The difference in price, cost of production items, and enterprise size between farms that were in the bottom one-third category for six or more years and farms that were in the top one-third category for six or more years was examined. Statistical differences between the variables for these two categories were computed using t-tests.

### Kansas Farm Management Data

Dryland wheat and cow-calf enterprise data from the Kansas Farm Management Associations were used in this paper. These two enterprises were chosen for analysis based on their importance to Kansas agriculture and the prevalence of data available on these enterprises.

Costs of production for dryland wheat were divided into three categories: labor cost, purchased input cost, and capital cost. Labor cost included hired and unpaid operator labor. Purchased input cost included seed expense, fertilizer, dues and fees, fuel, utilities, and herbicide and insecticide. Capital cost included repairs, interest, machine hire, storage, taxes, insurance, conservation expense, depreciation, and land expense. Table 1 presents summary statistics for the 87 farms that had continuous wheat enterprise data from 1991 to 2000. All cost and revenue items in table 1 were computed on an accrual basis or reflect adjustments for beginning and ending inventories. The average total cost per bushel over the ten year period was \$4.03. The average cost of production was higher than the average price received per bushel, but lower than the total gross income received per bushel. In addition to inventory adjusted crop sale receipts, gross income includes government payments, crop insurance receipts, and miscellaneous income such as cooperative dividends. On average, the sample farms had 603 acres of dryland wheat and a yield of approximately 39 bushels per acre.

Cost of production for the cow-calf enterprise was divided into six categories: labor cost, feed cost, capital cost, fuel and utilities cost, veterinarian expense, and miscellaneous expense. Labor cost included hired and unpaid operator labor. Capital cost included repairs, interest, machine work, taxes, insurance, and depreciation. Miscellaneous expense included dues and fees, livestock marketing expense, and expenses related to the use of futures and options. Table 2 presents summary statistics for the 73 farms that had continuous cow-calf enterprise data from 1991 to 2000. All cost and revenue items in table 2 include inventory adjustments and are reported on a per cwt. produced basis. Cwt. produced for the cow-calf enterprise includes calf and breeding livestock sales and purchases, and inventory adjustments. The average cost per cwt. produced was \$89.49 over the ten year period. The average cost of production was substantially higher than the average revenue received indicating that on average these farms lost money over the ten year period. On average, the sample farms had approximately 129 cows.

## Results

### Dryland Wheat Enterprise

The persistence of wheat enterprise performance is presented in table 3. Approximately 17% of the farms were in the bottom one-third production cost category for 6 or more of the 10 years. Conversely, approximately 18% of the farms were in the top one-third production cost category for 6 or more of the 10 years. 11 of the 87 farms (approximately 13% of the farms) were not in the bottom production cost category for any of the 10 years. These results suggest that it is possible, even given the wide fluctuations in weather over time, for farms to be consistently good performers. It is also important to note that some farms had a difficult time staying out of the bottom one-third. These farms were consistently poor performers.

Table 4 presents summary statistics for farms that were in the bottom one-third production cost category for 6 or more years (bottom category) and for farms that were in the top one-third production cost category for 6 or more years (top category). Gross income and price received per bushel were not significantly different between the two categories of farms. Yield and all of the cost items were significantly different between the farm categories. Average total cost per bushel was \$5.48 for the bottom category and \$3.10 for the top category. Average total cost per bushel for the top category was lower than the average wheat price received over the ten year period. Conversely, average total cost per bushel for the bottom category was higher than the average gross income per bushel indicating that even with government payments these farms did not cover all of their costs. The top category of farms had a relatively higher average yield and had more acres of wheat on average than the bottom category of farms.

#### Cow-Calf Enterprises

The persistence of cow-calf enterprise performance is presented in table 5. Approximately 22% of the farms were in the bottom one-third production cost category for 6 or more of the 10 years. Conversely, approximately 22% of the farms were in top one-third production cost category for 6 or more of the 10 years. 8 of the 73 farms (approximately 11% of the farms) were not in the bottom production cost category for any of the 10 years. Thus, it was also possible for some cow-calf producers to consistently outperform their peers. As with dryland wheat, there was a fairly substantial proportion of farms that were consistently poor performers.

Summary statistics for farms that were in the bottom one-third production cost category for 6 or more years (bottom category) and for farms that were in the top one-third production cost

category for 6 or more years (top category) are presented in table 6. Gross income per cwt. and veterinarian expenses per cwt. were not significantly different between the two farm categories. All of the other cost items as well as enterprise size were significantly different between the two categories of farms. Average total cost per cwt. was \$110.84 per cwt. for the bottom category and \$73.38 per cwt. for the top category. The average price received per cwt. was not high enough to cover the average total costs of either group of farms. The top category had a larger herd size, on average, than the bottom category.

### Conclusions and Implications

This paper examined the persistence of production cost performance for dryland wheat and cow-calf enterprises in Kansas using 1991 to 2000 data. Approximately 18% of the dryland wheat farms and 22% of the cow-calf farms were in the top one-third production cost category for 6 or more of the 10 years examined. Results suggest that is possible for farms to consistently outperform other farms over a long period of time. These farms have a sustainable competitive advantage.

In addition to illustrating the feasibility and importance of being a low cost producer, this paper reveals the importance of keeping track of production costs. In a competitive industry, it is extremely important to compute and compare cost of production benchmarks with other firms in the industry. Benchmarking can be an extremely effective method of assessing whether changes in an operation over time have enhanced a firm's competitive advantage.

One of the biggest challenges to farms and ranches today is identifying and taking advantage of unique resources to create a competitive advantage. Most farms have some advantage that can be used to gain the upper hand. Farms without any unique resources will find

it increasingly difficult to compete in tomorrow's agricultural industry.

### References

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Table 1. Summary Statistics for a Sample of Kansas Wheat Enterprises, 1991-2000.

Variable	Unit	Average	Standard Deviation
Gross Income	\$/bu	4.73	1.35
Price	\$/bu	3.31	0.27
Labor	\$/bu	0.83	0.40
Purchased Inputs	\$/bu	1.06	0.27
Capital	\$/bu	2.13	0.56
Total Cost	\$/bu	4.03	0.90
Wheat Acres	No.	603	363
Yield	bu.	38.51	5.11

Table 2. Summary Statistics for a Sample of Kansas Cow-Calf Enterprises, 1991-2000.

Variable	Unit	Average	Standard Deviation
Gross Income	\$/cwt	68.53	5.00
Labor	\$/cwt	12.37	4.18
Feed	\$/cwt	46.30	7.73
Capital	\$/cwt	23.03	5.94
Utilities and Fuel	\$/cwt	3.13	1.67
Veterinary	\$/cwt	2.37	1.17
Miscellaneous	\$/cwt	2.29	1.95
Total Cost	\$/cwt	89.49	15.72
Number of Cows	No.	128.75	69.72

Table 3. Persistence of Performance for Wheat Enterprises.

Number of Years	Number of Farms in Cost of Production Category	
	Bottom One-Third	Top One-Third
0	11	13
1	14	10
2	10	13
3	12	17
4	12	6
5	13	12
6	6	6
7	3	2
8	4	4
9	2	3
10	0	1

Table 4. Summary Statistics for Bottom and Top Wheat Enterprise Categories.<sup>a</sup>

Variable	Unit	Bottom Category	Top Category
Gross Income	\$/bu	5.21 <sup>1</sup>	4.52 <sup>1</sup>
Price	\$/bu	3.43 <sup>1</sup>	3.21 <sup>1</sup>
Labor	\$/bu	1.31 <sup>1</sup>	0.64 <sup>2</sup>
Purchased Inputs	\$/bu	1.41 <sup>1</sup>	0.88 <sup>2</sup>
Capital	\$/bu	2.76 <sup>1</sup>	1.59 <sup>2</sup>
Total Cost	\$/bu	5.48 <sup>1</sup>	3.10 <sup>2</sup>
Wheat Acres	No.	309 <sup>1</sup>	882 <sup>2</sup>
Yield	bu.	34.75 <sup>1</sup>	41.66 <sup>2</sup>

<sup>a</sup> Variables with unlike superscripts are significantly different at the 5% level.

Table 5. Persistence of Performance for Cow-Calf Enterprises.

Number of Years	Number of Farms in Cost of Production Category	
	Bottom One-Third	Top One-Third
0	8	14
1	15	7
2	11	12
3	8	9
4	8	8
5	7	7
6	7	7
7	5	4
8	2	1
9	1	3
10	1	1

Table 6. Summary Statistics for Bottom and Top Cow-Calf Enterprise Categories.<sup>a</sup>

Variable	Unit	Bottom Category	Top Category
Gross Income	\$/cwt	70.15 <sup>1</sup>	67.66 <sup>2</sup>
Labor	\$/cwt	15.91 <sup>1</sup>	8.92 <sup>2</sup>
Feed	\$/cwt	54.41 <sup>1</sup>	39.23 <sup>2</sup>
Capital	\$/cwt	29.39 <sup>1</sup>	18.99 <sup>2</sup>
Utilities and Fuel	\$/cwt	4.44 <sup>1</sup>	2.19 <sup>2</sup>
Veterinary	\$/cwt	3.00 <sup>1</sup>	2.33 <sup>1</sup>
Miscellaneous	\$/cwt	3.68 <sup>1</sup>	1.71 <sup>2</sup>
Total Cost	\$/cwt	110.84 <sup>1</sup>	73.38 <sup>2</sup>
Number of Cows	No.	95.51 <sup>1</sup>	160.75 <sup>2</sup>

<sup>a</sup> Variables with unlike superscripts are significantly different at the 5% level.