ABSTRACT

Factors and characteristics associated with farm profitability are of considerable interest to farm operators, farm managers, and researchers. This paper uses farm financial records from the Illinois Farm Business Management Association from 1995 to 2011 to classify grain farms into performance groups based on management returns. Performance groups are defined both on an annual basis and over two different five-year periods. The relative contributions of revenues and various cost categories to the differences in returns earned by the performance groups are quantified. Results show that farms in the high performance group tend to have both higher revenues and lower costs across all categories. Significant portions of the differences in revenues are attributed to variation in revenues and power, labor, and land costs. Power and labor costs are particularly important in determining performance, both in individual years and over time. This analysis provides an update to the literature on factors affecting farm profitability, and allows for comparison of the relative importance of these factors over 17 years with extended periods of both high and low farm incomes and returns.

The Impact of Revenues and Costs on the Relative Returns of Illinois Grain Farms

By Nicholas D. Paulson

Introduction

Identification of the financial, structural, and managerial characteristics which are positively associated with farm profitability and efficiency is of continued interest to farm operators and professional farm managers. Modern farm management requires choices to be made with respect to investing time and energy into various areas of the business to maximize expected returns while controlling risk. Identifying the relative contributions of various strategies on performance will allow for the most efficient allocation of time and effort. For example, the farm operator or manager could focus solely on maximizing production or crop yields, minimizing costs, marketing, or risk management. Depending on the operating environment, efforts in each of these areas may yield differing results in terms of farm returns.

Nicholas D. Paulson is an Assistant Professor in the Department of Agricultural and Consumer Economics at the University of Illinois at Urbana-Champaign.

Recognizing the difficulty in predicting the operating environment, this paper focuses on comparing the impact of revenues and costs on returns and relative farm performance among a group of Illinois grain farms. By including a relatively long time series spanning 17 crop years, the differences in revenues and various costs are compared for high and low performance groups where performance is examined both on an annual and longer-term or multi-year basis. Strategies which yield better performance in a given year can be viewed as short-term strategies which may be difficult to anticipate. Strategies linked to better performance over multiple years, especially when the operating environment is also changing over those years, provides some insight into longer term strategies that could be used by farm managers to improve performance regardless of the current state of, or volatility in, the operating environment.

The academic literature includes a number of examples of studies attempting to identify factors and characteristics associated with farm profitability (Boessen et al., 1990; Fox, Bergen, and Dickson, 1993; Mishra, El-Osta, and Johnson, 1999). Some have focused on the link between a farm's financial characteristics and performance (Gloy & Ladue, 2003; Plumley & Hornbaker, 1991). Others have attempted to link managerial characteristics or ability to profitability (Ford & Shonkwiler, 1994; Sonka, Hornbaker, and Hudson, 1989). Links have also been identified between farm size, diversification, and other structural and organization characteristics and financial performance (Garcia, Sonka, and Yoo, 1982; Purdy, Langemeier, and Featherstone, 1997). More recently, due to policy objectives set forth in the past two Farm Bills, work in this area has focused on limited-resource and beginning farmers (Mishra, Wilson, and Williams, 2009; Mishra, El-Osta, and Steele, 1999).

A few of the general findings from this broad area of work include a positive relationship between farm size and performance, benefits to diversification in terms of reducing farm income variability, the standard relationship between revenues, expenses, and profits, and a positive relationship between various proxy measures for managerial ability and performance. This article adds to the literature on the factors affecting farm profitability using data on commercial grain farms from Illinois provided by the Illinois Farm Business Farm Management Association. Financial records from this panel data set are used to classify farms into performance groups over time and quantify the relative contribution of revenues and cost categories to the differences in performance between the groups.

This paper makes a number of contributions to this literature. First, the majority of the existing studies on factors affecting grain farm profitability are a decade or more old. Since 2005, grain farms have experienced significant increases in commodity prices, costs of production, farm incomes and returns, as well as increased price volatility in all of these areas. This study includes data from more recent years, providing an update to existing work. Second, the panel data used in this analysis extends back to 1995, allowing for comparison of factors impacting differences in grain farm performance over a 17 year period covering a wide

range of economic conditions. Finally, this paper considers both annual performance of grain farms relative to their peers as well as consistent relative performance over multiple crop years. Specifically, the relative contributions of revenues and costs to the differences in performance of farms in the data over two five-year periods are examined. The results should help farm operators and managers to better understand the most efficient approach to investing time and effort into activities and strategies which can improve returns to the operation.

Data and Approach

Data used for this analysis was provided by the Illinois Farm Business Farm Management Association (FBFM). FBFM is a cooperative organization providing financial record-keeping and tax services to farm operators throughout the state. The association is comprised of approximately 5,000 cooperators (farm operators) and 100 professional field staff. The majority of members of the association are operators of commercial grain farms. Use of the association's data was limited specifically to grain farms from the 1995 to 2011 crop years. Records were limited to those farm operations with at least 200 tillable acres and with at least 90 percent of those acres dedicated to corn or soybean production. Data for farms with more than 10 percent of their gross revenues coming from livestock or custom farming enterprises were also removed. The final data set consisted of an unbalanced panel of 38,643 farm records, with an average of 2,273 farms for each crop year.

The performance measure selected for the analysis was management returns on a per acre basis. Management returns are defined as gross revenues less costs. Cost data includes categories for direct inputs (seed, fertility, and other chemicals), power (machinery costs including fuel, maintenance, and depreciation), labor (both direct labor costs and unpaid operator labor), buildings (maintenance and depreciation), land (ownership and rental costs), and other miscellaneous costs. In contrast to previous work where regression approaches were used to relate financial and managerial characteristics to performance, this analysis considers the relative contributions of revenues and costs in forming the gap in average returns earned by the high and low performance groups through a simple comparison of means approach. While high performance farms will, by definition, have higher average revenues and lower average costs than those farms categorized in the low performance category, the results provided in the following section quantify the relative importance of each in separating the return levels for each group.

In addition to revenue, cost, and returns for each farm, data on the operation's size (total tillable acres) and tenure position (owned, cash, and share rented acres) were also included to assess their impact on farm performance. Table 1 provides simple averages for management returns, crop revenues, and various cost categories across the included farms for each year of the data. These values illustrate the variation and trends in revenues, selected costs, and farm returns over time. In addition, they show that the size of FBFM farms has steadily increased since 1995, and that the tenure position of these operations has tended to shift towards fixed cash rental agreements and away from share leases (land ownership rates are

relatively constant). Averages for corn and soybean yields (bu/acre) across all included farms are also provided in Table 1.

The complete farm dataset was then also classified by relative performance into high and low performance groups. First, farms were classified into groups whose management returns were in the top and bottom half of all management returns in the data for a given year. Then, to compare performance in individual years to consistent performance over time, farms were also classified into performance groups over two separate five-year periods. The first includes farms which consistently earned returns in the top and bottom half of all farms over the 1998 to 2002 crop years. The second includes farms which were consistently in the top and bottom half of all farms over the 2007 to 2011 crop years. Standard t-tests were used to determine if the means of the returns, revenues, and costs for each performance groups were different at statistically significant levels.

The 1998 to 2002 period represents five years of relatively low returns, while the 2007 to 2011 period is characterized by relatively high returns. The earlier period of low returns was characterized by relatively stable and low commodity prices, and stable costs of production. The latter period of high returns is characterized by much higher and more volatile commodity prices, and generally increasing production costs. The high and volatile commodity prices in the latter period reflect a number of structural changes in agriculture due to demand growth in export markets such as China, as well as domestic uses such as the rapid expansion of the U.S. corn ethanol industry. Thus, the time periods represent two distinct operating environments. Comparison of the contributions of revenues and costs to relative return performance over both time periods will illustrate if managerial efforts in these areas result in similar performance outcomes regardless of the operating environment, or if the allocation of time and energy across management strategies needs to adjust to changes in the operating environment.

There were a total of 875 farm operations with available data in each of the crop years from 1998 to 2002, while complete data was available for 1,131 farms from 2007 to 2011. There were a total of 160 farms (18.3%) consistently in the top performance group from 1998 to 2002, and 168 farms (14.9%) consistently in the top performance group from 2007 to 2011. Farms consistently in the bottom performance groups totaled 84 operations (9.6%) from 1998 to 2002 and 108 operations (9.5%) for 2007 to 2011. A total of 389 farm operations had available data for both of the five-year time periods, with 26 farms (6.6%) consistently in the top performance group and just five farms (1.2%) consistently in the bottom performance group over both time periods. The aim of this portion of the analysis is to determine if the relative contributions of revenues and costs to the gap in management returns between *consistently* high and low performers differ from those for annual performance, and also to compare the contribution of these factors during multi-year periods of high and low returns for grain farms in general.

Results

Annual Performance

The average difference in performance (management returns) between the high and low performance groups is reported in the first row of both panels in Table 2. These values are simply the differences in average management returns for the high and low performance groups. High performance farms achieved management returns between $90 and $100 per acre more than low performance farms from 1995 to 2004, with an average difference over this 10 year time period of $93 per acre. Since 2005, the gap between the high and low performance groups has increased to between $102 (2005) to $207 (2011) per acre. The average difference in management returns across performance groups since 2005 was $152 per acre. The differences in average management returns is statistically significant at a significance level of one percent for all years considered.

Note the significance of these differences in returns relative to average management returns for all farms reported in Table 1. The $93 average difference in returns across performance groups from 1995 to 2004 is more than 10 times the average management return over this time period. The $152 average difference in returns across performance groups from 2005 to 2011 is about 1.5 times the average management return for all farms since 2005. This illustrates the high level of variability in farm-level returns that is often masked by averages reported by region or over time.

The lower portion of both panels of Table 2 provides a breakout of the contributions of revenues and various costs to the difference in management returns between performance groups for each year. High performance farms earn larger average returns and revenues, and have lower average costs in each category. The percentages in the bottom panel of Table 2 illustrate the percentage of the gap in average management returns that is attributed to either higher average revenues or lower average costs across all categories. For example, 52.1 percent or approximately $48 of the $92 per acre difference in average management returns achieved by the high and low performance groups in 1995 was due to high performance farms earning higher crop revenues. This implies that the high performance farms earned, on average, $48 more per acre in revenues than farms classified in the low performance group. The 2.4 percent reported for direct costs in 1995 implies that high performance farms had $2.20/acre lower average direct input costs ($92*2.4%).

The contributions of revenue and cost categories to differences in returns tend to vary considerably over time. For example, revenue accounted for just 27 percent of the difference in management returns across performance groups in 2001, but more than 79 percent of the difference in 2011. In general, the contribution of revenues to the gap in returns between performance groups has increased over time from an average of 42.5 percent from 1995 to 2004 to more than 61 percent since 2005.

The remaining portion of the difference in returns across performance groups can be attributed to the

various production costs incurred by grain farms. The contribution of direct input costs has generally ranged from five to seven percent, with exceptions in 2009 and 2010 due primarily to high and volatile fertilizer costs. The relative contribution of power, building, labor, land, and other costs have declined over time. Power costs, which include cash expenses such as fuel and repairs as well as non-cash expenses such as depreciation, remain the most significant cost category in explaining the differences in management returns across the performance groups.

These results imply that while variations in production costs explained the majority of the difference in returns earned by performance groups from 1995 to 2004, revenue variations have been the more dominant factor since 2005. Higher revenue levels can be achieved by better productivity (higher crop yields) or more effective marketing (higher prices). Figure 1 plots the ratio of average revenues and crop yields for the high performance group to the low performance group for each year. The data for 1995 show that the high performance farms averaged 15 percent higher crop revenues, just over 12 percent higher corn yields, and about 6.5 percent higher soybean yields than farms in the low performance group. Since crop revenues are the product of price and yield, Figure 1 provides an estimate of the proportion of the difference in revenues earned by the performance groups attributable to higher productivity.

For example, the ratio of crop yields in 2002 (1.15 for corn and 1.13 for soybeans) implies that the difference in revenues across performance groups was virtually completely attributed to high performance farms achieving better crop yields (revenue ratio of 1.135). In contrast, differences in prices received across performance groups played a much more significant role in the 1998 crop year when the difference in average corn and soybean yields across the performance groups was less than five percent but the high performance farms' average revenues were more than twelve percent greater than average revenues for the low performance farms.

Farms classified in the high performance group each year were consistently larger, having roughly 200 more tillable acres than farms in the low performance group. High performance farms also consistently owned a smaller proportion of their land, with the difference in ownership rates between the groups averaging approximately 10 percent. The average percentage of cash rented acres on high performance farms was also lower on average over time (a 2.5% to 3% difference). However, there was considerable variation with high performance farms having a higher percentage of cash rented acres than low performance farms, on average, in some crop years.

Consistent Performance Over Time

Tables 3 and 4 report the differences in management returns between the consistent performance groups from 1998 to 2002 and 2007 to 2011, respectively. Differences in management returns across these groups averaged $107 per acre from 1998 to 2002 and $198 per acre from 2007 to 2011. Similar to the annual performance comparisons, the contribution of revenue variations has increased over time. Less

than 25 percent of the difference in management returns was due to differences in revenues across the consistent high and low performance groups from 1998 to 2002. The contribution of revenue variation across groups accounts for more than 50 percent of the difference in management returns from 2007 to 2011.

The relative contribution of costs to the difference in management returns across groups is also qualitatively similar to the annual performance data. While the contribution of total costs to management return differences has declined in general, the average impact of direct cost variation is greater in the latter period, implying a widening gap in average direct input costs between the high and low performance groups in the latter period. There has been a significant decline, in relative terms, in the importance of labor and land costs in explaining differences in returns. From 1998 to 2002, variation in labor and land costs accounted for 23 percent and 20.4 percent of the difference in average management returns across performance groups. From 2007 to 2011 the contribution of labor and land costs was just 11.8 percent and 3.4 percent, respectively.

In the earlier, more stable time period land, labor, and power costs differences represented the largest non-revenue components of the difference in average management returns across the performance groups. These differences were also found to be consistently statistically significant across the five-year period. This implies that from 1998 to 2002, Illinois grain farms which consistently earned higher management returns than the majority of their peers had significantly lower labor, land, and power costs per acre. Examining the results from the latter, more volatile time period yields slightly different results. While differences in power and labor costs across the performance groups remains statistically significant across each of the five years, the size of differences in land costs declines and is no longer statistically significant. This implies that controlling power and labor costs are consistently important, regardless of whether the operating environment is characterized by low returns and stable prices or higher returns and higher, more volatile prices.

Finally, Figure 2 compares the ratio of average revenues and crop yields for the high consistent performance group to the low consistent performance group over both time periods. Compared to the annual performance results, productivity variations tend to describe a larger component of the revenue differences for the consistent performance groups. For example, in 2002 corn and soybean yields were approximately 10 percent larger for the high performance farms while the difference in revenues was less than 8 percent. The 2007 and 2009 crop years are also examples where yield or productivity differences accounted for nearly all of the difference in average revenues between the high and low performance groups. Exceptions are the 1998 and 2000 crop years when yield differences explained less than half of the difference in average revenues across performance groups.

Figure 2 also implies that relative yield differences across the performance groups may also be

increasing over time, or that the gap between average yields of the high and low performance groups is becoming larger. This may indicate a greater importance of, or larger focus on, managerial efforts directed towards improved productivity. The increased rate of adoption of practices such as the use of variable rate technologies likely explains a portion of this increase in yield differences. Furthermore, as average or trend yield levels continue to increase, we might expect to see greater variation in yields across farms in general.

Overall, these results suggest that farms which consistently outperform their peers, as measured by management returns, tend to have larger productivity and cost advantages relative to implied marketing abilities. While classifying performance groups on an annual basis suggests that farms earning larger returns do so because of higher prices received in some years, productivity and cost control are likely more important for achieving consistency in terms of relative performance. It is important to note the contribution of exogenous factors, such as basic soil productivity and weather, to farm yields. Farms located in areas with more naturally productive soils, or in regions which experience better growing conditions, will achieve higher crop yields and thus larger revenue and return levels than their peers with less productive soils or in areas experiencing more adverse weather conditions. Thus, while crop yields are an important factor in measuring relative farm performance, not all operations will be able to focus efforts on increasing crop yields at the same cost or levels of success.

Differences in farm size and land ownership rates across the performance groups were larger when performance was defined over time. The average size of high performance farms was 400 to 500 acres larger than low performance farms in both time periods. Ownership rates were, on average, 20 percent lower on high performance farms from 1998 to 2002, and 11 percent lower from 2007 to 2011. The difference in the proportion of acres cash rented was not significantly different across the performance groups in either time period.

Discussion and Conclusions

This paper has quantified the relative contributions of revenue and cost differences to the performance of grain farms in Illinois from 1995 to 2011. Farms classified in the high performance group each year consistently earn higher revenues while having lower production costs, on average, than their peers in the low performance group. While this general result is not at all surprising, what the results provide are the relative importance of revenues and various cost categories to the difference in management returns earned by the two performance groups. From 1995 to 2004, the data suggest that controlling costs were a slightly more important factor than increasing revenues in terms of achieving above average management returns. Since 2005, differences in revenues across performance groups have become the more dominant factor. Furthermore, productivity or differences in crop yield levels tend to explain a significant amount of the revenue variation. This implies that management efforts focused on improving productivity are just as important as marketing ability which may lead to higher price levels received.

When performance is defined consistently over time similar results are obtained. Farms classified in the high performance group in both time periods considered (1998 to 2002 and 2007 to 2011) tended to achieve both higher revenues as well as lower production costs than their peers in the low performance group. Similar to the annual performance results, the relative contribution of revenues, compared with costs, to differences in performance is also larger in the later time period. In further considering revenues, the proportion of revenue differences across the performance groups attributed to productivity or crop yields was more pronounced in the consistent performance groups for both time periods analyzed. This implies that while marketing abilities are important, it becomes more difficult for grain farms to outperform their peers over time by consistently achieving higher prices.

Thus, focusing efforts on strategies to better control costs or improve crop yields may provide better results in terms of consistent performance over time compared with focusing efforts on crop marketing. The data implies that beating the market and achieving higher prices is difficult to do consistently. The power and labor costs categories were consistently important in both economic and statistical terms, with the high performance farms having significantly lower costs than their peers in both categories. This also suggests that managerial strategies focused on controlling machinery and labor costs, or carefully scaling them to the needs of the operation, will lead to more consistent performance both in individual crop years and over time. Comparing the two time periods and different operating environments from 1998 to 2002 and 2007 to 2011, these cost areas are shown to be important during periods of low and stable returns as well as in an environment of high and more volatile returns.

Finally, both farm size and tenure position were found to have a relationship with relative performance both on an annual basis and over time. Farms in the higher performance groups tended to be larger in terms of total tillable acres. This result is most likely linked to the importance of power costs in that larger farms may be better suited to machinery investment to take advantage of larger, more efficient equipment while spreading the associated costs over more acreage. High performance farms also tended to own and cash rent a smaller proportion of their total acres, implying higher average returns are associated with share leases on Illinois grain farms. This suggests promotion of share leases or variable/hybrid lease designs.

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Table 1. Averages of Selected Variables and Farm Counts for the FBFM Grain Farm Data

Variable	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Crop Revenues	$348	$386	$381	$322	$334	$366	$344	$338	$379	$420
Direct Inputs	$90	$97	$100	$99	$92	$92	$97	$96	$102	$110
Power Costs	$41	$44	$64	$65	$63	$68	$69	$66	$57	$62
Building Costs	$11	$14	$17	$17	$17	$16	$18	$18	$15	$17
Labor Costs	$35	$36	$40	$41	$41	$43	$43	$44	$43	$43
Land Costs	$94	$97	$110	$110	$108	$110	$112	$112	$111	$115
Management Returns	$47	$69	$15	-$51	-$21	$0	-$26	-$24	$26	$45
Tillable Acres	864	896	891	913	935	943	984	986	1031	1061
% Cash Rented	23.8%	24.3%	25.2%	26.6%	27.3%	28.5%	31.5%	31.7%	35.1%	35.3%
% Owned	19.3%	20.1%	20.2%	19.7%	19.0%	19.3%	19.5%	19.5%	19.3%	19.6%
Corn Yield	119.9	143.8	136.1	148.2	150.5	155.8	158.5	143.3	170.2	181.4
Soybean Yield	42.8	44.2	47.8	48.8	47.7	46.9	48.4	48.1	37.4	53.0
No. Farm Operations	2,253	2,295	2,300	2,265	2,212	2,299	2,211	2,409	2,196	2,277

								Averages		
Variable	2005	2006	2007	2008	2009	2010	2011	95 to 11	95 to 04	05 to 11
Crop Revenues	$404	$473	$658	$737	$651	$757	$900	$482	$362	$654
Direct Inputs	$125	$125	$145	$181	$230	$198	$231	$130	$98	$177
Power Costs	$66	$72	$82	$99	$100	$109	$124	$74	$60	$93
Building Costs	$18	$20	$20	$33	$45	$32	$30	$21	$16	$28
Labor Costs	$42	$44	$46	$49	$51	$53	$54	$44	$41	$49
Land Costs	$119	$123	$134	$153	$161	$169	$191	$125	$108	$150
Management Returns	-$1	$42	$169	$160	$9	$143	$207	$48	$8	$104
Tillable Acres	1074	1087	1104	1138	1133	1148	1178	1022	950	1123
% Cash Rented	36.3%	37.9%	39.3%	40.5%	40.3%	41.0%	41.8%	33.3%	28.9%	39.6%
% Owned	19.1%	19.5%	20.0%	19.3%	20.1%	20.1%	20.1%	19.6%	19.5%	19.7%
Corn Yield	147.7	170.9	186.8	190.7	182.2	164.2	166.4	159.8	150.8	172.7
Soybean Yield	51.1	52.4	49.5	50.5	50.1	55.7	54.6	48.8	46.5	52.0
No. Farm Operations	2,282	2,196	2,369	2,307	2,324	2,153	2,295	2,273	2,272	2,275

Table 2. Difference in Average Management Returns of High and Low Performance Groups, 1995 to 2011

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Management Returns ($/acre)	$92	$102	$99	$100	$94	$89	$82	$88	$87	$93
					Percentage of Difference in Average Management Returns					
Crop Revenues	52.1%	62.9%	31.2%	37.2%	46.7%	31.9%	27.1%	48.6%	42.3%	41.9%
Direct Inputs	2.4%	1.2%[b]	5.5%	4.5%	4.5%	5.6%	6.4%	3.7%	5.6%	6.3%
Power Costs	14.0%	11.0%	21.5%	12.7%	12.6%	17.5%	17.8%	15.3%	11.3%	14.2%
Building Costs	1.9%	1.3%	4.4%	5.1%	4.4%	4.3%	5.9%	2.8%	4.6%	4.7%
Labor Costs	8.3%	8.3%	11.5%	14.5%	14.2%	15.3%	16.7%	15.6%	15.8%	14.2%
Land Costs	13.7%	10.1%	16.2%	14.0%	11.5%	16.5%	17.0%	7.7%	13.5%	10.1%
Other	7.5%	5.3%	9.8%	12.0%	6.1%	8.9%	9.0%	6.4%	6.9%	8.5%

									Averages	
	2005	2006	2007	2008	2009	2010	2011	95 to 11	95 to 04	05 to 11
Management Returns ($/acre)	$102	$106	$147	$164	$163	$176	$207	$117	$93	$152
					Percentage of Difference in Average Management Returns					
Crop Revenues	46.4%	50.8%	71.9%	65.2%	39.7%	61.4%	79.4%	52.4%	42.5%	61.1%
Direct Inputs	7.9%	6.9%	2.9%	3.6%	15.2%	9.6%	2.6%	5.7%	4.5%	6.8%
Power Costs	13.8%	15.0%	12.8%	10.7%	13.4%	10.4%	7.9%	13.0%	14.7%	11.5%
Building Costs	3.4%	2.4%	1.1%[a]	3.0%	5.5%	1.0%[b]	0.1%[c]	3.0%	3.9%	2.2%
Labor Costs	13.2%	11.4%	7.9%	8.1%	7.7%	5.6%	5.0%	10.4%	13.3%	7.8%
Land Costs	8.7%	6.4%	0.2%[c]	3.6%	9.1%	6.6%	0.4%[c]	8.5%	13.0%	4.6%
Other	6.6%	7.1%	3.3%	5.9%	9.4%	5.4%	4.6%	7.0%	8.1%	6.0%

Note: All reported values are statistically significant at 1% unless otherwise noted

[a]Statistically significant at 5%

[b]Statistically significant at 10%

[c]Not statistically significant at standard levels of 10% or less

Table 3. Difference in Average Management Returns of High and Low Consistent Performance Groups, 1998 to 2002

	1998	1999	2000	2001	2002	Average
Management Returns ($/acre)	$114***	$115***	$105***	$103***	$97***	$107***
	Percentage of Difference in Average Management Returns					
Crop Revenues	24.6%	29.6%	21.8%	20.5%	25.6%	24.5%
Direct Inputs	2.6%	5.5%	2.7%	6.1%*	5.7%	4.5%
Power Costs	14.0%**	15.8%**	16.7%**	16.6%**	14.5%*	15.5%
Building Costs	5.9%**	2.4%	4.9%*	6.4%**	5.9%*	5.1%
Labor Costs	21.2%***	21.2%***	23.8%***	24.8%***	24.5%***	23.0%
Land Costs	22.0%***	20.5%***	22.6%***	19.6%**	17.1%**	20.4%
Other	9.6%	4.9%	7.4%	6.0%	6.7%	6.9%

Asterisks denote a difference in means between the top and bottom performance groups which is statistically significant at 1% (***), 5%(**), or 10%(*)

Table 4. Difference in Average Management Returns of High and Low Performance Groups, 2007 to 2011

	2007	2008	2009	2010	2011	Average
Management Returns ($/acre)	$169***	$183***	$186***	$207***	$243***	$198***
	Percentage of Difference in Average Management Returns					
Crop Revenues	54.6%	45.6%	47.2%	53.5%	57.5%	52.0%
Direct Inputs	4.9%	9.9%	6.7%	7.6%	7.6%	7.4%
Power Costs	19.3%***	19.4%***	19.8%***	17.6%***	14.7%**	17.9%
Building Costs	0.8%	3.3%	0.8%	0.4%	2.2%	1.1%
Labor Costs	11.5%***	11.6%***	13.5%***	12.1%**	10.6%**	11.8%
Land Costs	3.4%	4.5%	5.3%	2.9%	1.7%	3.4%
Other	5.4%	5.8%	6.7%	5.9%	5.7%	6.4%

Asterisks denote a difference in means between the top and bottom performance groups which is statistically significant at 1% (***), 5%(**), or 10%(*)

Figure 1. Crop Revenue, Corn, and Soybean Yield Ratios (High/Low) for Annual Performance Farm Groups, 1995 to 2011

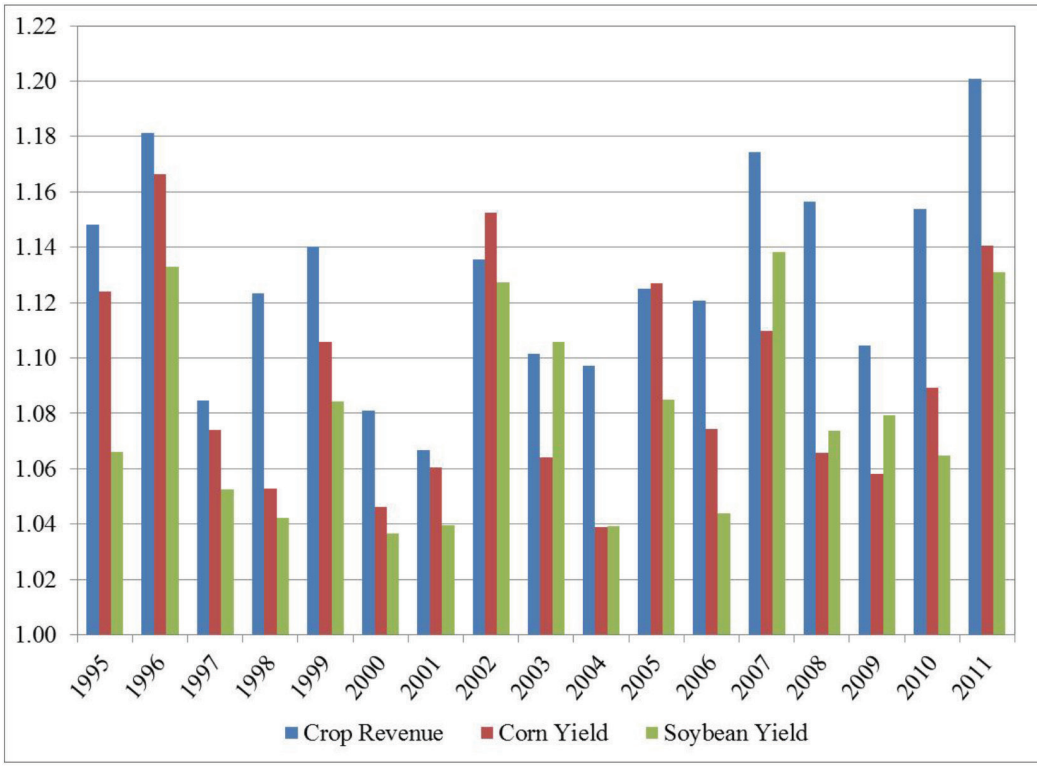

Figure 2. Crop Revenue, Corn, and Soybean Yield Ratios (High/Low) for Consistent Performance Farm Groups, 1998 to 2002 and 2007 to 2011