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Iowa had the highest average rental rate. All districts showed a decrease except the southeast district, which showed no change. The largest decrease in average rents was recorded in the north central district. This region of the state suffered from a very wet spring last year, which reduced crop yields and prevented many acres from being planted. No doubt this tempered people's enthusiasm when rents were being negotiated for 2014.

All areas of the state faced significantly lower grain prices at harvest for the 2013 crop, as well as decreased forward pricing opportunities for the 2014 crop. This likely was the major factor impacting rents.

Table 2 shows state average yields for corn and soybeans since 2010, the average marketing year cash prices received nationally as reported by the National Agricultural Statistics Service (NASS), and the average multiple peril crop insurance payment received per planted acre. These were combined to estimate gross revenue per acre for each crop for each year.

In 2012 the state had a below average corn crop, but much of the loss in revenue was offset by higher market prices and crop insurance payments. In 2013 yields were about average for corn and below average for soybeans. However, selling prices for 2013 crops, as recorded through March of 2014, have been dramatically lower. Crop insurance payments have offset only a portion of this decline. Estimated gross revenue per acre is over \$200 less than was realized in 2011 and 2012 for corn, and about \$60 per acre less for soybeans, so it is not surprising that the trend for cash rents has reversed itself. Delays in the passage of a new farm bill by Congress may also have contributed to uncertainty about future income prospects for crop farmers.

### Setting rents for next year

Survey information can serve as a reference point for negotiating an appropriate rental rate for next year. However, rents for individual farms should vary based on productivity, ease of farming, fertility, drainage, local price patterns, longevity of the lease and possible services performed by the tenant.

**Table 1. Typical cash rental rates reported for land producing corn and soybeans, \$ per acre**

Crop Reporting District	Average, 2013-\$	Average, 2014-\$	Change-\$	Change-%
Northwest	283	270	-13	-4.6%
North Central	294	270	-24	-8.2%
Northeast	281	277	-4	-1.4%
West Central	294	288	-6	-2.0%
Central	297	284	-13	-4.4%
East Central	284	273	-11	-3.9%
Southwest	257	249	-8	-3.1%
South Central	210	202	-8	-3.8%
South East	229	229	0	0.0%
Statewide	270	260	-10	-3.7%

**Table 2. Yields, prices, crop insurance payment and gross revenue per acre**

Crop Year	Corn				Soybeans			
	Yield <sup>1/</sup>	Price <sup>2/</sup>	Crop Ins. <sup>3/</sup>	Gross Revenue	Yield <sup>1/</sup>	Price <sup>2/</sup>	Crop Ins. <sup>3/</sup>	Gross Revenue
2010	165	\$5.18	\$21	\$876	51.0	\$11.30	\$7	\$583
2011	172	\$6.22	\$13	\$1,083	51.5	\$12.50	\$12	\$656
2012	137	\$7.20	\$122	\$1,108	44.5	\$14.30	\$29	\$665
2013	165	\$4.55	\$119	\$870	44.5	\$12.89	\$26	\$600

<sup>1/</sup> State average yield for Iowa (USDA)

<sup>2/</sup> Average marketing year price for the US (USDA)

<sup>3/</sup> Multiple Peril Crop Insurance indemnity payment per planted acre

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Other resources available for estimating a fair cash rent include the Ag Decision Maker information files Computing a Cropland Cash Rental Rate (C2-20), Computing a Pasture Rental Rate (C2-23) and Flexible Farm Lease Agreements (C2-21). All of these fact sheets include decision files (electronic spreadsheets) to help analyze individual leasing situations.

For questions regarding the cash rent survey, or leasing questions in general, contact a farm management field specialist, [www.extension.iastate.edu/ag/farm-management-0](http://www.extension.iastate.edu/ag/farm-management-0).



## Corn revenue, costs and returns trends and implications for the future

By Don Hofstrand, retired extension value-added agriculture specialist

Two forces have been working to change the grain price environment of the last few years. The rapid expansion in corn starch ethanol production is slowing substantially due to market saturation. Also, crop production yields are expected to shift from drought to more favorable growing conditions, thus increasing grain supplies. While the exact trend of these variables is uncertain, many analysts expect agriculture to move from the recent historically high grain prices to a considerably lower level. If that materializes, farmers and land owners will face significant adjustments. This article outlines some of the historical and possible future farm-level impacts from changes in grain prices and yields.

The analysis below shows the revenue, costs and net returns for a hypothetical Iowa corn farmer. Similar results for an Iowa soybean farmer can be found on Ag Decision Maker. It has been tracked monthly since the year 2000. The selling price used in the analysis is the monthly average price received by Iowa farmers over this time period. The annual yields reflect the Iowa average yields as reported by NASS. The annual cost figures are assumed to be typical of an Iowa farmer <sup>1/</sup>.

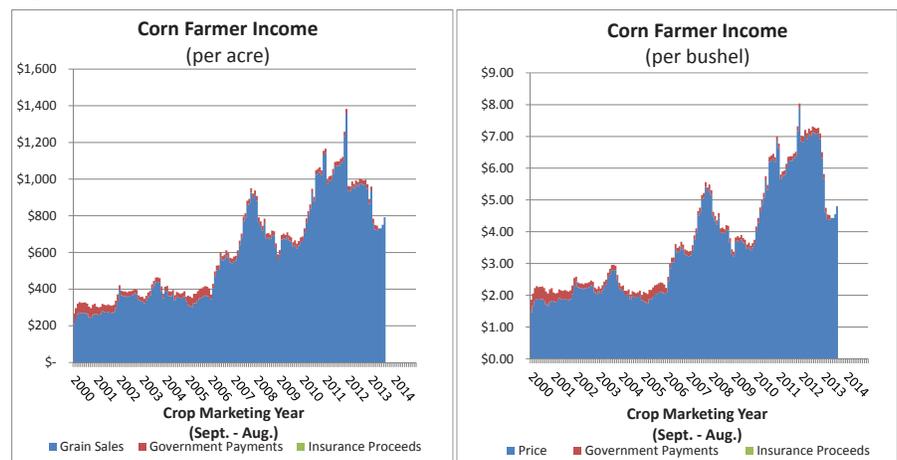
Monthly corn income is shown in Figure 1 on both a per acre and per bushel basis. Income consists primarily of corn selling price with a small addition in the form of U.S. government payments.

Income was relatively low from the 2000 to the 2006 corn marketing year but shot up to over \$5.00 per bushel in 2007 before retreating below \$4.00 per bushel in the 2008 corn marketing year. From there it advanced to almost \$8.00 per bushel in August of 2012 before retreating once again to the current range of \$4.00. The income pattern for soybeans is similar to corn except the recent price retreat has not been as severe as it has with corn.

Figure 1 shows the volatility that has occurred in recent years in grain prices and income. It shows the ability of these commodity market prices to turn on a dime due to changing market conditions and head in a different direction.

Corn production costs over this time period are shown in Figure 2. The figure on the left reflects a corn farmer who owns all cropland farmed. The figure on the right reflects a farmer who rents cropland

Figure 1. Corn Income per Acre and per Bushel (2000 to present)



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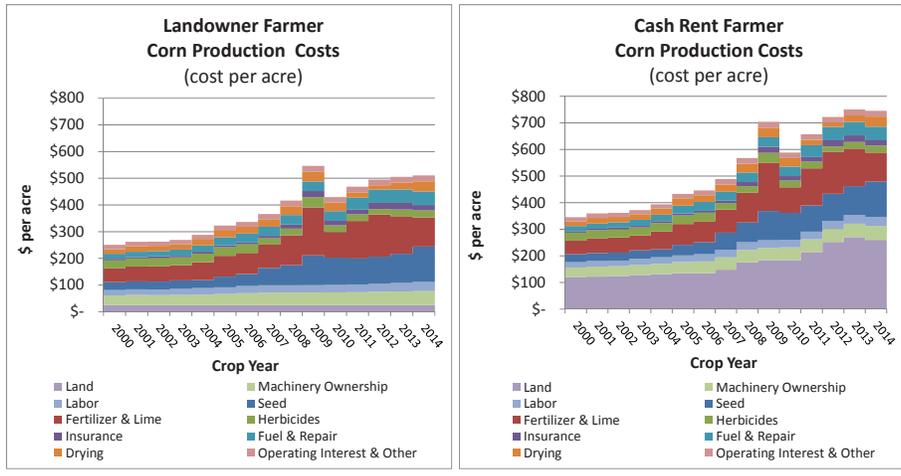
under a cash rent lease. Because most farmers both own and rent cropland, their average land cost falls somewhere between these two extremes.

The cost side of the equation is less volatile. But production cost has increased significantly over this time period. More specifically, it has essentially doubled since 2000. The upward trend has been relatively stable except for 2009 when cost increased substantially but then fell back in 2010. Seed, fertilizer, diesel fuel, machinery repairs, etc., have all increased substantially over the 15-year period. Only herbicide cost has bucked the trend.

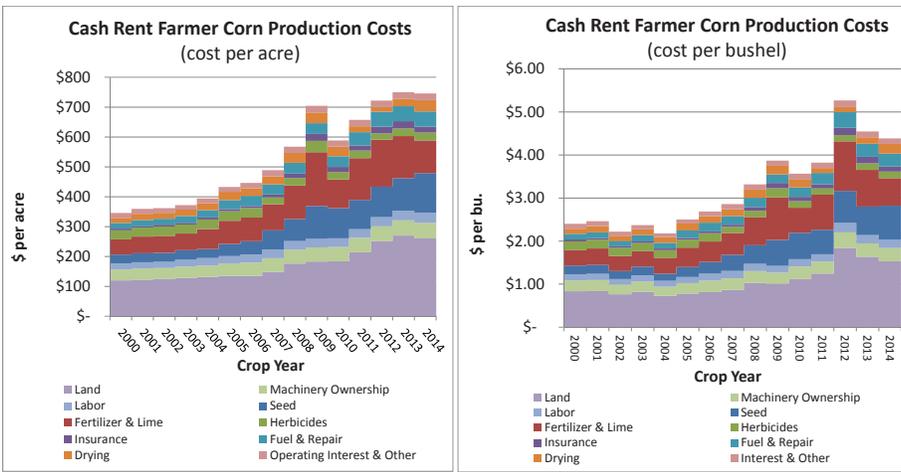
For the farmer who owns cropland (free of debt), the only direct land cost is real estate taxes. For the farmer who rents cropland, cash rent is the largest production cost and has also doubled during this time period. In 2014 the cash rent corn farmer is expected to have an \$800 total cost per acre (up from less than \$400 per acre in 2000). The landowner farmer is expected to have a \$250 total cost per acre (up from \$125 in 2000). The increase in cost over the 15-year period has either been financed by borrowing or by using previously earned net income.

A farmer's cost structure can also be viewed from the perspective of cost per bushel. The cost pattern differs due to variations in both cost per acre and yield. Cost per acre and cost per bushel are shown in Figure 3 for the cash rent corn farmer. The 2009 spike in production cost per acre is largely offset in the cost per bushel chart due to the high corn

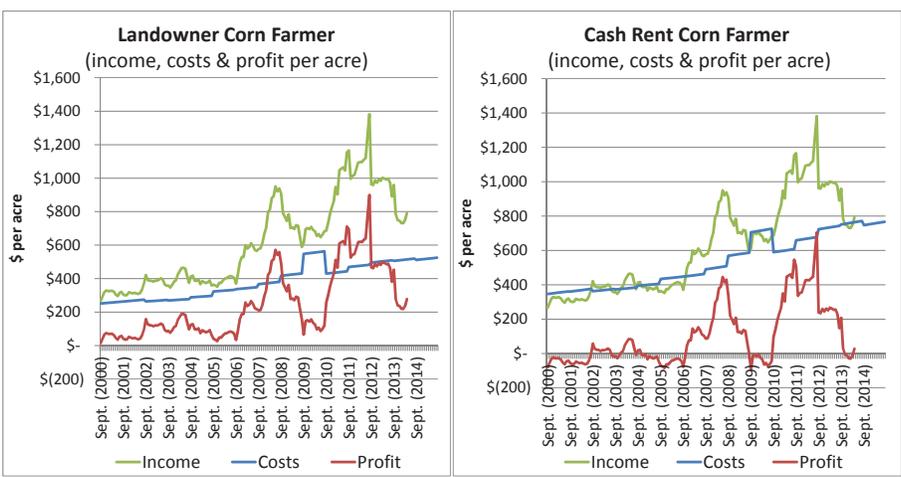
**Figure 2. Landowner and Cash Rent Corn Farmer Costs per Acre (2000 to present)**



**Figure 3. Corn Cash Renter Farmer – Costs per Acre and Costs per Bushel (2000 to present)**



**Figure 4. Landowner and Cash Rent Corn Farmer Income, Costs and Returns per Acre (2000 to present)**



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yield of 2009. Conversely, the rather modest increase in cost per acre in 2012 is more pronounced in the cost per bushel chart due to the drought reduced yield of 2012.

Net return (profitability) can be estimated by combining income and costs. Figure 4 shows the revenue, production cost and net return per acre for both the landowner farmer and the cash rent farmer. Net return to the landowner farmer was positive throughout the entire 15-year period. Although net return has dropped precipitously in recent months due to falling corn price, the net return to the landowner farmer is still strong. This is because the landowner farmer receives both the farm operator's and landowner's return. In the case of the cash rent farmer, the landowner's return (cropland cash rent) becomes a cost and the farmer's net return reflects just the farm operator's return. This results in much lower net returns for the cash rent farmer. Although there were two high profit periods, net returns during most of this period were breakeven as shown in Figure 4.

### Looking ahead

Substantial uncertainty surrounds corn and soybean selling prices, production costs and net returns over the next several years. On the cost side of the equation we have reached a new plateau in the level of costs per acre and per bushel. Where these costs will trend in the future from this new plateau is uncertain. Although energy prices may soften, interest rates are expected to strengthen. With continued improvement in genetics, seed cost may continue to rise, but the rise may be offset by higher yields. What we know for certain is that corn and soybean selling prices need to stay strong relative to historic levels to continue to generate farm operator net returns from the marketplace.

Let's look at three scenarios of what may occur over coming years and the potential impact on farmer operators and landowners.

- Corn and soybean selling prices strengthen over the coming years.
- Corn and soybean selling prices soften over the coming years.
- Corn and soybean selling prices are volatile over the coming years.

### Rising selling prices

Rising selling prices will generate profits for farm operators in the short term. However, costs will eventually rise to capture these profits. Although some of these profits may accrue to production inputs such as seed, fertilizer, etc., the remaining profits will be capitalized into higher cropland rental rates as farm operators bid against each other to expand their operations. So the eventual beneficiary of higher selling prices will accrue to the landowner.

### Declining selling prices

Declining selling prices will generate losses for farm operators in the short term. However, costs will eventually decline to match the selling prices. A portion of the decline may occur in production inputs such as fertilizer, seeds, etc., but the major portion of the adjustment will occur in lower cropland rental rates. So, although the short-term pain will be felt by farm operators, the long-term adjustment will be borne by landowners. A major question is how quickly cropland rental rates will adjust downward.

Part or all of this decline may be impacted by government programs. If programs are designed to provide a gradual adjustment to the lower price levels, much of the farm operator pain of the adjustment may be reduced. However, the long-term adjustment will still be borne by the landowner through lower rental rates. Conversely, if programs are designed to maintain prices above the market level, it will reduce the need for lower rental rates.

### Volatile selling prices in the short term

Regardless of whether prices trend up or down over the coming years, they are expected to be volatile. Volatile selling prices can quickly impact the level of net returns of farm operators. Government programs designed to help offset the farm operator's exposure to price volatility and the risk of short-term price declines (e.g. revenue insurance) can provide a degree of needed economic stability for farm operators.

When farm operators are exposed to risk, they tend to be more conservative when making economic decisions like bidding for rented land. This is known as including a "risk premium" in the farm operator's projected profit margin. However, when risk is reduced (such as the risks of price volatility or yield variability), there is less need for a "risk premium" in the farm operator's profit margin. This will allow

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the farm operator to bid more aggressively for rented cropland and pass some or all of the benefits from the reduced risk exposure on to landowners in the form of higher rental rates.

<sup>1/</sup> Production input costs are based on Estimate Cost of Crop Production – File A1-20 - [www.extension.iastate.edu/agdm/crops/html/a1-20.html](http://www.extension.iastate.edu/agdm/crops/html/a1-20.html), Cash Rental Rates are based on Cash Rental Rates for Iowa – File C2-10 - [www.extension.iastate.edu/agdm/wholefarm/html/c2-10.html](http://www.extension.iastate.edu/agdm/wholefarm/html/c2-10.html)

### **Personalize the Analysis**

The cost and returns coefficients in the spreadsheets used for this article can be modified to fit an individual situation. Enter a coefficient in any of the dark grey boxes in the “Input Model” worksheet and the entire workbook analysis will be recomputed (including the graphs) based on the new coefficient.

Spreadsheets are located on the Ag Decision Maker “Outlook & Profitability” webpage.

- Monthly Profitability of Corn Production – A1-85 (xls)
- Monthly Profitability of Soybean Production – A1-85 (xls)

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### **Internet Updates**

The following information files and Decision Tools have been updated on [www.extension.iastate.edu/agdm](http://www.extension.iastate.edu/agdm).

Farm Employee Management: Do We Need an Employee Handbook? – C1-72 (2 pages)

Farm Employee Management: Assembly of Farm Job Descriptions – C1-73 (2 pages)

Cash Rental Rate Estimation – C2-20 (Decision Tool)

Flexible Lease Agreement Worksheet – C2-21 (Decision Tool)

### **Current Profitability**

The following tools have been updated on [www.extension.iastate.edu/agdm/info/outlook.html](http://www.extension.iastate.edu/agdm/info/outlook.html).

Corn Profitability – A1-85

Soybean Profitability – A1-86

Iowa Cash Corn and Soybean Prices – A2-11

Season Average Price Calculator – A2-15

Ethanol Profitability – D1-10

Biodiesel Profitability – D1-15

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