

# Rising and Changing Costs of Production Agriculture

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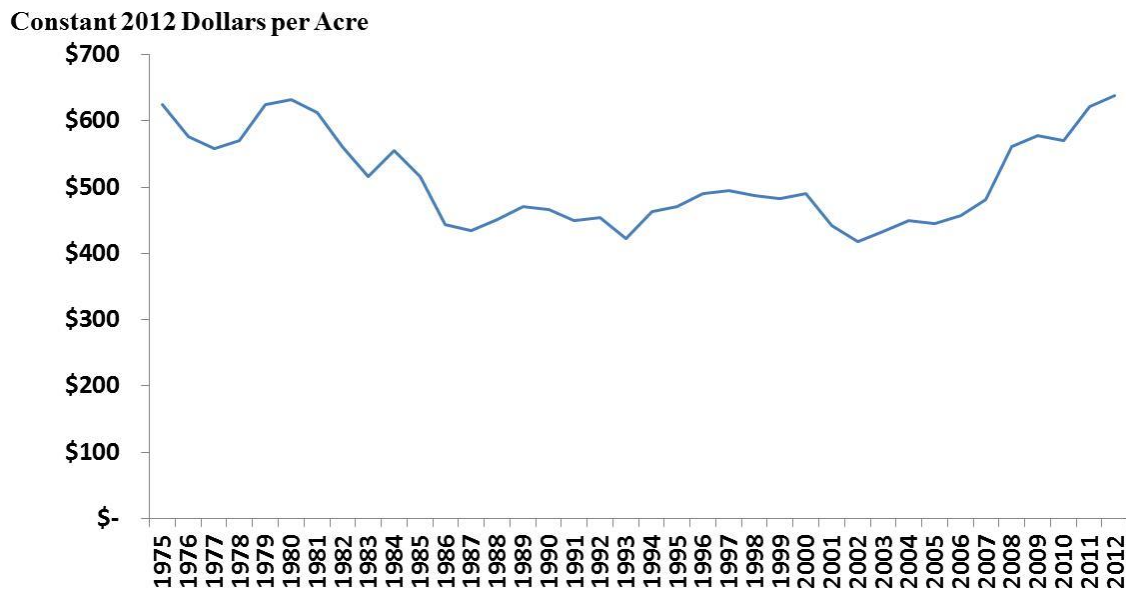
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Costs of production agriculture have surged. Since 2002, total costs of producing an acre of corn have risen over 50 percent. While these costs have eclipsed the highs of the 1970s, breaking down total costs into operating and overhead costs does highlight some differences between today and the past. These differences are driven largely by improvements in technology as well as some variation in land rental costs. The objective of this fact sheet is to examine these cost differences, the impact rising costs have had on agricultural profitability and peer into the future evolution of the costs of production agriculture.

Total costs associated with production agriculture have climbed to levels not experienced since the mid- to late-1970s. According to United States Department of Agriculture (USDA) numbers reported in constant 2012 dollars, the 2002 average total cost of producing an acre of corn was \$417 and now is \$639 per acre (Figure 1). The last time inflation adjusted total cost of production rose above \$600 per acre was in the late 1970s. A big reason for the recent increase in the cost of production is because seed costs per acre have more than doubled (\$40 per acre in 2002 to \$90 per acre in 2012) and fertilizer costs per acre have more than tripled (\$53 per acre in 2002 to \$158 per acre in 2012).



Source: USDA

**Figure 1. Inflation Adjusted Total Costs of Corn Production: Average for the U.S.**

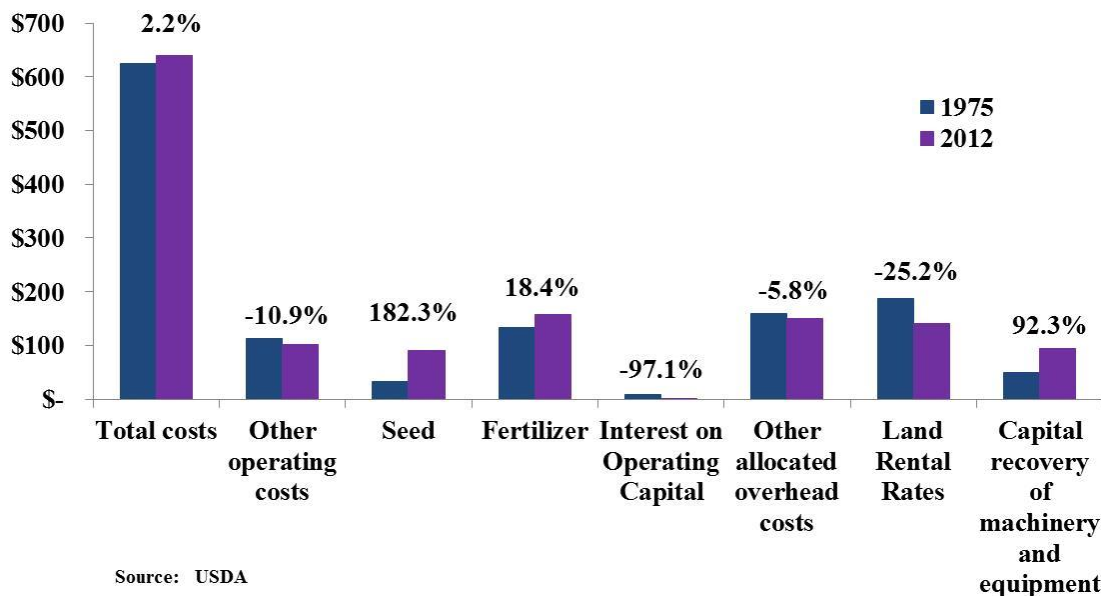
Comparing and contrasting today's cost of production to costs in 1975 reveals some interesting differences, especially the impact of improvements in technology on production costs. On an inflation adjusted basis, total cost of producing an acre of corn are just 2 percent higher today than they were in 1975 (figure 2). However, there are differences between these two time periods. Namely, the cost of seed technology has significantly risen for U.S. farmers. In the case of corn, from 1975 to 2012, seed costs per acre soared 182 percent. Other technological costs also shot up, such as the cost of machinery and equipment increasing 92 percent.

These added technological costs have provided a great benefit to producers. Better technology, as in the case of seed and equipment, has improved farm yields and farm efficiency. For example, according to the National Agricultural Statistics Service, average corn yields in the U.S. have doubled since 1975.

These higher yields have lifted farmers' profits. Technological improvements have boosted farm yields, which has contributed to revenues remaining above costs. As a result, today's farmer has enjoyed strong profits relative to the past. According to USDA data, the 1975 total profit per acre of corn was \$120 in constant 2012 dollars. In 2012, that same profit per acre is \$162.

Furthermore, from 2007 to 2012, the average corn farmer has experienced positive profits, the longest such stretch since 1975.

Constant 2012 Dollars per Acre



**Figure 2. Inflation Adjusted Costs of Corn Production: Average for the U.S. in 1975 and 2012**

Profits have also benefited from some costs being lower in 2012 than in 1975. The biggest decline in inflation adjusted costs from 1975 to 2012 comes from interest on operating capital. In 1975, the average corn farmer paid in 2012 constant dollars just below \$8 per acre, while in 2012 that cost plummeted to nearly zero. Two reasons for this very low interest cost are that farmers today have lower amounts of operating debt and, for those that do have operating debt, interest rates are exceptionally low compared to 1975.

Interestingly, another cost that remains below its historical highs is land rental rates. From 1975 to 2012, the average corn farmer faces an inflation adjusted land rental rate charge that is 25 percent lower today. It is not clear why these inflation adjusted rates are nearly \$50 per acre lower today.

So, where might farmers experience an increase in their cost structure? While it is difficult to pinpoint an exact area, it is likely that land rental rates will rise. Support for this assertion stems from the continued growth in global economies and a fairly positive outlook for farm incomes. So, if these positive factors for farm incomes persist, then farmland rental rates may rise to their mid- to late-1970s highs as shown in figure 2. Why? Farmland owners would adjust their rental agreements to capture some of these additional farm incomes.

Even if land rental rates rose to similar levels experienced in 1975, there would have to be additional increases in costs to wipe out farm profits. Let's assume that average land rental rates for corn acres increased an additional \$50 per acre to their 1975 highs (numbers taken from the USDA). The average corn farmer would still have over \$100 per acre profit in 2012, which leaves room to cover additional increases in costs. Therefore, in order for profits to disappear, other costs such as fertilizer, seed, machinery, etc., would also have to rise.

In summary, agricultural production costs have risen to historic highs. These elevated costs do not appear to be too burdensome for producers as revenues have remained elevated and the profit outlook is positive (USDA projects 2013 net farm income to rise 14 percent). However, history has shown that profits in agriculture can disappear quickly. As a result, producers must control what they can, and when it comes to controlling cost, being as cost efficient as possible is paramount.