

## Costs to Produce Corn and Soybeans in Illinois—2010

Bradley L. Zwilling

Extension Specialist, Farm Business Analyst

Department of Agricultural and Consumer Economics

College of Agricultural, Consumer and Environmental Sciences

University of Illinois at Urbana-Champaign

June 2011

In 2010, the total of all economic costs per acre for growing corn in Illinois averaged \$739 in the northern section, \$717 in the central section for farmland with “high” soil ratings, \$687 in the central section for farmland with “low” soil ratings, and \$635 in the southern section. Soybean costs per acre were \$524, \$539, \$493 and \$467, respectively (see Table 1). Costs were lower in southern Illinois primarily because of lower land costs. The total of all economic costs per bushel in the different sections of the state ranged from \$4.25 to \$4.38 for corn and from \$8.98 to \$9.53 for soybeans. Variations in this cost were related to weather, yields, and land quality.

These figures were obtained from farm business records kept by farmers enrolled in the Illinois Farm Business Farm Management Association. The samples included only farms with more than 500 acres of productive and nearly level soils in each area of the state; these are farms without livestock. Farms located in the 22 counties north and northwest of the Illinois River are included in the sample for northern Illinois. Farms from 36 counties below a line from about Mattoon to Alton are in the sample for southern Illinois. The remaining 44 counties make up the sample for central Illinois. The sample farms averaged 1,267 tillable acres in northern Illinois, 1,244 acres in the central section

with high soil ratings, 1,342 acres in the central section with lower soil ratings, and 1,518 acres in southern Illinois. This economic analysis includes some factors in the cost of doing business that nonagricultural businesses may not include. These factors are not used as expense items on income tax returns. Examples include the charge for labor performed by the farm operator, a rental charge for the use of owned and rented land, and an interest charge on equity in machinery and inventories of grain and livestock. In the short run, farm operators may continue to produce without covering these total economic costs of production. However, if returns do not equal the total economic cost of production in the long run, it will be difficult to maintain the same level of resources in the farm firm. In addition, producers will be challenged to lower their cost of production and/or increase volume as profit margins remain narrow.

### Nonland Costs

Soil fertility costs for soybeans were allocated on the basis of phosphorus, potassium, and lime removal, with the residual cost allocated to corn. The seed, pesticide and drying expenses also included some commercial drying and storage. The costs of fuel, machine hire, and machinery repair were reduced for income received

from custom work. Labor costs included the cash value of hired labor, plus a charge for available unpaid labor at a rate of \$3,250 per month. This rate represents a charge for only the physical labor input, not including a charge for management. Building and storage costs were for repairs and depreciation only. The nonland interest rate in 2010 was set at 5.0 percent; this figure was then multiplied by the sum of half the average inventory value of crops at the beginning and the end of the year, the depreciated value of machinery and buildings, and half the total operating expenses. The result is the total nonland interest charge. Overhead costs included insurance, utilities, the farm share of light vehicle expenses, and miscellaneous items. As mentioned above, no charge has been made in this analysis for management, but it may normally be about 7 percent of the total cost per bushel, or 30 to 31 cents for corn and 63 to 68 cents per bushel for soybeans.

### Land Costs

Land costs included the adjusted net rent and the real estate taxes. Net rent was represented as the estimated average rent received by crop-share landlords on record-keeping farms for the period 2006 to 2009. Caution is needed in interpreting differences in land costs between areas. In the long run, the net rent residual return to landowners should tend to equalize the total cost of production.

### Cost Per Bushel and Acre

Costs **per bushel** of corn in 2010 as compared to 2009 were higher for all geographic areas of the state except for the northern region. Costs per bushel were higher due to lower yields. Costs per bushel were 6 cents lower in northern Illinois, 18 cents higher in central Illinois with the higher rated soils, 36 cents higher in central Illinois with the lower rated soils and 27 cents higher in southern Illinois.

The average corn yield in 2010 was 4

bushels per acre lower than 2009 in northern Illinois, 24 to 30 bushels lower in central Illinois and 15 bushels per acre lower in southern Illinois. The 2010 average corn yield in the different geographical locations ranged from 8 to 24 bushels per acre lower than the four-year average from 2007 to 2010.

Costs **per acre** were lower in all the different geographic regions in Illinois compared to 2009. Across the state total costs per acre to produce corn decreased 3 to 9 percent. A number of costs decreased, including fertilizer, pesticides and drying.

Production costs **per bushel** of soybeans in 2010 decreased in all areas of the state as compared to 2009. Costs per bushel decreased mainly due to higher yields and lower fertility costs. Soybean yields were higher in every region of Illinois when compared to the year before. Soybean yields ranged from 2 to 7 bushels per acre higher in 2010 compared to 2009.

Decreases in costs per bushel ranged from 58 cents in central Illinois with the lower rated soils to \$1.46 in northern Illinois.

Total costs **per acre** decreased in all geographic regions of the state except southern Illinois when compared to 2009. While costs increased \$2 per acre in southern Illinois, costs decreased \$6 per acre in northern Illinois, \$7 per acre in central Illinois with the higher rated soils and \$12 per acre in central Illinois with the lower rated soils. Average soybean yields in the different areas ranged from 2 to 4 bushels per acre higher than the four-year average from 2007 to 2010.

### State Averages

Total costs to produce corn for all combined areas of the state were \$704 per acre. This figure decreased 7 percent compared to the year before. Variable costs decreased \$64 per acre, or 16 percent, other nonland costs increased \$7 per acre and land costs increased \$4 per acre. In 2010, cash costs

accounted for 48 percent of the total cost of production for corn, other nonland costs were 27 percent, and land costs were 25 percent. The average corn yield for all combined areas of the state was 164 bushels per acre resulting in a total cost of production of \$4.29 per bushel. The average corn yield was the lowest in the last five years. The highest corn yield on record was 194 bushels per acre in 2008. Total costs per acre were the second highest on record and total costs per bushel were the highest since 2001.

Total cost per acre to produce soybeans decreased, from \$522 per acre in 2009 to \$515 per acre in 2010. Generally speaking, the same expenses that decreased for corn also decreased for soybeans. Variable costs accounted for 33 percent of the total cost of production for soybeans, other nonland costs 33 percent and land costs 34 percent. The average soybean yield for all combined areas of the state was 56 bushels per acre resulting in a total cost of production of \$9.21 per bushel. The average soybean yield was the highest on record. The cost per bushel to raise soybeans the last five years averaged \$8.79 per bushel.

### **Cost Comparison**

Average variable costs per bushel of corn for the five-year period 2006 through 2010 ranged from \$1.61 in central Illinois with the higher rated soils to \$1.89 in southern Illinois. Total costs per bushel ranged from \$3.44 in central Illinois with the higher rated

soils to \$3.64 in southern Illinois. Total costs per acre were lower in southern Illinois due to a lower land cost.

Average variable costs per bushel of soybeans ranged from \$2.77 in central Illinois with the higher rated soils to \$3.60 in southern Illinois. Total costs per bushel varied from \$8.52 in central Illinois with the lower rated soils to \$9.22 in northern Illinois. Like for corn, total cost per acre was lower in southern Illinois due to a lower land cost.

### **Acknowledgement**

The author would like to acknowledge that data used in this study comes from the local Farm Business Farm Management (FBFM) Associations across the State of Illinois. Without their cooperation, information as comprehensive and accurate as this would not be available for educational purposes. FBFM, which consists of 5,500 plus farmers and 60 professional field staff, is a not-for-profit organization available to all farm operators in Illinois. FBFM field staff provide on-farm counsel with computerized recordkeeping, farm financial management, business entity planning and income tax management. For more information, please contact the State FBFM Office located at the University of Illinois Department of Agricultural and Consumer Economics at 217-333-5511 or visit the FBFM website at [www.fbfm.org](http://www.fbfm.org).

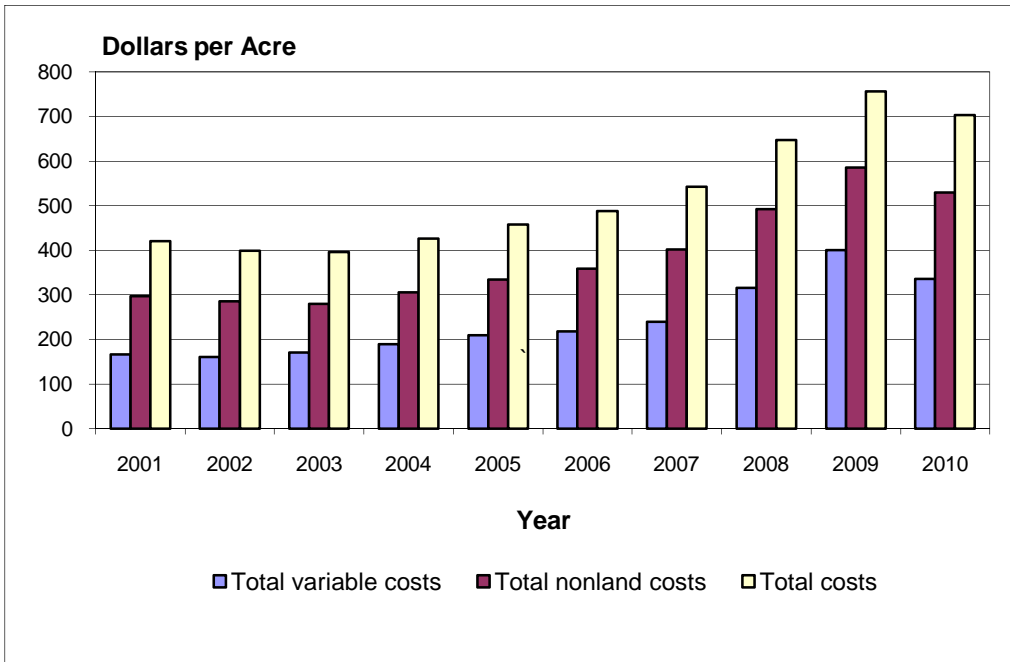


Figure 1. Total costs per acre to grow corn on Illinois grain farms.

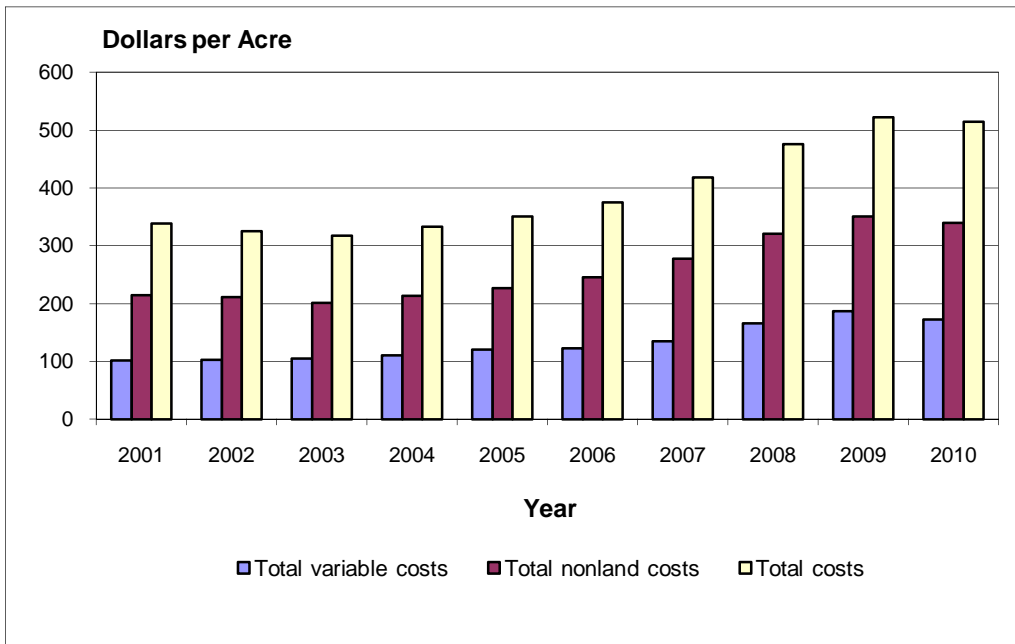


Figure 2. Total costs per acre to grow soybeans on Illinois grain farms.

Table 1. Cost Per Acre of Growing Corn and Soybeans on Illinois Grain Farms Without Livestock in 2010.

	Corn				Soybeans			
	North	Central <sup>1</sup>	Central <sup>2</sup>	South	North	Central <sup>1</sup>	Central <sup>2</sup>	South
Number of farms .....	377	628	345	213	377	628	345	213
Acres in crop.....	826	684	729	732	403	542	575	699
<b>Nonland Costs</b>								
Variable costs:								
Soil fertility .....	\$ 118	\$ 122	\$ 124	\$ 134	\$ 28	\$ 42	\$ 35	\$ 41
Pesticides .....	44	44	44	45	26	27	28	33
Seed .....	95	95	94	90	52	61	49	53
Drying.....	19	22	17	10	1	1	1	1
Repairs, fuel, and hire .....	<u>68</u>	<u>47</u>	<u>58</u>	<u>59</u>	<u>61</u>	<u>43</u>	<u>52</u>	<u>55</u>
Total, variable costs .....	\$ 344	\$ 330	\$ 337	\$ 338	\$ 168	\$ 174	\$ 165	\$ 183
Percent change from 2009.....	-14	-20	-17	-7	-10	-9	-7	-3
Other nonland costs:								
Labor .....	\$ 42	\$ 40	\$ 40	\$ 44	\$ 38	\$ 38	\$ 40	\$ 40
Buildings.....	17	10	14	17	9	8	10	10
Storage.....	6	13	10	3	3	6	4	1
Machinery depreciation.....	41	38	37	47	26	34	32	45
Nonland interest.....	50	50	45	39	42	45	40	41
Overhead .....	<u>57</u>	<u>35</u>	<u>41</u>	<u>40</u>	<u>56</u>	<u>33</u>	<u>39</u>	<u>40</u>
Total, other costs .....	\$ 213	\$ 186	\$ 187	\$ 190	\$ 174	\$ 164	\$ 165	\$ 177
Total, nonland costs.....	\$ 557	\$ 516	\$ 524	\$ 528	\$ 342	\$ 338	\$ 330	\$ 360
Percent change from 2009 .....	-5	-13	-11	-4	-2	-4	-4	0
<b>Land costs</b>								
Taxes .....	\$ 30	\$ 31	\$ 23	\$ 15	\$ 30	\$ 31	\$ 23	\$ 15
Annually adjusted net rent.....	<u>152</u>	<u>170</u>	<u>140</u>	<u>92</u>	<u>152</u>	<u>170</u>	<u>140</u>	<u>92</u>
Total land cost.....	\$ 182	\$ 201	\$ 163	\$ 107	\$ 182	\$ 201	\$ 163	\$ 107
<b>Total, all costs</b> .....	\$ 739	\$ 717	\$ 687	\$ 635	\$ 524	\$ 539	\$ 493	\$ 467
Percent change from 2009.....	-4	-9	-9	-3	-1	-1	-2	0
2010 yields, bushels per acre .....	174	168	157	148	56	60	54	49
Nonland cost per bushel .....	\$3.20	\$3.07	\$3.34	\$3.57	\$6.11	\$5.63	\$6.11	\$7.35
Total, all costs per bushel.....	\$4.25	\$4.27	\$4.38	\$4.29	\$9.36	\$8.98	\$9.13	\$9.53
2007-2010 average yield.....	187	190	181	156	52	56	52	45
Nonland cost per bushel.....	\$2.98	\$2.72	\$2.90	\$3.38	\$6.58	\$6.04	\$6.35	\$8.00
Total, all costs per bushel.....	\$3.95	\$3.77	\$3.80	\$4.07	\$10.08	\$9.63	\$9.48	\$10.38

Note: The last two lines of the table are costs based on 2007-2010 average yields.

<sup>1</sup> Soil productivity ratings of 86 to 100.

<sup>2</sup> Soil productivity ratings of 56 to 85