

Costs to Produce Corn and Soybeans in Illinois—2007

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In 2007 the total of all economic costs per acre for growing corn in Illinois averaged \$563 in the northern section, \$554 in the central section for farmland with “high” soil ratings, \$526 in the central section for farmland with “low” soil ratings, and \$484 in the southern section. Soybean costs per acre were \$441, \$427, \$394 and \$366, 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 \$2.76 to \$3.34 for corn and from \$7.58 to \$9.89 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 1,212 tillable acres in northern Illinois, 1,240 acres in the central section

with high soil ratings, 1,291 acres in the central section with lower soil ratings, and 1,472 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, crop, pesticide, and drying expenses also included some commercial drying and storage and the estimated value of home-raised seed. 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 \$2,950 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 2007 was set at 8.0 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 19 to 23 cents for corn and 53 to 69 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 2003 to 2006. 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 2007 as compared to 2006 were higher for all geographic areas of the state except for the central region with the higher rated soils. Costs per bushel were higher due to higher per acre costs. Costs per bushel were 2 cents lower in central Illinois with the higher rated soils, 4 cents higher in central Illinois with the lower rated soils, 13 cents higher in northern Illinois and 23 cents higher in

southern Illinois.

The average corn yield in 2007 was 13 bushels per acre higher than 2006 in northern Illinois, 17 to 21 bushels higher in central Illinois and 1 bushel per acre higher in southern Illinois. The 2007 average corn yield in the different geographical locations ranged from 4 bushels per acre lower to 19 bushels per acre higher than the four-year average from 2004 to 2007.

Costs **per acre** were higher in all the different geographic regions in Illinois compared to 2006. Across the state total costs per acre to produce corn increased 8 to 12 percent. A number of costs increased, including fertilizer, seed, fuel, repairs, insurance and land costs. The nonland interest cost per acre was one of the items that increased the most due to higher grain inventory values and more capital investment into machinery.

Production costs **per bushel** of soybeans in 2007 increased in all areas of the state as compared to 2006. Costs per bushel increased mainly due to higher per acre costs. Soybean yields were the same for central Illinois but lower for northern and southern Illinois when compared to the year before. Soybean yields ranged from 11 bushels per acre lower to no change in 2007 as compared to 2006. Increases in costs per bushel ranged from 64 cents in central Illinois with the lower rated soils to \$2.79 in southern Illinois.

Like corn, total costs **per acre** increased in all geographic regions of the state compared to 2006. Costs increased \$54 per acre in northern Illinois, \$41 per acre in central Illinois with the higher rated soils, \$33 per acre in central Illinois with the lower rated soils and \$25 per acre in southern Illinois. Fertilizer, fuel, repairs, seed and interest were some of the costs that increased. Average soybean yields in the different areas ranged from no difference to 9 bushels

per acre lower than the four-year average from 2004 to 2007.

State Averages

Total costs to produce corn for all combined areas of the state were \$542 per acre. This figure increased 11 percent compared to the year before. Variable costs increased \$22 per acre, or 10 percent, other nonland costs increased \$21 per acre and land costs increased \$11 per acre. In 2007, cash costs accounted for 44 percent of the total cost of production for corn, other nonland costs were 30 percent, and land costs were 26 percent. The average corn yield for all combined areas of the state was 190 bushels per acre resulting in a total cost of production of \$2.85 per bushel. The average corn yield was the highest on record. The 2004 corn yield was 184 bushels per acre and the 2003 and 2006 corn yields were 174 bushels per acre. Total costs per acre were the highest on record. Even with the high corn yields, total costs per bushel were the second highest since 1998. The highest cost per bushel during that time period was \$3.05 in 2005.

Total cost per acre to produce soybeans increased, from \$375 per acre in 2006 to \$418 per acre in 2007. Generally speaking, the same expenses that increased for corn also increased for soybeans. Variable costs accounted for 32 percent of the total cost of production for soybeans, other nonland costs 34 percent and land costs 34 percent. The average soybean yield for all combined areas of the state was 51 bushels per acre resulting in a total cost of production of \$8.20 per bushel. The average soybean yield was the lowest since 2003. The highest yield on record of 54 bushels per acre was recorded in 2004. The cost per bushel to raise soybeans the last five years averaged \$7.31 per bushel.

Cost Comparison

Average variable costs per bushel of corn for the five-year period 2003 through 2007 ranged from \$1.12 in central Illinois with the higher rated soils to \$1.38 in southern Illinois. Total costs per bushel ranged from \$2.59 in central Illinois with the higher rated soils to \$2.85 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 \$2.23 in central Illinois with the higher rated soils to \$2.75 in southern Illinois. Total costs per bushel varied from \$7.13 in central Illinois with the higher rated soils to \$7.86 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.

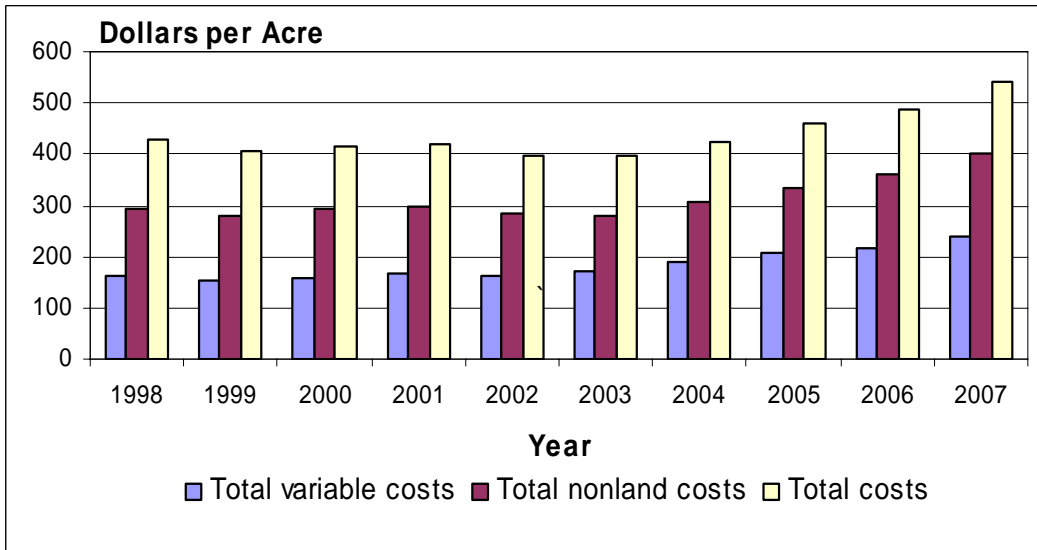


Figure 1. Total costs per acre to grow corn on Illinois grain farms.

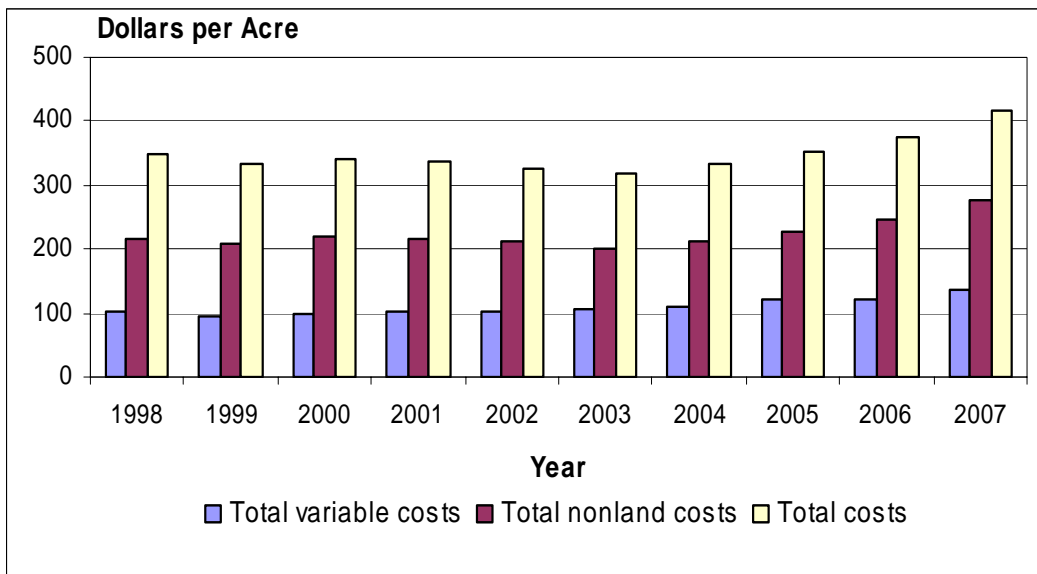


Figure 2. Total costs per acre to grow soybeans on Illinois grain farms.

Table 1. Cost Per Acre of Growing Corn and Soybeans on Illinois Grain Farms Without Livestock in 2007.

	Corn				Soybeans			
	North	Central ¹	Central ²	South	North	Central ¹	Central ²	South
Number of farms	412	611	348	188	412	611	348	188
Acres in crop	851	751	769	733	330	464	471	590
Nonland Costs								
Variable costs:								
Soil fertility	\$ 84	\$ 90	\$ 92	\$ 92	\$ 26	\$ 29	\$ 28	\$ 29
Pesticides	38	40	38	39	24	25	24	28
Seed	54	55	54	52	40	37	36	34
Drying	12	9	8	4	3	1	1	1
Repairs, fuel, and hire	<u>61</u>	<u>43</u>	<u>49</u>	<u>46</u>	<u>52</u>	<u>37</u>	<u>41</u>	<u>44</u>
Total, variable costs	\$ 249	\$ 237	\$ 241	\$ 233	\$ 145	\$ 129	\$ 130	\$ 136
Percent change from 2006	10	10	13	7	14	9	8	5
Other nonland costs:								
Labor	\$ 34	\$ 36	\$ 35	\$ 37	\$ 32	\$ 34	\$ 33	\$ 35
Buildings	13	8	9	11	8	5	6	6
Storage	5	8	6	2	3	4	2	1
Machinery depreciation	23	23	22	25	20	20	19	21
Nonland interest	53	54	50	44	47	49	43	37
Overhead	<u>42</u>	<u>34</u>	<u>35</u>	<u>32</u>	<u>42</u>	<u>32</u>	<u>33</u>	<u>30</u>
Total, other costs	\$ 170	\$ 163	\$ 157	\$ 151	\$ 152	\$ 144	\$ 136	\$ 130
Total, nonland costs	\$ 419	\$ 400	\$ 398	\$ 384	\$ 297	\$ 273	\$ 266	\$ 266
Percent change from 2006	14	12	13	8	17	12	10	7
Land costs								
Taxes	\$ 27	\$ 25	\$ 18	\$ 13	\$ 27	\$ 25	\$ 18	\$ 13
Annually adjusted net rent	<u>117</u>	<u>129</u>	<u>110</u>	<u>87</u>	<u>117</u>	<u>129</u>	<u>110</u>	<u>87</u>
Total land cost	\$ 144	\$ 154	\$ 128	\$ 100	\$ 144	\$ 154	\$ 128	\$ 100
Total, all costs	\$ 563	\$ 554	\$ 526	\$ 484	\$ 441	\$ 427	\$ 394	\$ 366
Percent change from 2006	12	11	11	8	14	11	9	7
2007 yields, bushels per acre	196	201	189	145	51	55	52	37
Nonland cost per bushel	\$2.14	\$1.99	\$2.11	\$2.65	\$5.82	\$4.96	\$5.12	\$7.19
Total, all costs per bushel	\$2.87	\$2.76	\$2.78	\$3.34	\$8.65	\$7.76	\$7.58	\$9.89
2004-2007 average yield	177	183	172	149	51	55	52	46
Nonland cost per bushel	\$2.37	\$2.19	\$2.31	\$2.58	\$5.82	\$4.96	\$5.12	\$5.78
Total, all costs per bushel	\$3.18	\$3.03	\$3.06	\$3.25	\$8.65	\$7.76	\$7.58	\$7.96

Note: The last two lines of the table are costs based on 2004-2007 average yields.

¹ Soil productivity ratings of 86 to 100.

² Soil productivity ratings of 56 to 85