

Costs to Produce Corn and Soybeans in Illinois—2022

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In 2022, the total of all economic costs per acre for growing corn in Illinois averaged \$1,185 in the northern section, \$1,192 in the central section for farmland with “high” soil ratings, \$1,129 in the central section for farmland with “low” soil ratings, and \$1,098 in the southern section. Soybean costs per acre were \$839, \$859, \$793 and \$802, 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 \$4.97 to \$5.57 for corn and from \$11.84 to \$13.83 for soybeans. Variations in these costs 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 1,794 tillable acres in northern Illinois, 1,563 acres in the central section with high soil ratings, 1,555 acres in the central section with lower soil ratings, and

1,697 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 business. Also, producers will be challenged to lower their cost of production 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 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 \$4,200 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 2022 was set at 4.0 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 remaining economic depreciation 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 8 percent of the total cost per bushel or 41 cents for corn and 99 cents per bushel for soybeans.

Land Costs

Land costs were the weighted average of owned, crop share and cash rent costs. Owned land costs include real estate taxes and an interest charge on owned land. For 2022, the land interest charge was 1.80 percent. The land cost for crop shared acres is the labor and equipment charges needed to produce a crop on non-revenue acres (acres the operator does not receive production from). Cash rent costs are the amounts paid to cash rent landlords. Caution is needed in interpreting differences in land costs between areas.

Cost Per Bushel and Acre

Costs **per bushel** of corn in 2022 as compared to 2021 were higher in all regions of the state. Costs per bushel were increased even with higher yields due to greater fertility, pesticides, non-land, land and overhead costs as well as machinery repairs, fuel and machine hire costs. Costs per bushel were 65 cents higher in northern Illinois, 73 cents higher in central Illinois with the higher rated soils, 55 cents higher in central Illinois with the lower rated soils and \$1.38 higher in southern Illinois.

The average corn yield in 2022 was 19

bushels per acre higher than 2021 in northern Illinois, 14 bushels to 22 bushel higher in central Illinois and 12 bushels lower than 2021 in southern Illinois. The 2022 average corn yield in the different geographical locations ranged from 7 bushels higher to 21 bushels per acre higher than the five-year average from 2018 to 2022.

Costs **per acre** for corn were higher in all the different geographic regions in Illinois compared to 2021. Across the state, total costs per acre to produce corn increased from 24 to 25 percent. Fertility costs increased the most statewide.

Production costs **per bushel** of soybeans in 2022 in Illinois compared to 2021 increased across the state. Costs per bushel increased due to yields staying similar to 2021, but with the same cost increasing as for corn. Soybean yields ranged from 6 bushel lower to 2 bushels per acre higher in 2022 compared to 2021. Changes in costs per bushel ranged from \$1.67 higher in central Illinois with lower soil ratings to \$3.40 higher in southern Illinois.

Total costs **per acre** for soybeans increased in Illinois when compared to 2021. Costs increased \$133 per acre in northern Illinois, \$142 per acre in central Illinois with the higher rated soils, \$132 per acre in central Illinois with the lower rated soils and \$134 per acre in southern Illinois when compared to 2021. Average soybean yields in the different areas ranged from 1 bushel lower to 4 bushel higher per acre when comparing to the five-year average from 2018 to 2022.

State Averages

Total costs to produce corn for all combined areas of the state were \$1,165 per acre. This is \$228 per acre higher than 2021. Variable costs increased \$155 per acre or 35 percent, other nonland costs increased \$40 per acre, and land costs increased \$33 per acre. In 2022, cash costs accounted for 51 percent of

the total cost of production for corn, other nonland costs were 25 percent, and land costs were 24 percent. The average corn yield for all combined areas of the state was 227 bushels per acre resulting in a total cost of production of \$5.13 per bushel. The average corn yield in 2022 was the highest on record and 14 bushels to the acre more than 2021. Total costs per acre were the highest on record while total costs per bushel were the second highest on record with 2012 being the highest.

Total cost per acre to produce soybeans increased, from \$695 per acre in 2021 to \$833 per acre in 2022. Variable cash costs accounted for 36 percent of the total cost of production for soybeans, other nonland costs 31 percent and land costs 33 percent. The average soybean yield for all combined areas of the state was 67 bushels per acre resulting in a total cost of production of \$12.43 per bushel. The cost per bushel to raise soybeans the last five years averaged \$10.64 per bushel.

Cost Comparison

Average variable costs per bushel of corn for the five-year period 2018 through 2022 ranged from \$2.07 in central Illinois with the higher rated soils to \$2.29 in southern Illinois. Total costs per bushel ranged from \$4.33 in central Illinois with the higher rated soils to \$4.66 in southern Illinois. Total costs per bushel were higher in southern Illinois due to lower yields over the five-year period from 2018 through 2022.

Average variable costs per bushel of soybeans for the five-year period 2018 through 2022 ranged from \$3.45 in central Illinois with higher rated soils to \$4.20 in southern Illinois. Total costs per bushel varied from \$10.31 in central Illinois with the higher rated soils to \$11.55 in southern Illinois. Like for corn, soybeans total cost

per bushel were higher in southern Illinois due to lower yields during the most recent five-year period.

2023 Forecast

Forecasts for Illinois production costs in 2023 look to increase using Dr. Gary Schnitkey's 2023 crop budgets and the USDA's Cost-of-Production Forecasts as a guide. For corn, 2023 variable costs are projected to increase 6 percent, mainly due to soil fertility, seed, and machinery cost increases. However, this increase could be affected depending on when fertilizer was purchased. For 2023, soybeans have a larger projected percentage increase of variable costs of 14 percent. This increase is also primarily due to soil fertility, seed, and machinery costs. These increases coupled with higher overhead and land costs have the possibility to lead to much lower returns due to currently lower projected grain prices for 2023.

Acknowledgment

The author would like to acknowledge that data used in this study comes from Illinois Farm Business Farm Management (FBFM) Associations across the state. Without their cooperation, information as comprehensive and accurate as this would not be available for educational purposes. FBFM, which consists of 5,000 plus farmers and 65 plus professional field staff, is a not-for-profit organization available to all farm operators in Illinois. FBFM field staff provide on-farm counsel with 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 217-333-8346 or visit the FBFM website at www.fbfm.org.

Figure 1. Total Costs Per Acre to Grow Corn on Illinois Grain Farms

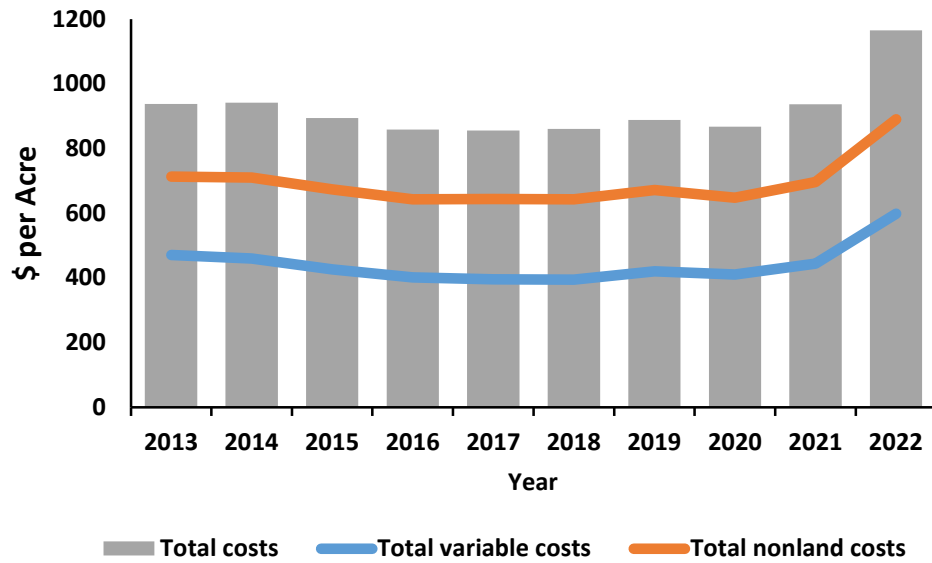


Figure 2. Total Costs Per Acre to Grow Soybeans on Illinois Grain Farms

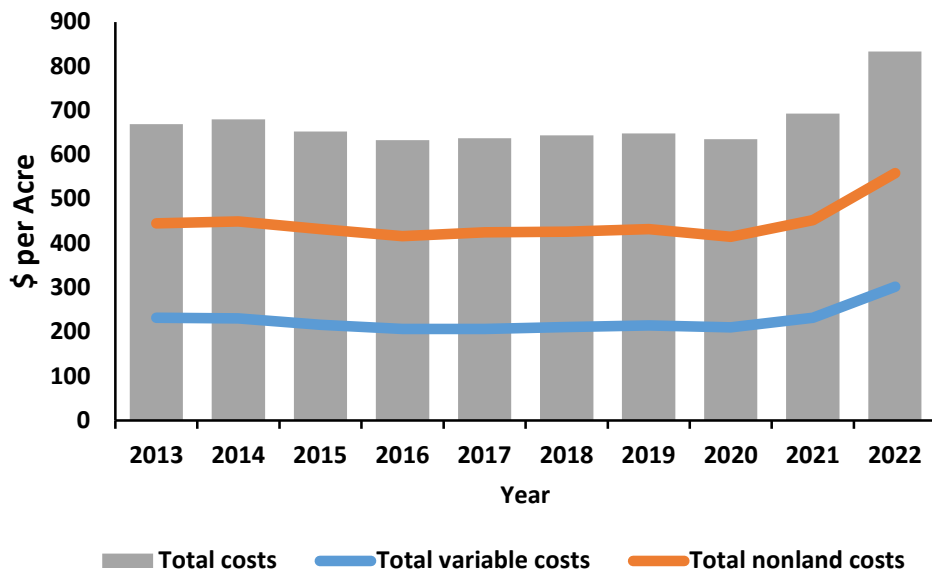


Table 1. Cost Per Acre for Growing Corn and Soybeans on Illinois Grain Farms Without Livestock in 2022

	Corn				Soybeans			
	Northern	Central ¹ High	Central ² Low	Southern	Northern	Central ¹ High	Central ² Low	Southern
Number of Farms	329	551	288	162	329	551	288	162
Acres in crop	1,067	785	778	687	684	756	745	867
NONLAND COSTS								
Variable Costs:								
Soil Fertility	\$235	\$240	\$236	\$241	\$65	\$71	\$68	\$78
Pesticides	102	128	120	117	63	77	74	80
Seed	117	117	123	110	72	74	65	73
Drying	28	26	23	13	1	-	2	-
Repairs, fuel and hire	<u>112</u>	<u>96</u>	<u>93</u>	<u>104</u>	<u>97</u>	<u>83</u>	<u>83</u>	<u>90</u>
Total variable costs.....	\$594	\$607	\$595	\$585	\$298	\$305	\$292	\$321
Percent change from 2021	34%	34%	36%	37%	26%	29%	31%	32%
Other nonland costs								
Labor	\$53	\$52	\$55	\$67	\$46	\$49	\$53	\$61
Buildings	30	20	21	31	15	17	15	18
Storage	8	8	6	6	4	4	2	4
Machinery depreciation	69	76	71	80	59	66	61	77
Nonland interest	63	65	60	61	52	58	53	58
Overhead	<u>76</u>	<u>68</u>	<u>69</u>	<u>66</u>	<u>73</u>	<u>64</u>	<u>65</u>	<u>61</u>
Total, other costs.....	\$299	\$289	\$282	\$311	\$249	\$258	\$249	\$279
Total, nonland costs	\$893	\$896	\$877	\$896	\$547	\$563	\$541	\$600
Percent change from 2021.....	28%	28%	28%	30%	22%	23%	24%	25%
LAND COSTS								
Total land costs ³	\$292	\$296	\$252	\$202	\$292	\$296	\$252	\$202
TOTAL, all costs	\$1,185	\$1,192	\$1,129	\$1,098	\$839	\$859	\$793	\$802
Percent change from 2021.....	25%	24%	25%	25%	19%	20%	20%	20%
2022 yields, bushels per acre	230	235	227	197	66	71	67	58
Nonland costs per bushel	\$3.88	\$3.81	\$3.86	\$4.55	\$8.29	\$7.93	\$8.07	\$10.34
Total, all costs per bushel	\$5.15	\$5.07	\$4.97	\$5.57	\$12.71	\$12.10	\$11.84	\$13.83
2018-2022 average yield	209	223	207	190	63	69	63	58
Nonland costs per bushel	\$4.27	\$4.02	\$4.23	\$4.72	\$8.63	\$8.11	\$8.61	\$10.34
Total, all costs per bushel	\$5.66	\$5.35	\$5.44	\$5.78	\$13.23	\$12.38	\$12.63	\$13.83

Note: The last two lines of the table are costs based on 2018-2022 average yields

¹ Soil productivity ratings of 86 to 100

² Soil productivity ratings of 56 to 85

³ Weighted average of owned, crop share and cash rent land costs