farmdoc DAILY

Department of Agricultural and Consumer Economics, University of Illinois Urbana-Champaign

Cost to Produce Corn and Soybeans in Illinois — 2016

Brandy Krapf, Dwight Raab, and Bradley Zwilling

Illinois FBFM Association and Department of Agricultural and Consumer Economics
University of Illinois

April 21, 2017

***farmdoc daily* (7):74**

Recommended citation format: Krapf, B., D. Raab, and B. Zwilling. "Cost to Produce Corn and Soybeans in Illinois — 2016." *farmdoc daily* (7):74, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, April 21, 2017.

Permalink: http://farmdocdaily.illinois.edu/2017/04/cost-to-produce-corn-and-soybeans-illinois-2016.html

In 2016, the total of all economic costs per acre for growing corn in Illinois averaged $886 in the northern section, $870 in the central section for farmland with "high" soil ratings, $849 in the central section for farmland with "low" soil ratings, and $801 in the southern section. Soybean costs per acre were $638, $652, $610 and $603, 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 $3.81 to $4.92 for corn and from $9.44 to $10.77 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 1,470 tillable acres in northern Illinois, 1,359 acres in the central section with high soil ratings, 1,379 acres in the central section with lower soil ratings, and 1,664 acres in southern Illinois.

Cost of Production for Corn Compared to 2015

Costs per bushel of corn in 2016 as compared to 2015 were lower for all geographic areas of the state. Costs per bushel were lower due to lower fertility costs as well as higher yields, except in southern Illinois. Costs per bushel were 78 cents lower in northern Illinois, 67 cents lower in central Illinois with the higher rated soils, 90 cents lower in central Illinois with the lower rated soils and 30 cents lower in southern Illinois.

The average corn yield in 2016 was 29 bushels per acre higher than 2015 in northern Illinois, 28 to 33 bushels higher in central Illinois and the same as 2015 in southern Illinois. The 2016 average corn yield in the different geographical locations ranged from 14 to 35 bushels per acre higher than the five-year average from 2012 to 2016.

Costs per acre were mostly lower in all the different geographic regions in Illinois compared to 2015. Across the state, total costs per acre to produce corn decreased 3 to 6 percent. Many costs decreased, including fertility, seed and land costs.

Cost of Production for Soybeans Compared to 2015

Production costs per bushel of soybeans in 2016 decreased in all areas of the as compared to 2015. Costs per bushel decreased due to a combination of lower costs and higher yields. Soybean yields were higher when compared to the year before. Soybean yields ranged from 2 to 5 bushels per acre higher in 2016 compared to 2015. Changes in costs per bushel ranged from 62 cents lower in central Illinois with lower rated soils to $1.36 lower in southern Illinois.

Total costs per acre decreased in all geographic regions of the state when compared to 2015. Costs decreased $18 per acre in northern Illinois, $16 per acre in central Illinois with the higher rated soils, $18 per acre in central Illinois with the lower rated soils and $28 per acre in southern Illinois. Average soybean yields in the different areas ranged from 5 to 8 bushels per acre higher than the five-year average from 2012 to 2016.

State Averages

Total costs to produce corn for all combined areas of the state were $859 per acre. This figure decreased four percent compared to the year before. Variable costs decreased $24 per acre or 6 percent, other nonland costs decreased $8 per acre and land costs decreased $3 per acre. In 2016, cash costs accounted for 47 percent of the total cost of production for corn, other nonland costs were 28 percent, and land costs were 25 percent. The average corn yield for all combined areas of the state was 215 bushels per acre resulting in a total cost of production of $3.99 per bushel. The average corn yield was the highest on record. Total costs per acre were the lowest in the last five years while total costs per bushel were the lowest in the last eight years.

Total cost per acre to produce soybeans decreased, from $652 per acre in 2015 to $633 per acre in 2016. 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 65 bushels per acre resulting in a total cost of production of $9.71 per bushel. The average soybean yield was the highest on record. The cost per bushel to raise soybeans the last five years averaged $11.25 per bushel.

Forecasts for Illinois production costs in 2017 look to be less while 2018 sees a slight increase using Gary Schnitkey's 2017 crop budgets and the USDA's Cost-of-Production Forecasts as a guide. For corn, 2017 variable costs are projected to decrease 5 percent, mainly due to soil fertility costs. For 2018, the variable costs are expected to increase 2 percent from 2017. For 2017, soybeans have a larger projected decrease of variable costs of 8 percent. This decrease is also primarily due to soil fertility costs. In 2018, the soybean variable costs are expected to be 2 percent more than 2017. With tightening margins, these decreases are needed. However, additional cutting of overhead and land costs will need to occur to make returns more profitable in 2017 and 2018.

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.

A more complete discussion of how some of the costs are calculated can be found under Illinois Farm Management Handbook in the management section of *farmdoc*.

Table 1. Cost Per Acre for Growing Corn and Soybeans on Illinois Grain Farms Without Livestock in 2016

	Corn				Soybeans			
	Northern	Central [1] High	Central [2] Low	Southern	Northern	Central [1] High	Central [2] Low	Southern
Number of Farms	371	615	333	217	371	615	333	217
Acres in crop	920	722	729	729	510	617	616	809
NONLAND COSTS								
Variable Costs:								
Soil Fertility	$144	$154	$154	$138	$37	$49	$44	$44
Pesticides	56	66	64	68	34	40	41	48
Seed	118	116	118	112	69	74	62	64
Drying	15	13	13	6	0	1	1	0
Repairs, fuel and hire	72	55	58	62	61	48	52	58
Total variable costs	$405	$404	$407	$386	$201	$212	$200	$214
Percent change from 2015	-5%	-5%	-6%	-8%	-2%	-5%	-5%	-5%
Other nonland costs								
Labor	$45	$48	$49	$59	$40	$46	$48	$53
Buildings	27	16	18	24	14	14	13	14
Storage	9	14	11	9	3	8	4	7
Machinery depreciation	67	66	65	68	57	58	56	65
Nonland interest	49	48	46	44	40	43	40	41
Overhead	46	44	48	49	45	42	45	47
Total, other costs	$243	$237	$237	$253	$199	$211	$205	$227
Total, nonland costs	$648	$641	$644	$639	$400	$423	$405	$441
Percent change from 2015	-5%	-4%	-5%	-7%	-4%	-3%	-3%	-5%
LAND COSTS								
Total land costs[3]	$238	$229	$205	$162	$238	$229	$205	$162
TOTAL, all costs	$886	$870	$849	$801	$638	$652	$610	$603
Percent change from 2015	-4%	-3%	-4%	-6%	-3%	-2%	-3%	-4%
2016 yields, bushels per acre	223	228	218	163	66	69	63	56
Nonland costs per bushel	$2.91	$2.81	$2.95	$3.92	$6.06	$6.13	$6.43	$7.88
Total, all costs per bushel	$3.97	$3.81	$3.89	$4.92	$9.67	$9.44	$9.69	$10.77
2012-2016 average yield	194	196	183	149	60	61	57	51
Nonland costs per bushel	$3.34	$3.26	$3.52	$4.29	$6.71	$6.89	$7.11	$8.72
Total, all costs per bushel	$4.57	$4.43	$4.63	$5.38	$10.70	$10.62	$10.71	$11.92

Note: The last two lines of the table are costs based on 2012-2016 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

References

Schnitkey, G. "Crop Budgets, Illinois, 2017." Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, April 21, 2017.

USDA Economic Research Service. "Cost-of-Production Forecasts for U.S. Major Field Crops, 2016F-2018F." Accessed April 21, 2017. https://www.ers.usda.gov/webdocs/DataFiles/Commodity_Costs_and_Returns__25351/cop_forecast.xls?v=42718