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2023 Crop Budgets: Higher Costs and Lower Returns

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The first release of the *2023 Illinois Crop Budgets* is available on *farmdoc*. Costs are projected to increase in 2023 from 2022 levels. At projected cost levels, per bushel prices of $5.30 for corn and $12.75 for soybeans result in marginal profitability, similar to levels experienced from 2014 to 2019. While 2023 is projected to be profitable, risks exist. A decline in commodity price likely would not be associated with similar decreases in cost levels, reducing already narrow margins. Profitability risks will be mitigated over time as input prices are locked in and as projected prices for crop insurance are set in February 2023.

2023 Crop Budgets

Table 1 provides corn and soybean budgets for four regions of Illinois:

1. Northern Illinois,
2. Central Illinois with high-productivity farmland,
3. Central Illinois with low-productivity farmland, and
4. Southern Illinois.

Table 1. 2023 Corn and Soybean Budgets for Northern, Central, and Southern Illinois

	Northern		Central-High		Central-Low		Southern	
	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans
Yield per acre	217	65	227	72	211	64	187	58
Price per bu	$5.30	$12.70	$5.30	$12.70	$5.30	$12.70	$5.30	$12.70
Crop revenue	$1,150	$826	$1,203	$914	$1,118	$813	$991	$737
ARC/PLC	0	0	0	0	0	0	0	0
Ad hoc Federal payments	0	0	0	0	0	0	0	0
Crop insurance proceeds	0	0	0	0	0	0	0	0
Gross revenue	**$1,150**	**$826**	**$1,203**	**$914**	**$1,118**	**$813**	**$991**	**$737**
Fertilizers	250	95	250	95	246	95	230	95
Pesticides	108	64	123	74	120	74	109	75
Seed	130	83	130	84	130	70	118	76
Drying	27	4	34	4	23	5	18	5
Storage	3	1	6	5	5	2	4	3
Crop insurance	37	28	39	26	34	26	32	26
Total direct costs	**$555**	**$275**	**$582**	**$288**	**$558**	**$272**	**$511**	**$280**
Machine hire/lease	28	27	20	18	19	18	19	16
Utilities	8	7	7	7	8	7	9	7
Machine repair	50	31	41	37	41	37	52	52
Fuel and oil	33	21	30	24	28	24	34	24
Light vehicle	3	1	2	1	2	2	2	2
Mach. depreciation	79	70	79	70	79	68	81	73
Total power costs	**$201**	**$157**	**$179**	**$157**	**$177**	**$156**	**$197**	**$174**
Hired labor	27	25	25	22	21	18	35	34
Building repair and rent	5	7	8	7	9	7	9	9
Building depreciation	25	11	14	12	15	11	21	21
Insurance	12	11	13	13	13	13	17	17
Misc	12	11	13	13	11	11	13	13
Interest (non-land)	23	17	20	18	21	18	20	19
Total overhead costs	**$104**	**$82**	**$93**	**$85**	**$90**	**$78**	**$115**	**$113**
Total non-land costs	**$860**	**$514**	**$854**	**$530**	**$825**	**$506**	**$823**	**$567**
Operator and land return	**$290**	**$312**	**$349**	**$384**	**$293**	**$307**	**$168**	**$170**
Land costs (cash rent)	301	301	341	341	282	282	231	231
Farmer return	**-$11**	**$11**	**$8**	**$43**	**$11**	**$25**	**-$63**	**-$61**

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More detailed budgets are available here in the management section of *farmdoc*. Several notes concerning the budgets shown in Table 1 are:

- Yields are set at trend levels for 2023, with trends established through historical yields. Over time, corn yields have increased an average of 2.0 bushels per acre, while soybean yields have increased by .5 bushels per acre.
- Projected prices are $5.30 per bushel for corn and $12.70 for soybeans, near current 2023 fall bids.
- Non-land costs are based on historical expenses on Illinois farms, updated based on current and expected input price levels.

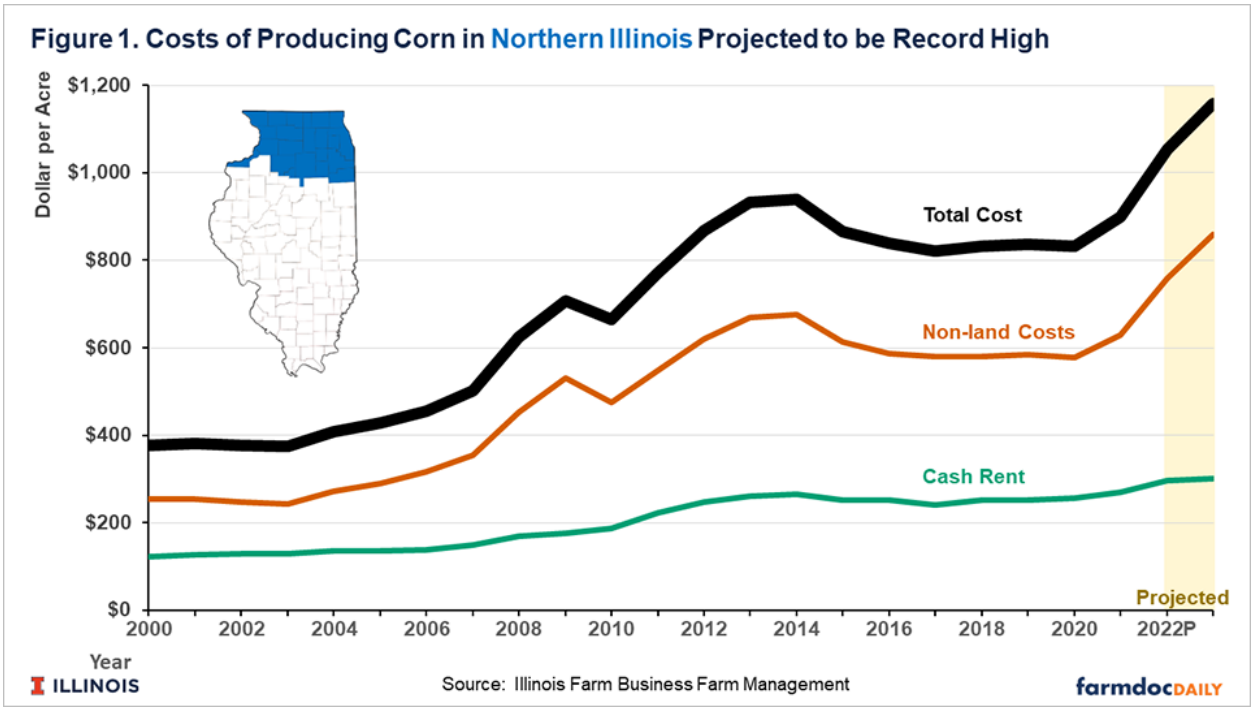
- Land costs are based on projected cash rents.

Farmer returns represent the amount remaining for the farmer after paying all financial costs, with a land charge at the average projected cash rent. The lowest returns are projected for southern Illinois, with farmer returns of -$63 per acre for corn and -$61 per acre for soybean. The highest returns are in central Illinois with high-productivity farmland, with farmer returns of $8 for corn and $43 per acre for soybeans. For all regions of Illinois, the relatively high returns experienced in recent years are projected to end in 2023.

Soybeans are projected to be more profitable in all regions of Illinois (see Table 1). However, the differences in crop returns are relatively small. In northern Illinois, for example, corn is projected to have a -$11 per acre return, while soybeans are projected to have an $11 return, a difference of $22 per acre. Those differences are not likely to change normal rotational decisions.

Cost Increases

Non-land costs are projected to be higher in 2023 than in 2022, as is illustrated for corn grown in northern Illinois in Figure 1. Non-land costs are projected to be $860 in 2023, up from $758 in 2022. Overall, costs have increased dramatically since 2020, from $577 to $860, an increase of $283 per acre, or a 49% increase.



In northern Illinois, cash rents are projected to increase from $296 per acre up to $301 per acre. While projected returns may not justify an increase in cash rent, relatively high profitability in recent years and continuing high commodity prices likely lead to cash rent increases. Like non-land costs, can rents have increased since 2020, increasing from $256 per acre up to $301 per acre, an increase of $45 per acre, or 18%.

Total costs equal non-land costs and land costs. In 2023, total costs are projected at $1,161 per acre, up from the $1,054 level in 2022. Since 2020, total costs have increased from $833 per acre to $1,161, an increase of $328 per acre, or 39%.

Table 2 shows actual results for northern Illinois for 2021, along with projections for 2022 and 2023. As shown in Table 2, most costs are projected to increase. Inflation is prevalent across the entire U.S. economy. Interest rates, energy prices, and wage rates continue to increase, and supply issues that began in Covid have not been resolved. The Ukraine-Russia war has further clouded the outlook and worsened supply chain issues.

Table 2. Corn and Soybean Returns, Northern Illnois

	Corn			Soybeans		
	2021	2022P	2023P	2021	2022P	2023P
Yield per acre	211	215	217	66	64	65
Price per bu	$6.50	$5.80	$5.30	$14.00	$13.00	$12.70
Crop revenue	$1,372	$1,247	$1,150	$924	$832	$826
ARC/PLC	0	0	0	0	0	0
Ad hoc Federal payments	0	0	0	0	0	0
Crop insurance proceeds	5	0	0	5	0	0
Gross revenue	**$1,377**	**$1,247**	**$1,150**	**$929**	**$832**	**$826**
Fertilizers	141	200	250	38	85	95
Pesticides	79	99	108	47	59	64
Seed	116	120	130	71	77	83
Drying	16	21	27	0	2	4
Storage	3	3	3	1	1	1
Crop insurance	27	37	37	18	28	28
Total direct costs	**$382**	**$480**	**$555**	**$175**	**$252**	**$275**
Machine hire/lease	24	26	28	23	25	27
Utilities	6	7	8	5	6	7
Machine repair	38	46	50	23	28	31
Fuel and oil	21	32	33	14	21	21
Light vehicle	3	3	3	1	1	1
Mach. depreciation	67	73	79	60	66	70
Total power costs	**$159**	**$187**	**$201**	**$126**	**$147**	**$157**
Hired labor	24	25	27	23	24	25
Building repair and rent	4	4	5	5	6	7
Building depreciation	21	23	25	9	10	11
Insurance	10	11	12	9	10	11
Misc	10	11	12	9	10	11
Interest (non-land)	19	17	23	15	13	17
Total overhead costs	**$88**	**$91**	**$104**	**$70**	**$73**	**$82**
Total non-land costs	**$629**	**$758**	**$860**	**$371**	**$472**	**$514**
Operator and land return	**$748**	**$489**	**$290**	**$558**	**$360**	**$312**
Land costs (cash rent)	271	296	301	271	296	301
Farmer return	**$477**	**$193**	**-$11**	**$287**	**$64**	**$11**

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We are projecting higher fertilizer costs in 2023. While fertilizer prices have declined recently (see *farmdoc daily*, July 19, 2022), fertilizer prices are still much higher than last year. Many farmers purchased fertilizer for 2022 before much of the price increase in fall and early winter of 2021. Opportunities to price at those levels do not exist currently.

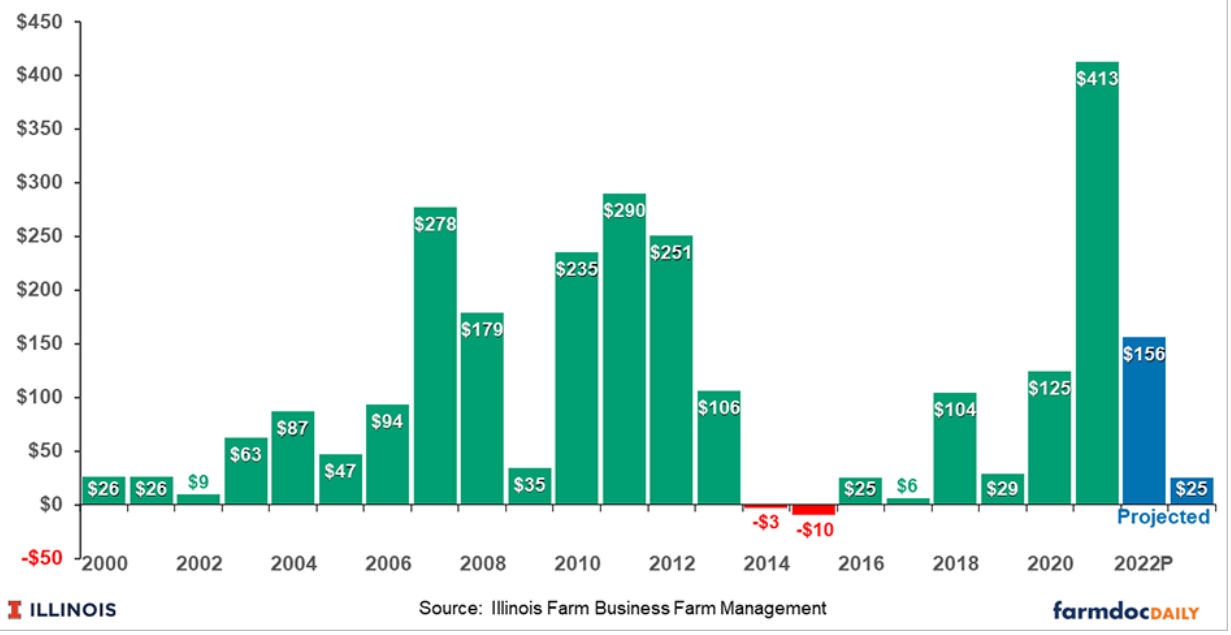
Given higher costs, break-even levels will be much higher. For northern Illinois, the break-even corn price is $5.34 per bushel on cash rented land. The break-even soybean price is $12.54. Those break-even

price are above average prices received from 2014 to 2019: $3.66 per bushel for corn and $9.69 for soybeans.

Farmer Returns

Farmer returns are projected to be lower for 2023, as is illustrated in Figure 2, which shows farmer returns for central Illinois farmland with high productivity farmland. These returns are for a typical 50% corn and 50% soybean rotation in central Illinois. In 2023, farmer returns are projected at $25 per acre, well below levels for 2020 to 2022, when farmer returns averaged $232 per acre. The 2023 farmer return is projected to be close to the average from 2013 to 2019 when the return averaged $29 per acre. The lower projected profits in 2023 result from much higher costs and projected lower commodity prices than 2021 and 2022. While commodity prices are projected lower, those prices still are not low by historical standards. A projected $5.30 corn price for 2023 compares to a $3.66 price from 2014 to 2019. Similarly, a projected 2014 soybean price of $12.70 compares to an average price of $9.69 from 2014 to 2019.

Figure 2. Farmer Returns in Dollar per Acre for Central Illinois on High-Productivity Farmland



Commentary

Projections are for a return to much lower profits in 2023, continuing a pattern of rising and falling farm incomes. Periods of high net incomes are following by less profitable periods which often persists for several years.

Obviously, risks of lower returns exist. For 2023, much higher prices than average historical prices are needed to maintain some profitability. Lower commodity prices are possible from any number of causes. History suggests that low prices would not lead quickly to lower costs, as costs typically exhibit lags in adjustments. Risks will exist throughout the autumn as many decisions concerning 2023 production are made, and input prices are locked in. A safety net under revenue will be established when projected prices for crop insurance are determined in February 2023. Until that point, the risks of low returns from price declines will be large.

Documents on *farmdoc*

More details on 2023 budgets are available in the management section of *farmdoc* through two documents:

- *2023 Crop Budgets* give more detail on four crop combinations: 1) Corn-after-corn, 2) corn-after-soybeans, 3) soybeans-after-corn, and 4) soybeans-after-soybeans, and 4) wheat. Double-crop soybeans budgets are given for central and southern Illinois regions.

- *Revenue and Costs for Illinois Grain Crops* shows historical returns and costs for crops by region. Historical values are given for the years from 2016 to 2021, and projections are given for 2022 and 2023.

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