
2018 Iowa Farm Costs and Returns

Ag Decision Maker

File C1-10

The farm record data utilized in this report were obtained from the Iowa Farm Business Association. The average of all farms in each table represents a weighted average of the values for each size group listed. Weighting factors are based on the number of farms in each size group in the state, as computed from the most recent Census of Agriculture. Only farms with sales of \$100,000 or more were counted in making the weighting. Thus, overall averages should be representative of full-time Iowa farms.

All records were kept on the accrual, or inventory, basis. On rented farms, only operator income and expenses were recorded. Data for ending assets and liabilities represent those of the operator only, and do not include the value of rented land.

Definition of Terms Used

Net farm income, cash - total sales and other cash income minus cash expenses, including purchases of livestock and feed. Does not include principal borrowed or repaid, sales and purchases of capital assets, or nonfarm income and expenses.

Net farm income, accrual - cash net income adjusted for inventory changes and accrued expenses. Represents a return to unpaid labor, net worth (equity), management, and profit.

Value of farm production - value of crops produced (at market price), livestock production (net of feed and purchased livestock), inventory value gain or loss, and miscellaneous income. This measures the total production per farm.

Management return - accrual net farm income less four percent interest on value of equity (net worth) and wages for operator and family labor. The wage rate used for operator labor was \$2,500 per month.

Inventory value gain or loss - change in value of crops or livestock sold due to differences in opening inventory price and final sale price.

Livestock returns per \$100 feed fed - value of livestock production minus livestock purchases, divided by value of feed fed, multiplied by 100.

Machinery cost per crop acre - total of machinery repairs, fuel, custom machine hire, utilities, machinery depreciation, and auto expense, less 75% of all custom hire income received, divided by crop acres. Depreciation is estimated at 10 percent of current value of the machinery. Interest is not included.

Return on assets - net farm income, plus interest expense, minus value of operator and family labor, divided by total farm assets owned.

Return on equity - net farm income minus value of operator and family labor, divided by net worth.

Operating profit margin ratio - net farm income, plus interest expense, minus value of operator and family labor, divided by value of farm production.

Working capital - current assets minus current liabilities.



The data for this report were collected by Iowa Farm Business Association consultants and compiled by Iowa State University Extension and Outreach.

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Iowa Farm Costs and Returns 2014-2018

The following summary is intended to provide a general picture of costs and returns to well-managed, full-time Iowa farms. The values presented are averages; however, results vary widely from one farm to the next.

The average number of crop acres per farm declined by 21 acres in 2018, reaching its lowest since 2013 at 668 acres. The average value of total farm assets and farm net worth declined, respectively, by \$147,471 (-6%) and \$121,876 (-7%). The average accrual net farm income increased by 6% to \$58,832 in 2018. Livestock returns per \$100 feed fed declined by 10% to \$161 in 2018; while the average sale price for corn increased by 3% to \$3.40 and the average corn yield declined by 7% to 201 bushels per acre. The average debt-to-asset ratio remained stable at 0.24 in 2018, its highest level since 2008. The average current asset-to-debt ratio, increased for the first time since 2012 to 3.14 in 2018, but still remains below the 10-year average of 4.21.

Table 1. Comparison by Years

	2018	2017 ^{1/}	2016	2015 ^{2/}	2014
Financial Returns					
Net farm income-accrual	\$58,832	\$55,266	\$45,597	\$27,927	\$99,177
Return to management	-45,358	-53,925	-63,620	-85,187	-8,922
Net farm income-cash	86,480	55,029	92,500	94,990	143,158
Resources Used					
Acres in crops	668	689	694	707	692
Labor months	19	20	19	18	17
Livestock, feed, supplies	\$583,011	\$611,903	\$586,669	\$635,031	\$644,624
Machinery and equipment	461,390	499,514	500,782	517,123	452,453
Land and improvements	1,350,870	1,431,324	1,347,510	1,380,356	1,271,960
Total farm assets	\$2,395,270	\$2,542,741	\$2,434,961	\$2,532,510	\$2,369,037
Farm net worth	\$1,711,990	\$1,833,866	\$1,807,856	\$1,918,009	\$1,843,316
Value of Farm Production					
Livestock income less feed, purchases for resale	\$34,904	\$75,306	\$25,395	\$18,671	\$108,778
Crop production	430,542	434,481	455,336	431,461	486,806
Miscellaneous	110,925	87,556	97,375	118,214	60,255
Crop inventory gain or loss	-4,432	-2,122	-118	5,295	-27,271
Value of farm production	\$571,939	\$595,220	\$577,989	\$573,641	\$628,569
Cash Expenses					
Operating	\$273,441	\$284,059	\$283,007	\$285,204	\$294,344
Fixed	239,665	255,895	249,384	260,510	232,310
Efficiency					
Corn yield (bu. per acre)	201	214	209	200	184
Average sale price for corn, per bushel	\$3.40	\$3.28	\$3.43	\$3.71	\$4.32
Crop value per acre	\$617	\$604	\$635	\$588	\$667
Machinery cost per crop acre	\$137	\$136	\$131	\$133	\$139
Livestock returns per \$100 feed fed	\$161	\$179	\$117	\$133	\$223
Gross revenue per person	\$418,186	\$421,783	\$420,420	\$452,035	\$466,608
Gross revenue per \$1 expense	\$1.12	\$1.08	\$1.12	\$1.09	\$1.20
Gross revenue per \$1 assets	\$0.27	\$0.27	\$0.27	\$0.27	\$0.24
Return on assets (ROA)	2.2%	1.5%	1.7%	1.1%	2.5%
Return on equity (ROE)	1.4%	0.8%	1.0%	0.2%	2.4%
Financial					
Debt-to-asset ratio	0.24	0.24	0.22	0.21	0.19
Current asset-to-debt ratio	3.14	2.77	3.30	3.32	3.52
Farm net worth per acre farmed	\$2,870	\$2,918	\$2,872	\$2,897	\$2,805

^{1/} Revised with weights from the 2017 Census of Agriculture.

^{2/} Revised with additional farm data.

Assets and Liabilities

A breakdown of farm assets and liabilities by value of gross sales per farm is shown in Table 2. Total assets, total liabilities, and the total debt-to-asset ratio increased with farm size, indicating that larger farms utilized relatively more credit and were more leveraged than smaller farms. Total liabilities in 2018 were lower than in 2017 across all groups. However, the decline in total assets more than offset the reduction in liabilities resulting in declining farm net worth for all groups but the second group (\$200,000-\$399,999 in gross sales), as well as for the overall average. Relative measures of liquidity suggest that smaller farms were better positioned to cover short term liabilities than larger farms. Average working capital continued to decline for a sixth consecutive year in 2018, to \$324,247.

Table 2. Assets and Liabilities by Size of Farm, End of Year Values

	Average	Total Value of Gross Sales			
		\$100,000 to \$199,999	\$200,000 to \$399,999	\$400,000 to \$799,999	\$800,000 and above
Farm Assets					
Feeding livestock	\$113,106	\$4,318	\$13,238	\$18,403	\$373,060
Crop inventory	325,886	105,695	197,636	334,056	606,356
Cash	58,911	9,552	40,138	79,488	95,865
Supplies, prepaid expenses, other ^{1/}	85,107	23,425	44,213	92,950	163,472
Total short-term assets	\$583,011	\$142,991	\$295,224	\$524,897	\$1,238,753
Breeding livestock	\$26,597	\$5,431	\$17,309	\$15,507	\$61,146
Machinery, equipment	399,647	99,125	224,017	391,145	800,300
Other intermediate assets ^{2/}	35,146	0	43,980	12,020	73,769
Total intermediate assets	461,390	\$104,556	\$285,306	\$418,672	\$935,214
Land and improvements	\$1,350,870	\$701,305	\$1,018,227	\$1,391,681	\$2,120,427
Total assets	\$2,395,270	\$948,852	\$1,598,758	\$2,335,250	\$4,294,394
Farm Liabilities					
Operating notes, accounts payable	\$251,036	\$31,153	\$96,182	\$140,604	\$660,803
Intermediate and long-term due	5,827	310	3,908	3,013	14,289
Other short term debt ^{3/}	1,901	0	410	518	5,962
Total short-term debt	\$258,763	\$31,463	\$100,501	\$144,135	\$681,054
Intermediate-term debt	\$242,661	\$45,285	\$130,053	\$151,744	\$578,345
Long-term debt	\$181,856	\$63,333	\$86,848	\$188,972	\$354,943
Total liabilities	\$683,280	\$140,080	\$317,402	\$484,851	\$1,614,342
Farm Net Worth					
Farm net worth	\$1,711,990	\$808,771	\$1,281,356	\$1,850,399	\$2,680,051
Net worth change from last year	-\$121,876	-\$167,951	\$23,707	-\$70,641	-\$269,494
Working capital	\$324,247	\$111,528	\$194,723	\$380,762	\$557,698
Current asset-to-debt ratio	3.14	4.54	2.94	3.64	1.82
Working capital per \$1 of gross revenue	\$0.56	\$0.72	\$0.64	\$0.67	\$0.29
Total debt-to-asset ratio	0.24	0.15	0.20	0.21	0.38
Total crop acres farmed	668	220	406	697	1,229
Months of labor used	19	8	12	15	37
Farm net worth per acre farmed	\$2,870	\$3,678	\$3,153	\$2,654	\$2,181

^{1/} Purchased feed, accounts receivable, hedging accounts, sealed grain, investment in growing crops, short term loans.

^{2/} Capital leases, investment in cooperatives.

^{3/} Labor related liabilities, accrued interest, taxes payable, and other current liabilities.

Income and Expenses

A summary of operating and fixed expenses by size of farm is shown in Table 3. All expenses increase with farm size. Crop expenses include seed, fertilizer, pesticides and other expenses related to crop production. The average farm generated a net farm cash flow of about \$107,000 for replacement of capital assets, expansion, savings, living expenses and income taxes. Although the net farm cash flow only increased by \$3,600 compared to the previous year, the composition of the net cash flow changed substantially. While cash net farm income only accounted for 53% of the average net cash flow in 2017 (and net borrowing accounted for the rest), it accounted for 81% of the net cash flow in 2018. When compared to the previous year, a lower reliance on net borrowing to cash flow operations in 2018 was evident across all groups.

Table 3. Summary of Cash Income and Expenses by Size of Farm

	Average	Total Value of Gross Sales			
		\$100,000 to \$199,999	\$200,000 to \$399,999	\$400,000 to \$799,999	\$800,000 and above
Income					
Livestock sales	\$264,613	\$4,940	\$13,770	\$42,886	\$893,063
Corn sales	235,372	70,970	142,285	262,743	423,533
Soybeans sales	140,485	45,328	87,624	154,716	249,852
Other crop sales	11,010	1,157	5,615	11,191	23,397
Other cash income	114,957	24,699	52,867	97,598	257,138
Total cash income	\$766,437	\$147,094	\$302,161	\$569,135	\$1,846,984
Expenses					
Machinery and equipment repairs	\$24,621	\$7,119	\$15,201	\$24,471	\$46,886
Fuel and oil	20,080	3,823	9,445	17,664	44,547
Machine hire	12,857	4,464	5,874	11,997	26,555
Auto and truck expense	5,550	1,969	4,235	5,115	9,884
Utilities	9,533	3,658	5,335	8,422	18,919
Labor hired	17,949	507	3,119	9,255	52,797
Livestock expense	30,501	917	2,295	5,095	101,877
Crop expense	148,389	45,810	87,401	154,202	278,453
Miscellaneous	3,962	1,027	1,851	4,883	7,364
Total cash operating expense	\$273,441	\$69,295	\$134,756	\$241,105	\$587,281
Cash rent	\$95,914	\$20,931	\$38,159	\$88,248	\$213,911
Property taxes	9,152	5,227	7,003	9,484	13,857
Insurance	22,250	7,460	12,942	21,233	43,123
Building repairs	7,044	1,987	4,238	6,728	13,797
Interest	32,382	7,987	15,123	24,760	73,839
Other overhead expenses	14,152	3,075	8,173	10,086	31,757
Total cash fixed expense	\$180,894	\$46,668	\$85,638	\$160,539	\$390,284
Feed purchased	\$117,968	\$7,031	\$10,472	\$23,195	\$386,808
Livestock purchased	107,653	681	4,178	16,131	366,835
Total cash expenses	\$679,957	\$123,675	\$235,044	\$440,971	\$1,731,208
Cash net farm income	\$86,480	\$23,419	\$67,117	\$128,164	\$115,775
Loans received minus loans repaid	\$20,404	\$1,675	-\$4,815	-\$1,761	\$77,892
Net farm cash flow	\$106,884	\$25,094	\$62,302	\$126,403	\$193,668

A more accurate measure of net farm income is achieved by netting out changes in the values of beginning and ending inventories, subtracting a depreciation charge for farm assets and including accrued income and expenses. A summary of income and expenses using accrual accounting is shown in Table 4. The average accrual net farm income ranged from \$18,742 for the smallest farms to \$97,650 for the largest farms. Return to management, obtained after subtracting a return to unpaid labor and equity capital invested, was negative for all farm sizes and averaged -\$45,358. The operating expense ratio decreased by three percentage points in 2018 to 76%, and the net farm income ratio increased to 10%.

Table 4. Summary of Accrual Income and Expenses by Size of Farm^{1/}

	Average	Total Value of Gross Sales			
		\$100,000 to \$199,999	\$200,000 to \$399,999	\$400,000 to \$799,999	\$800,000 and above
Income					
Total cash income	\$766,437	\$147,094	\$302,161	\$569,135	\$1,846,984
Change in crop inventory	-4,432	6,753	-3,760	-5,587	-12,513
Change in livestock inventory	-8,443	-531	1,136	-6,331	-25,329
Feed credits, change in other inventories	43,999	2,501	5,331	11,624	140,398
Total accrual income (gross revenue)	\$797,561	\$155,817	\$304,868	\$568,840	\$1,949,539
Total cash expenses	\$679,957	\$123,675	\$235,044	\$440,971	\$1,731,208
Depreciation	58,772	13,400	31,385	56,809	120,681
Total accrual expenses	\$738,728	\$137,074	\$266,429	\$497,780	\$1,851,889
Accrual net farm income	\$58,832	\$18,742	\$38,439	\$71,061	\$97,650
Charge for unpaid labor	28,668	19,500	26,656	30,532	35,863
Charge for equity capital (4%)	75,522	35,870	57,598	81,031	117,594
Return to management	-\$45,358	-\$36,628	-\$45,816	-\$40,503	-\$55,807
Allocation of gross revenue					
Operating expense	76%	74%	72%	73%	85%
Interest expense	5%	5%	5%	4%	4%
Depreciation expense	9%	9%	10%	10%	6%
Net farm income	10%	12%	13%	12%	5%
	100%	100%	100%	100%	100%

The value of all crops and livestock produced on the farm is shown in Table 5. The value of farm production declined by \$23,281 and averaged \$571,939 in 2018.

Table 5. Value of Farm Production by Size of Farm^{2/}

	Average	Total Value of Gross Sales			
		\$100,000 to \$199,999	\$200,000 to \$399,999	\$400,000 to \$799,999	\$800,000 and above
Value of livestock production	\$260,526	\$4,811	\$17,692	\$40,222	\$877,167
Less purchase for resale	107,653	681	4,178	16,131	366,835
Less purchased feed fed	117,968	7,031	10,472	23,195	386,808
Net value of livestock production	34,904	-2,901	3,043	896	123,524
Value of crop production (incl. feed credits)	430,542	119,959	240,855	439,499	836,703
Miscellaneous income	110,925	24,294	50,080	94,707	248,183
Crop inventory change	-4,432	6,753	-3,760	-5,587	-12,513
Value of farm production	\$571,939	\$148,104	\$290,218	\$529,514	\$1,195,896

^{1/} Accrual net farm income = value of farm production - total cash fixed expense - total cash operating expense - depreciation

^{2/} Value of farm production = gross revenue - livestock purchase for resale - purchased feed fed

Efficiency Factors

Efficiency can be measured in many ways. Several efficiency factors are shown in Table 6 for the four farm size groups. The gross revenue per person increases with farm size, but gross revenue per dollar of expense was similar for all size groups except the largest farms (which was lower). The rates of return on equity and assets, averaged, respectively, 1.4% and 2.2% across all groups.

Table 6. Overall Efficiency Factors by Size of Farm

	Average	Total Value of Gross Sales			
		\$100,000 to \$199,999	\$200,000 to \$399,999	\$400,000 to \$799,999	\$800,000 and above
Crops					
Acres in crops	668	220	406	697	1,229
Crop value per acre	\$617	\$546	\$593	\$630	\$681
Crop acres per person	425	325	409	555	400
Machinery cost per crop acre	\$137	\$143	\$140	\$137	\$129
Machinery investment per crop acre	\$481	\$455	\$489	\$502	\$475
Livestock					
Livestock returns per \$100 feed fed	\$161	\$204	\$176	\$135	\$136
Financial					
Gross revenue per person	\$418,186	\$229,943	\$307,036	\$452,804	\$635,055
Gross revenue per \$1 expense	\$1.12	\$1.14	\$1.14	\$1.14	\$1.05
Gross revenue per \$1 assets	\$0.27	\$0.16	\$0.19	\$0.24	\$0.45
Value of farm production per \$1 assets	\$0.21	\$0.16	\$0.18	\$0.23	\$0.28
Return on assets (ROA)	2.2%	0.8%	1.7%	2.8%	3.2%
Return on equity (ROE)	1.4%	-0.1%	0.9%	2.2%	2.3%
Operating profit margin ratio (as % of gross revenue) ^{1/}	8.1%	4.6%	8.8%	11.5%	7.0%
Operating profit margin ratio (as % of value of farm production)	9.7%	4.9%	9.3%	12.3%	11.3%
Average interest rate on debt	5.0%	5.7%	4.8%	5.1%	4.6%

^{1/} (Accrual net farm income + interest - unpaid labor) / gross revenue

High-, Middle-, and Low-profit Farms

Profits vary greatly among farms. In Table 7, farms were ranked by return to management and sorted into three groups. The high third group was the one with the lowest machinery costs per acre and the highest livestock returns per \$100 feed fed, and its return to management averaged \$54,106 in 2018. This group also had the lowest net worth per acre farmed across the three groups. The middle third group had the lowest number of acres in crops, the highest number of crop acres per person, smallest livestock sales and expenses, and its return to management averaged -\$60,990. The low third group had the highest number of acres in crops, the lowest crop acres per person, the highest machinery cost per crop acre, and its return to management averaged -\$224,588. However, their net worth per acre was the highest among the three groups, and their debt-to-asset ratio is low.

High-, Middle-, and Low-profit Farms

Table 7. Comparison of High-, Middle-, and Low-profit Farms, Ranked by Return to Management ^{1/}

	High Third	Middle Third	Low Third	Your Farm
Farm Income				
Crop sales	\$440,359	\$397,910	\$528,489	_____
Livestock sales	304,077	183,086	541,487	_____
Other income and inventory	179,234	66,965	45,684	_____
Feed credits	39,548	25,999	111,770	_____
Gross revenue	\$963,219	\$673,960	\$1,227,431	_____
Operating expenses	\$301,949	\$255,930	\$431,929	_____
Fixed expenses (incl. depreciation)	270,886	221,373	373,114	_____
Feed purchased	113,208	79,940	274,202	_____
Livestock purchased	128,479	70,963	207,869	_____
Total expenses	\$814,522	\$628,205	\$1,287,113	_____
Accrual Net Farm Income	\$148,697	\$45,754	-\$59,682	_____
Operator and family labor charge	\$30,258	\$29,671	\$32,177	_____
Charge for equity capital	64,333	77,074	132,728	_____
Return to Management	\$54,106	-\$60,990	-\$224,588	_____
Crops				
Acres in crops	757	658	937	_____
Crop value per acre	\$634	\$644	\$683	_____
Crop acres per person	463	498	363	_____
Machinery cost per crop acre	\$122	\$142	\$154	_____
Machinery investment per crop acre	\$409	\$509	\$609	_____
Livestock				
Livestock returns per \$100 feed fed	\$156	\$133	\$134	_____
Value of Farm Production	\$721,532	\$523,057	\$745,361	_____
Financial				
Gross revenue per person	\$589,560	\$509,400	\$475,413	_____
Gross revenue per \$1 expense	\$1.18	\$1.07	\$0.95	_____
Gross revenue per \$1 assets	\$0.43	\$0.30	\$0.29	_____
Value of farm production per \$1 assets	\$0.32	\$0.23	\$0.18	_____
Return on assets (ROA)	6.8%	1.9%	-0.8%	_____
Return on equity (ROE)	8.1%	0.9%	-3.0%	_____
Operating profit margin ratio (as % of gross revenue) ^{1/}	0.16	0.06	-0.03	_____
Operating profit margin ratio (as % of value of farm production)	0.21	0.08	-0.05	_____
Debt-to-asset ratio	0.35	0.22	0.28	_____
Net worth per acre farmed	\$1,927	\$2,663	\$3,230	_____
Allocation of Value of Gross Revenue				
Operating expense	74%	81%	92%	_____
Interest expense	4%	4%	5%	_____
Depreciation expense	7%	8%	8%	_____
Net farm income	15%	7%	-5%	_____

^{1/} Values have not been adjusted for size of business.

Crop Production

Details of crop production income and expenses per acre are summarized in Table 8. Some expenses, such as cash rent, did not occur on all farms or on all acres, but are shown as the average cost over all acres. Total economic costs include a 4% opportunity cost charge for the farm net worth capital, a depreciation charge, and a charge for operator and family labor. The numbers presented in Table 8 refer to simple, unweighted averages across all farms included in the Iowa Farm Business Association Summary Report.

Table 8. Crop Production

	All Corn	Soybeans
Total operator acres per crop	442	360
Yield, bushels per acre	201	59
Selling price per bushel	\$3.40	\$9.11
Crop value per acre	\$681	\$539
Crop Expenses per Acre		
Seed	\$109.34	\$58.83
Fertilizer and lime	118.14	29.59
Herbicide	40.82	45.11
Insecticide	6.01	6.34
Drying and storage	16.54	3.70
Machinery, fuel, repairs, machine hire	80.63	75.48
Utilities	10.79	9.31
Insurance	28.52	27.83
Hired labor	11.03	9.90
Interest	35.75	32.97
Cash rent	125.54	124.97
Property taxes and building repairs	21.09	20.17
Other crop expenses	19.15	16.13
Total cash crop expenses per acre	\$623.36	\$460.32
Machinery depreciation	\$56.60	\$54.07
Building depreciation	13.05	12.24
Charge for equity capital	112.55	109.97
Unpaid labor value	44.66	43.22
Total economic cost per acre	\$850.22	\$679.82
Total economic cost per bushel	\$4.24	\$11.49
Total cash flow needed per acre	\$623.36	\$460.32
Total cash flow needed per bushel	\$3.11	\$7.78

Trends

Table 9 illustrates trends in production and financial efficiency over the past 10 years. Livestock income per \$100 feed fed shows a cyclical pattern, and in 2018 it was 10% higher than the 10-year average. The average corn yield of 2011 was the third highest ever, and 8% higher than the 10-year average. The rate of return to owned assets averaged 2.2% in 2018, less than half of the 10-year average, and marked the sixth consecutive year of rates of return under 3%.

Table 9. Trends in Production and Financial Efficiency on Iowa Farms

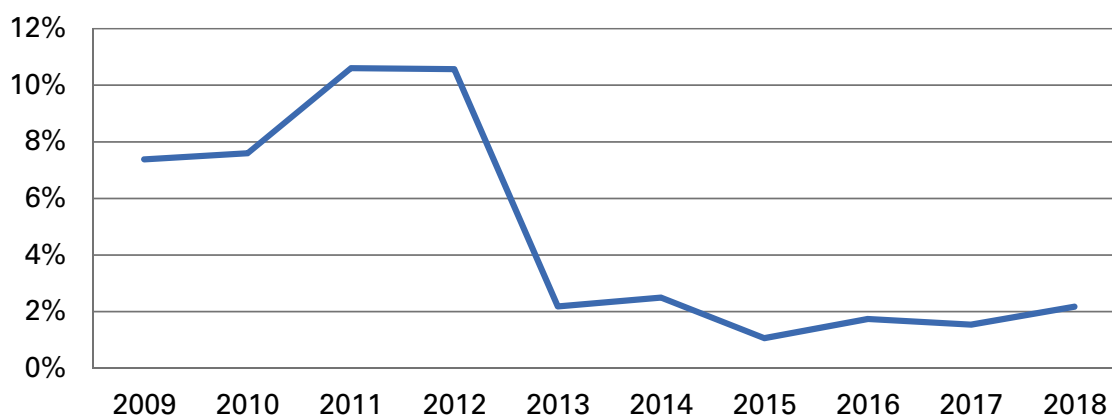
Year	Livestock Income per \$100 Feed Fed	Corn Yield Bushels per Acre	Value of Farm Production per \$1 Expense	Crop Value per Acre	Percent Return to Owned Assets
2009	\$118	183	\$1.43	\$562	7.4%
2010	149	174	1.52	584	7.6%
2011	135	172	1.71	671	10.6%
2012 ^{1/}	102	149	1.68	882	10.6%
2013	145	169	1.19	821	2.2%
2014	223	184	1.20	667	2.5%
2015 ^{2/}	133	200	1.09	588	1.1%
2016	117	209	1.12	635	1.7%
2017 ^{3/}	179	214	1.08	604	1.5%
2018	161	201	1.12	617	2.2%
10-year average	\$146	186	\$1.31	\$663	4.7%

^{1/} Revised using weights from the 2012 Census of Agriculture.

^{2/} Revised with additional farm data.

^{3/} Revised using weights from the 2017 Census of Agriculture.

Percent Return to Owned Assets



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