
2017 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 percent 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 2013-2017

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 increased by 20 acres in 2017, reaching the record level of 714 acres. The average value of total farm assets increased by \$189,575 and the average farm net worth increased by four percent or \$76,198. The average accrual net farm income increased by \$12,331 to \$57,928 in 2017, driven by livestock production. Livestock returns per \$100 feed fed increased by 53 percent to \$179 in 2017; while crop value per acre declined by four percent to \$608. The average debt-to-asset ratio increased for a fifth consecutive year in 2017 to 0.24, the highest level since 2008. The average current asset-to-debt ratio, a relative measure of liquidity, decreased to 2.74 in 2017, the lowest level since 2001 (when it was 2.46).

Table 1. Comparison by Years

	2017	2016	2015 ^{1/}	2014	2013
Financial Returns					
Net farm income-accrual	\$57,928	\$45,597	\$27,927	\$99,177	\$71,595
Return to management	-53,792	-63,620	-85,187	-8,922	-32,564
Net farm income-cash	56,635	92,500	94,990	143,158	184,949
Resources Used					
Acres in crops	714	694	707	692	662
Labor months	20	19	18	17	16
Livestock, feed, supplies	\$637,749	\$586,669	\$635,031	\$644,624	\$608,170
Machinery and equipment	520,400	500,782	517,123	452,453	409,991
Land and improvements	1,466,387	1,347,510	1,380,356	1,271,960	1,190,214
Total farm assets	\$2,624,536	\$2,434,961	\$2,532,510	\$2,369,037	\$2,208,375
Farm net worth	\$1,884,053	\$1,807,856	\$1,918,009	\$1,843,316	\$1,765,312
Value of Farm Production					
Livestock income less feed, purchases for resale	\$79,790	\$25,395	\$18,671	\$108,778	\$39,073
Crop production	451,672	455,336	431,461	486,806	562,763
Miscellaneous	91,589	97,375	118,214	60,255	43,046
Crop inventory gain or loss	-2,232	-118	5,295	-27,271	-92,610
Value of farm production	\$620,818	\$577,989	\$573,641	\$628,569	\$552,272
Cash Expenses					
Operating	\$295,916	\$283,007	\$285,204	\$294,344	\$273,314
Fixed	266,975	249,384	260,510	232,310	210,532
Efficiency					
Corn yield (bu. per acre)	214	209	200	184	169
Average sale price for corn, per bushel	\$3.28	\$3.43	\$3.71	\$4.32	\$6.35
Crop value per acre	\$608	\$635	\$588	\$667	\$821
Machinery cost per crop acre	\$135	\$131	\$133	\$139	\$150
Livestock returns per \$100 feed fed	\$179	\$117	\$133	\$223	\$145
Gross revenue per person	\$433,150	\$420,420	\$452,035	\$466,608	\$453,197
Gross revenue per \$1 expense	\$1.08	\$1.12	\$1.09	\$1.20	\$1.19
Gross revenue per \$1 assets	\$0.27	\$0.27	\$0.27	\$0.24	\$0.23
Return on assets (ROA)	1.6%	1.7%	1.1%	2.5%	2.2%
Return on equity (ROE)	0.9%	1.0%	0.2%	2.4%	1.8%
Financial					
Debt-to-asset ratio	0.24	0.22	0.21	0.19	0.17
Current asset-to-debt ratio	2.74	3.30	3.32	3.52	4.92
Farm net worth per acre farmed	\$2,873	\$2,872	\$2,897	\$2,805	\$2,881

^{1/} 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. Both assets and liabilities increased with farm size. 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 2017 were higher than in 2016 across all groups, but the corresponding increases in total assets more than offset the increase in liabilities. Consequently, average farm net worth increased for all groups. Relative measures of liquidity suggest that smaller farms were better positioned to cover short-term liabilities than larger farms. Average working capital declined by \$3,262 to \$347,330 in 2017, the lowest value since 2012 (when it reached \$235,242).

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	\$143,330	\$13,978	\$10,167	\$24,999	\$443,878
Crop inventory	354,146	113,534	214,947	370,363	607,936
Cash	54,146	7,812	34,008	66,073	89,403
Supplies, prepaid expenses, other ^{1/}	86,127	28,269	45,854	97,977	145,814
Total short-term assets	\$637,749	\$163,593	\$304,976	\$559,412	\$1,287,031
Breeding livestock	\$31,982	\$12,755	\$14,988	\$13,853	\$74,750
Machinery, equipment	454,915	98,534	239,406	462,216	853,829
Other intermediate assets ^{2/}	33,503	11,645	35,579	59,621	21,812
Total intermediate assets	\$520,400	\$122,934	\$289,973	\$535,690	\$950,391
Land and improvements	\$1,466,387	\$844,829	\$987,976	\$1,388,741	\$2,331,041
Total assets	\$2,624,536	\$1,131,356	\$1,582,924	\$2,483,842	\$4,568,464
Farm Liabilities					
Operating notes, accounts payable	\$281,839	\$47,439	\$94,907	\$190,463	\$669,329
Intermediate and long-term due	5,227	474	1,185	5,289	11,578
Other short term debt ^{3/}	3,353	0	753	66	10,612
Total short-term debt	\$290,419	\$47,912	\$96,844	\$195,818	\$691,520
Intermediate-term debt	\$244,394	\$35,216	\$112,693	\$192,499	\$533,514
Long-term debt	\$205,670	\$71,506	\$115,738	\$174,486	\$393,884
Total liabilities	\$740,482	\$154,634	\$325,275	\$562,803	\$1,618,919
Farm Net Worth					
Farm net worth	\$1,884,053	\$976,722	\$1,257,649	\$1,921,039	\$2,949,545
Net worth change from last year	\$76,198	\$134,475	\$15,572	\$13,904	\$147,839
Working capital	\$347,330	\$115,680	\$208,132	\$363,594	\$595,512
Current asset-to-debt ratio	2.74	3.41	3.15	2.86	1.86
Working capital per \$1 of gross revenue	\$0.55	\$0.73	\$0.65	\$0.61	\$0.29
Total debt-to-asset ratio	0.24	0.14	0.21	0.23	0.35
Total crop acres farmed	714	243	434	755	1,211
Months of labor used	20	9	12	16	38
Farm net worth per acre farmed	\$2,873	\$4,012	\$2,901	\$2,545	\$2,436

^{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 increased 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. That amount represents a \$9,500 improvement over 2016. However, the average net farm cash flow declined by \$14,500 for the smallest farms; and it increased by \$15,300 for the second smallest farms; by \$1,600 for the second largest farms; and by \$26,500 for the largest farms.

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	\$301,707	\$12,344	\$16,384	\$45,490	\$955,666
Corn sales	237,866	71,288	136,957	269,218	399,347
Soybeans sales	158,194	51,027	108,133	170,977	256,028
Other crop sales	10,757	964	6,141	10,584	20,939
Other cash income	96,950	18,690	43,365	83,281	203,636
Total cash income	\$805,474	\$154,313	\$310,979	\$579,551	\$1,835,615
Expenses					
Machinery and equipment repairs	\$26,894	\$6,629	\$15,614	\$24,914	\$50,898
Fuel and oil	18,665	4,092	8,851	15,940	38,553
Machine hire	14,880	5,211	7,721	12,741	28,925
Auto and truck expense	5,796	2,355	3,900	5,669	9,667
Utilities	10,267	3,577	5,755	8,532	19,837
Labor hired	22,055	1,534	3,520	9,926	61,545
Livestock expense	30,213	1,730	2,152	5,339	94,252
Crop expense	162,435	48,502	98,457	173,321	278,072
Miscellaneous	4,712	1,217	2,924	4,577	8,531
Total cash operating expense	\$295,916	\$74,847	\$148,894	\$260,958	\$590,280
Cash rent	\$104,506	\$18,992	\$45,644	\$101,165	\$210,917
Property taxes	9,453	5,149	7,114	9,529	14,056
Insurance	24,274	7,598	14,123	23,727	43,797
Building repairs	7,916	1,999	4,411	7,358	15,087
Interest	31,500	6,265	15,121	23,919	67,987
Other overhead expenses	18,396	3,683	5,852	9,210	46,515
Total cash fixed expense	\$196,045	\$43,686	\$92,264	\$174,907	\$398,360
Feed purchased	\$126,714	\$9,835	\$10,054	\$21,691	\$393,445
Livestock purchased	130,164	3,796	4,854	16,978	417,520
Total cash expenses	\$748,839	\$132,164	\$256,067	\$474,534	\$1,799,604
Cash net farm income	\$56,635	\$22,149	\$54,913	\$105,017	\$36,011
Loans received minus loans repaid	\$50,573	\$9,917	\$13,540	\$21,562	\$133,558
Net farm cash flow	\$107,208	\$32,066	\$68,453	\$126,579	\$169,569

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 \$7,801 for the smallest farms to \$114,305 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 -\$53,792.

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	\$805,474	\$154,313	\$310,979	\$579,551	\$1,835,615
Change in crop inventory	-2,232	-542	1,523	6,740	-14,559
Change in livestock inventory	29,566	1,861	-567	2,846	96,554
Feed credits, change in other inventories	44,887	3,915	5,847	9,534	135,490
Total accrual income (gross revenue)	\$877,696	\$159,547	\$317,782	\$598,671	\$2,053,100
Total cash expenses	\$748,839	\$132,164	\$256,067	\$474,534	\$1,799,604
Depreciation	70,930	19,582	34,202	65,384	139,190
Total accrual expenses	\$819,768	\$151,746	\$290,269	\$539,917	\$1,938,795
Accrual net farm income	\$57,928	\$7,801	\$27,513	\$58,753	\$114,305
Charge for unpaid labor	29,611	20,830	26,828	30,432	36,703
Charge for equity capital (4%)	82,108	43,629	55,763	83,571	127,203
Return to management	-\$53,792	-\$56,658	-\$55,078	-\$55,249	-\$49,601
Allocation of gross revenue					
Operating expense	79%	79%	76%	75%	84%
Interest expense	4%	4%	5%	4%	3%
Depreciation expense	10%	12%	11%	11%	7%
Net farm income	7%	5%	9%	10%	6%
	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 increased by \$42,829 and averaged \$620,818 in 2017. Only seven percent of gross revenue was left as net farm income after all expenses were accounted for.

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	\$336,667	\$16,213	\$17,772	\$50,820	\$1,065,271
Less purchase for resale	130,164	3,796	4,854	16,978	417,520
Less purchased feed fed	126,714	9,835	10,054	21,691	393,445
Net value of livestock production	79,790	2,581	2,865	12,151	254,307
Value of crop production (incl feed credits)	451,672	127,156	257,278	460,778	811,128
Miscellaneous income	91,589	16,720	41,208	80,333	191,259
Crop inventory change	-2,232	-542	1,523	6,740	-14,559
Value of farm production	\$620,818	\$145,915	\$302,874	\$560,002	\$1,242,135

^{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). Return on equity and return on investment, averaged, respectively 0.9 percent and 1.6 percent across all farm 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	714	243	434	755	1,211
Crop value per acre	\$608	\$522	\$593	\$610	\$670
Crop acres per person	437	325	435	584	378
Machinery cost per crop acre	\$135	\$155	\$132	\$133	\$128
Machinery investment per crop acre	\$478	\$410	\$451	\$532	\$493
Livestock					
Livestock returns per \$100 feed fed	\$179	\$173	\$174	\$176	\$189
Financial					
Gross revenue per person	\$433,150	\$212,730	\$318,638	\$463,303	\$640,771
Gross revenue per \$1 expense	\$1.08	\$1.05	\$1.09	\$1.11	\$1.06
Gross revenue per \$1 assets	\$0.27	\$0.14	\$0.20	\$0.24	\$0.45
Value of farm production per \$1 assets	\$0.21	\$0.13	\$0.19	\$0.23	\$0.27
Return on assets (ROA)	1.6%	-0.6%	1.0%	2.1%	3.2%
Return on equity (ROE)	0.9%	-1.3%	0.1%	1.5%	2.6%
Operating profit margin ratio (as % of gross revenue) ^{1/}	4.9%	-4.2%	5.0%	8.7%	7.1%
Operating profit margin ratio (as % of value of farm production)	6.4%	-4.6%	5.2%	9.3%	11.7%
Average interest rate on debt	4.3%	4.1%	4.6%	4.2%	4.2%

^{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 \$47,967 in 2017. 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, and the smallest livestock sales and expenses, and its return to management averaged -\$64,648. The low third group had the highest number of acres in crops and the highest machinery cost per crop acre, and its return to management averaged -\$197,727. However, their net worth per acre is 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	\$382,784	\$348,885	\$645,996	_____
Livestock sales	571,499	57,379	295,024	_____
Other income and inventory	246,317	56,893	39,121	_____
Feed credits	76,172	12,640	48,295	_____
Gross revenue	\$1,276,772	\$475,798	\$1,028,436	_____
Operating expenses	\$331,063	\$212,787	\$434,022	_____
Fixed expenses (incl. depreciation)	297,244	190,733	398,632	_____
Feed purchased	225,631	27,090	131,748	_____
Livestock purchased	277,672	15,186	83,077	_____
Total expenses	\$1,131,610	\$445,795	\$1,047,479	_____
Accrual Net Farm Income	\$145,162	\$30,003	-\$19,043	_____
Operator and family labor charge	\$30,602	\$28,206	\$33,536	_____
Charge for equity capital	66,593	66,444	145,148	_____
Return to Management	\$47,967	-\$64,648	-\$197,727	_____
Crops				
Acres in crops	732	590	1,054	_____
Crop value per acre	\$627	\$613	\$659	_____
Crop acres per person	371	482	493	_____
Machinery cost per crop acre	\$118	\$137	\$152	_____
Machinery investment per crop acre	\$407	\$503	\$590	_____
Livestock				
Livestock returns per \$100 feed fed	\$196	\$180	\$158	_____
Value of Farm Production	\$773,469	\$433,522	\$813,611	_____
Financial				
Gross revenue per person	\$646,760	\$388,855	\$481,503	_____
Gross revenue per \$1 expense	\$1.13	\$1.07	\$0.98	_____
Gross revenue per \$1 assets	\$0.54	\$0.24	\$0.23	_____
Value of farm production per \$1 assets	\$0.33	\$0.22	\$0.18	_____
Return on assets (ROA)	6.4%	1.1%	-0.2%	_____
Return on equity (ROE)	7.6%	0.1%	-1.5%	_____
Operating profit margin ratio (as % of gross revenue) ^{1/}	0.12	0.05	-0.01	_____
Operating profit margin ratio (as % of value of farm production)	0.20	0.05	-0.01	_____
Debt-to-asset ratio	0.37	0.24	0.24	_____
Net worth per acre farmed	\$2,045	\$2,548	\$3,255	_____
Allocation of Value of Gross Revenue				
Operating expense	80%	79%	87%	_____
Interest expense	3%	4%	4%	_____
Depreciation expense	6%	11%	11%	_____
Net farm income	11%	6%	-2%	_____

^{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 four percent 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*	435	347
Yield, bushels per acre	214	60
Selling price per bushel	\$3.28	\$9.32
Crop value per acre	\$704	\$556
Crop Expenses		
Seed per acre	\$112.19	\$58.65
Fertilizer and lime	120.78	28.01
Herbicide	43.60	45.09
Insecticide	5.46	7.26
Drying and storage	18.70	3.42
Machinery, fuel, repairs, machine hire	75.88	71.42
Utilities	10.18	8.93
Insurance	29.68	28.18
Hired labor	11.51	9.97
Interest	31.55	28.80
Cash rent	125.90	121.59
Property taxes and building repairs	20.64	19.66
Other crop expenses	19.07	16.84
Total cash crop expenses	\$625.15	\$447.83
Machinery depreciation	\$59.03	\$57.31
Building depreciation	15.08	13.82
Charge for equity capital	108.35	106.61
Unpaid labor value	43.76	43.42
Total economic cost per acre	\$851.37	\$668.98
Total economic cost per bushel	\$3.97	\$11.21
Total cash flow needed per acre	\$625.15	\$447.83
Total cash flow needed per bushel	\$2.91	\$7.50

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, but in 2017 it was 25 percent higher than the 10-year average. The average corn yield of 214 was the highest ever, and 17 percent higher than the 10-year average. The \$1.08 value of farm production per dollar of expense observed in 2017 was the lowest in the 10-year period.

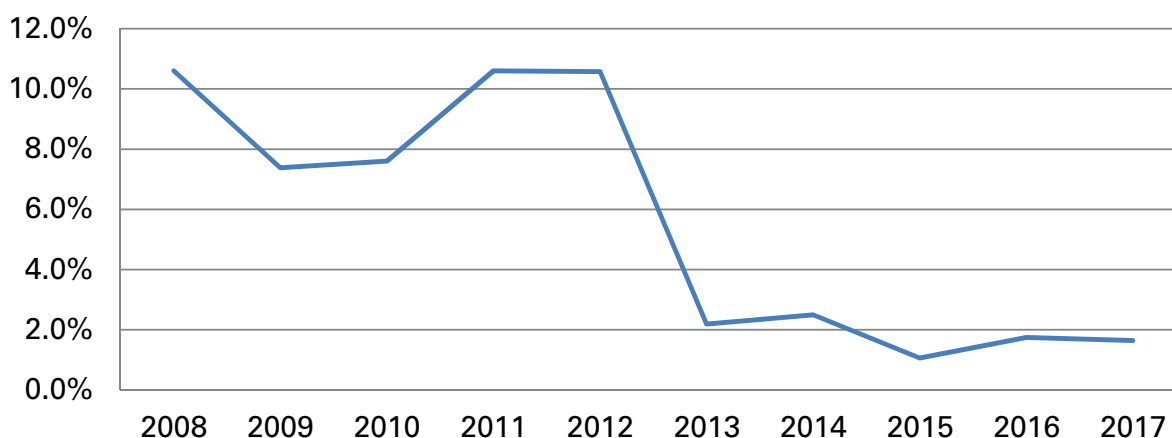
Table 9. Trends in Production and Financial Efficiency on Iowa Farms

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
2008	\$124	179	\$1.39	\$541	10.6%
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	179	214	1.08	608	1.6%
10-year average	\$143	183	\$1.34	\$656	5.6%

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

^{2/} Revised with additional farm data.

Percent Return to Owned Assets



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Prepared by Alejandro Plastina
extension economist,
plastina@iastate.edu
Ann Johanns
extension program specialist