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.
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 15 acres in 2016, after four years of continued expansion. The average value of total farm assets declined by $97,549 and the average farm net worth declined by six percent or $110,153. The average accrual net farm income increased by $17,670 to $45,597 in 2016, driven by record yields. Livestock returns per $100 feed fed declined by 13 percent to $117 in 2016; while crop value per acre increased by eight percent to $635. The average debt-to-asset ratio increased for a fourth consecutive year in 2016 to 0.22, the highest level since 2008. The average current asset-to-debt ratio, a relative measure of liquidity, decreased to 3.30 in 2015, the lowest level since 2006.

Table 1. Comparison by Years

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015(^*)</th>
<th>2014</th>
<th>2013</th>
<th>2012(^*)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial Returns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net farm income-accrual</td>
<td>$45,597</td>
<td>$27,927</td>
<td>$99,177</td>
<td>$71,595</td>
<td>$243,072</td>
</tr>
<tr>
<td>Return to management</td>
<td>-63,620</td>
<td>-85,187</td>
<td>-8,922</td>
<td>-32,564</td>
<td>147,071</td>
</tr>
<tr>
<td>Net farm income-cash</td>
<td>92,500</td>
<td>94,990</td>
<td>143,158</td>
<td>184,949</td>
<td>214,411</td>
</tr>
<tr>
<td><strong>Resources Used</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acres in crops</td>
<td>694</td>
<td>707</td>
<td>692</td>
<td>662</td>
<td>631</td>
</tr>
<tr>
<td>Labor months</td>
<td>19</td>
<td>18</td>
<td>17</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Livestock, feed, supplies</td>
<td>$586,669</td>
<td>$635,031</td>
<td>$644,624</td>
<td>$608,170</td>
<td>$645,734</td>
</tr>
<tr>
<td>Machinery and equipment</td>
<td>500,782</td>
<td>517,123</td>
<td>452,453</td>
<td>409,991</td>
<td>343,356</td>
</tr>
<tr>
<td>Land and improvements</td>
<td>1,347,510</td>
<td>1,380,356</td>
<td>1,271,960</td>
<td>1,190,214</td>
<td>1,088,910</td>
</tr>
<tr>
<td>Total farm assets</td>
<td>$2,434,961</td>
<td>$2,532,510</td>
<td>$2,369,037</td>
<td>$2,208,375</td>
<td>$2,078,000</td>
</tr>
<tr>
<td>Farm net worth</td>
<td>$1,807,856</td>
<td>$1,918,009</td>
<td>$1,843,316</td>
<td>$1,765,312</td>
<td>$1,690,684</td>
</tr>
<tr>
<td><strong>Value of Farm Production</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livestock income less feed, purchases for resale</td>
<td>$25,395</td>
<td>$18,671</td>
<td>$108,778</td>
<td>$39,073</td>
<td>$13,277</td>
</tr>
<tr>
<td>Crop production</td>
<td>455,336</td>
<td>431,461</td>
<td>486,806</td>
<td>562,763</td>
<td>577,676</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>97,375</td>
<td>118,214</td>
<td>60,255</td>
<td>43,046</td>
<td>39,626</td>
</tr>
<tr>
<td>Crop inventory gain or loss</td>
<td>-118</td>
<td>5,295</td>
<td>-27,271</td>
<td>-92,610</td>
<td>42,487</td>
</tr>
<tr>
<td>Value of farm production</td>
<td>$577,989</td>
<td>$573,641</td>
<td>$628,569</td>
<td>$552,272</td>
<td>$673,066</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>$283,007</td>
<td>$285,204</td>
<td>$294,344</td>
<td>$273,314</td>
<td>$268,190</td>
</tr>
<tr>
<td>Fixed</td>
<td>249,384</td>
<td>260,510</td>
<td>232,310</td>
<td>210,532</td>
<td>186,105</td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn yield (bu. per acre)</td>
<td>209</td>
<td>200</td>
<td>184</td>
<td>169</td>
<td>149</td>
</tr>
<tr>
<td>Average sale price for corn, per bushel</td>
<td>$3.43</td>
<td>$3.71</td>
<td>$4.32</td>
<td>$6.35</td>
<td>$6.45</td>
</tr>
<tr>
<td>Crop value per acre</td>
<td>$635</td>
<td>$588</td>
<td>$667</td>
<td>$821</td>
<td>$882</td>
</tr>
<tr>
<td>Machinery cost per crop acre</td>
<td>$131</td>
<td>$133</td>
<td>$139</td>
<td>$150</td>
<td>$149</td>
</tr>
<tr>
<td>Livestock returns per $100 feed fed</td>
<td>$117</td>
<td>$133</td>
<td>$223</td>
<td>$145</td>
<td>$102</td>
</tr>
<tr>
<td>Gross revenue per person</td>
<td>$420,420</td>
<td>$452,035</td>
<td>$466,608</td>
<td>$453,197</td>
<td>$588,093</td>
</tr>
<tr>
<td>Gross revenue per $1 expense</td>
<td>$1.12</td>
<td>$1.09</td>
<td>$1.20</td>
<td>$1.19</td>
<td>$1.68</td>
</tr>
<tr>
<td>Gross revenue per $1 assets</td>
<td>$0.27</td>
<td>$0.27</td>
<td>$0.24</td>
<td>$0.23</td>
<td>$0.31</td>
</tr>
<tr>
<td>Return on assets (ROA)</td>
<td>1.7%</td>
<td>1.1%</td>
<td>2.5%</td>
<td>2.2%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Return on equity (ROE)</td>
<td>1.0%</td>
<td>0.2%</td>
<td>2.4%</td>
<td>1.8%</td>
<td>11.8%</td>
</tr>
<tr>
<td><strong>Financial</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt-to-asset ratio</td>
<td>0.22</td>
<td>0.21</td>
<td>0.19</td>
<td>0.17</td>
<td>0.16</td>
</tr>
<tr>
<td>Current asset-to-debt ratio</td>
<td>3.30</td>
<td>3.32</td>
<td>3.52</td>
<td>4.92</td>
<td>7.08</td>
</tr>
<tr>
<td>Farm net worth per acre farmed</td>
<td>$2,872</td>
<td>$2,897</td>
<td>$2,805</td>
<td>$2,881</td>
<td>$2,765</td>
</tr>
</tbody>
</table>

* Revised using weights from the 2012 Census of Agriculture.

\(^*\) 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 increase with farm size. The total debt-to-asset ratio tends to increase with farm size, indicating that larger farms utilized relatively more credit and were more leveraged than smaller farms. The two groups of larger farms had higher total liabilities in 2016 than in 2015, but the two groups of smaller farms had lower total liabilities in 2016. Except for the second group of farms, all other groups experienced a decline in the value of total assets. Consequently, average farm net worth declined for all groups but the second smallest farms. Relative measures of liquidity suggest that smaller farms were better positioned to cover short term liabilities than larger farms. Average working capital declined by $47,798 in 2016, accumulating a reduction of $167,972 since 2012.

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

<table>
<thead>
<tr>
<th>Total Value of Gross Sales</th>
<th>Average</th>
<th>$100,000 to $199,999</th>
<th>$200,000 to $399,999</th>
<th>$400,000 to $799,999</th>
<th>$800,000 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Farm Assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeding livestock</td>
<td>$101,051</td>
<td>$4,222</td>
<td>$7,945</td>
<td>$18,718</td>
<td>$314,796</td>
</tr>
<tr>
<td>Crop inventory</td>
<td>347,873</td>
<td>104,630</td>
<td>217,479</td>
<td>360,841</td>
<td>598,695</td>
</tr>
<tr>
<td>Cash</td>
<td>56,094</td>
<td>9,449</td>
<td>36,382</td>
<td>89,467</td>
<td>71,892</td>
</tr>
<tr>
<td>Supplies, prepaid expenses, other(^1)</td>
<td>81,650</td>
<td>24,249</td>
<td>46,345</td>
<td>92,032</td>
<td>138,130</td>
</tr>
<tr>
<td>Total short-term assets</td>
<td>$586,669</td>
<td>$142,551</td>
<td>$308,152</td>
<td>$561,058</td>
<td>$1,123,513</td>
</tr>
<tr>
<td>Breeding livestock</td>
<td>$29,930</td>
<td>$6,022</td>
<td>$14,611</td>
<td>$18,825</td>
<td>$67,857</td>
</tr>
<tr>
<td>Machinery, equipment</td>
<td>437,361</td>
<td>97,075</td>
<td>229,843</td>
<td>436,556</td>
<td>826,743</td>
</tr>
<tr>
<td>Other intermediate assets(^2)</td>
<td>33,490</td>
<td>11,367</td>
<td>35,162</td>
<td>10,048</td>
<td>66,883</td>
</tr>
<tr>
<td>Total intermediate assets</td>
<td>$500,782</td>
<td>$114,464</td>
<td>$279,615</td>
<td>$465,429</td>
<td>$961,483</td>
</tr>
<tr>
<td>Land and improvements</td>
<td>$1,347,510</td>
<td>$697,795</td>
<td>$924,306</td>
<td>$1,354,256</td>
<td>$2,106,573</td>
</tr>
<tr>
<td>Total assets</td>
<td>$2,434,961</td>
<td>$955,227</td>
<td>$1,513,673</td>
<td>$2,380,742</td>
<td>$4,195,301</td>
</tr>
<tr>
<td><strong>Farm Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating notes, accounts payable</td>
<td>$229,660</td>
<td>$29,996</td>
<td>$83,521</td>
<td>$150,776</td>
<td>$549,483</td>
</tr>
<tr>
<td>Intermediate and long-term due</td>
<td>5,865</td>
<td>812</td>
<td>2,402</td>
<td>4,778</td>
<td>12,940</td>
</tr>
<tr>
<td>Other short term debt(^2)</td>
<td>549</td>
<td>0</td>
<td>180</td>
<td>875</td>
<td>912</td>
</tr>
<tr>
<td>Total short-term debt</td>
<td>$236,074</td>
<td>$30,808</td>
<td>$86,103</td>
<td>$156,429</td>
<td>$563,335</td>
</tr>
<tr>
<td>Intermediate-term debt</td>
<td>$215,499</td>
<td>$24,240</td>
<td>$78,936</td>
<td>$158,603</td>
<td>$502,145</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>$177,120</td>
<td>$57,932</td>
<td>$106,557</td>
<td>$158,575</td>
<td>$328,114</td>
</tr>
<tr>
<td>Total liabilities</td>
<td>$628,693</td>
<td>$112,981</td>
<td>$271,596</td>
<td>$473,607</td>
<td>$1,393,595</td>
</tr>
<tr>
<td><strong>Farm Net Worth</strong></td>
<td>$1,807,856</td>
<td>$842,247</td>
<td>$1,242,076</td>
<td>$1,907,135</td>
<td>$2,801,706</td>
</tr>
<tr>
<td>Net worth change from last year</td>
<td>-$110,153</td>
<td>-$71,119</td>
<td>$94,595</td>
<td>-$69,539</td>
<td>-$345,888</td>
</tr>
<tr>
<td>Working capital</td>
<td>$350,595</td>
<td>$111,743</td>
<td>$222,048</td>
<td>$404,629</td>
<td>$560,178</td>
</tr>
<tr>
<td>Current asset-to-debt ratio</td>
<td>3.30</td>
<td>4.63</td>
<td>3.58</td>
<td>3.59</td>
<td>1.99</td>
</tr>
<tr>
<td>Working capital per $1 of gross revenue</td>
<td>0.60</td>
<td>$0.74</td>
<td>$0.73</td>
<td>$0.68</td>
<td>$0.32</td>
</tr>
<tr>
<td>Total debt-to-asset ratio</td>
<td>0.22</td>
<td>0.12</td>
<td>0.18</td>
<td>0.20</td>
<td>0.33</td>
</tr>
<tr>
<td>Total crop acres farmed</td>
<td>694</td>
<td>213</td>
<td>419</td>
<td>721</td>
<td>1,204</td>
</tr>
<tr>
<td>Months of labor used</td>
<td>19</td>
<td>9</td>
<td>12</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>Farm net worth per acre farmed</td>
<td>$2,872</td>
<td>$3,949</td>
<td>$2,965</td>
<td>$2,647</td>
<td>$2,327</td>
</tr>
</tbody>
</table>

\(^1\) 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 $98,000 for replacement of capital assets, expansion, savings, living expenses, and income taxes. That is $13,000 less than in 2015.

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

<table>
<thead>
<tr>
<th>Total Value of Gross Sales</th>
<th>$100,000 to $199,999</th>
<th>$200,000 to $399,999</th>
<th>$400,000 to $799,999</th>
<th>$800,000 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average</strong></td>
<td>$765,974</td>
<td>$148,358</td>
<td>$296,169</td>
<td>$577,285</td>
</tr>
</tbody>
</table>

**Income**

- Livestock sales: $254,228
- Corn sales: $226,997
- Soybeans sales: $172,238
- Other crop sales: $11,067
- Other cash income: $101,444

**Expenses**

- Machinery and equipment repairs: $24,834
- Fuel and oil: $15,685
- Machine hire: $14,788
- Auto and truck expense: $5,182
- Utilities: $9,451
- Labor hired: $19,718
- Livestock expense: $26,296
- Crop expense: $163,237
- Miscellaneous: $3,817

**Total cash operating expense**: $283,007

- Cash rent: $103,233
- Property taxes: $8,686
- Insurance: $21,857
- Building repairs: $7,068
- Interest: $27,377
- Other overhead expenses: $13,592

**Total cash fixed expense**: $181,813

- Feed purchased: $111,593
- Livestock purchased: $97,060

**Total cash expenses**: $673,474

- Cash net farm income: $92,500
- Loans received minus loans repaid: $5,219
- Net farm cash flow: $97,719

**Net farm cash flow**: $97,719
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 $25,322 for the smallest farms to $74,513 for the second largest. Return to management, after subtracting a return to unpaid labor and equity capital invested, was negative for all farm sizes and averaged -$63,620. Only ten percent of gross revenue was left as net farm income after all expenses were paid.

**Table 4. Summary of Accrual Income and Expenses by Size of Farm**

<table>
<thead>
<tr>
<th>Income</th>
<th>Average</th>
<th>$100,000 to $199,999</th>
<th>$200,000 to $399,999</th>
<th>$400,000 to $799,999</th>
<th>$800,000 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cash income</td>
<td>$765,974</td>
<td>$148,358</td>
<td>$296,169</td>
<td>$577,285</td>
<td>$1,720,697</td>
</tr>
<tr>
<td>Change in crop inventory</td>
<td>-118</td>
<td>2,002</td>
<td>7,539</td>
<td>9,812</td>
<td>-16,907</td>
</tr>
<tr>
<td>Change in livestock inventory</td>
<td>-24,176</td>
<td>-997</td>
<td>-6,881</td>
<td>-9,311</td>
<td>-66,720</td>
</tr>
<tr>
<td>Feed credits, change in other inventories</td>
<td>44,962</td>
<td>2,448</td>
<td>6,641</td>
<td>13,948</td>
<td>132,004</td>
</tr>
<tr>
<td><strong>Total accrual income (gross revenue)</strong></td>
<td>$786,642</td>
<td>$151,810</td>
<td>$303,469</td>
<td>$591,734</td>
<td>$1,769,073</td>
</tr>
<tr>
<td>Total cash expenses</td>
<td>$673,474</td>
<td>$112,029</td>
<td>$236,422</td>
<td>$454,939</td>
<td>$1,592,168</td>
</tr>
<tr>
<td>Depreciation</td>
<td>67,571</td>
<td>14,459</td>
<td>31,316</td>
<td>62,281</td>
<td>136,294</td>
</tr>
<tr>
<td><strong>Total accrual expenses</strong></td>
<td>$741,045</td>
<td>$126,488</td>
<td>$267,737</td>
<td>$517,221</td>
<td>$1,728,462</td>
</tr>
<tr>
<td><strong>Accrual net farm income</strong></td>
<td>$45,597</td>
<td>$25,322</td>
<td>$35,731</td>
<td>$74,513</td>
<td>$40,612</td>
</tr>
<tr>
<td>Charge for unpaid labor</td>
<td>29,312</td>
<td>19,776</td>
<td>26,905</td>
<td>30,495</td>
<td>36,226</td>
</tr>
<tr>
<td>Charge for equity capital (4%)</td>
<td>79,905</td>
<td>37,975</td>
<td>56,158</td>
<td>82,549</td>
<td>123,861</td>
</tr>
<tr>
<td><strong>Return to management</strong></td>
<td>-$63,620</td>
<td>-$32,429</td>
<td>-$47,332</td>
<td>-$38,530</td>
<td>-$119,476</td>
</tr>
</tbody>
</table>

**Allocation of gross revenue**

<table>
<thead>
<tr>
<th></th>
<th>Operating expense</th>
<th>Interest expense</th>
<th>Depreciation expense</th>
<th>Net farm income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>77%</td>
<td>70%</td>
<td>4%</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>74%</td>
<td>4%</td>
<td>4%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>74%</td>
<td>3%</td>
<td>10%</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td>87%</td>
<td>3%</td>
<td>11%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The value of all crops and livestock produced on the farm is shown in Table 5. The value of farm production increased by $4,348 and averaged $577,989 in 2016.

**Table 5. Value of Farm Production by Size of Farm**

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>$100,000 to $199,999</th>
<th>$200,000 to $399,999</th>
<th>$400,000 to $799,999</th>
<th>$800,000 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of livestock production</td>
<td>$234,048</td>
<td>$6,102</td>
<td>$6,806</td>
<td>$38,942</td>
<td>$745,272</td>
</tr>
<tr>
<td>Less purchase for resale</td>
<td>97,060</td>
<td>2,041</td>
<td>3,473</td>
<td>10,757</td>
<td>313,664</td>
</tr>
<tr>
<td>Less purchased feed fed</td>
<td>111,593</td>
<td>3,110</td>
<td>10,629</td>
<td>27,657</td>
<td>340,731</td>
</tr>
<tr>
<td>Net value of livestock production</td>
<td>25,395</td>
<td>951</td>
<td>-7,296</td>
<td>328</td>
<td>90,877</td>
</tr>
<tr>
<td>Value of crop production (incl feed credits)</td>
<td>455,336</td>
<td>126,974</td>
<td>249,477</td>
<td>459,035</td>
<td>831,842</td>
</tr>
<tr>
<td>Miscellaneous income</td>
<td>97,375</td>
<td>16,732</td>
<td>39,647</td>
<td>83,945</td>
<td>208,867</td>
</tr>
<tr>
<td>Crop inventory change</td>
<td>-118</td>
<td>2,002</td>
<td>7,539</td>
<td>9,812</td>
<td>-16,907</td>
</tr>
<tr>
<td><strong>Value of farm production</strong></td>
<td>$577,989</td>
<td>$146,659</td>
<td>$289,367</td>
<td>$553,320</td>
<td>$1,114,679</td>
</tr>
</tbody>
</table>

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 higher for small farms than for large farms. Return on equity averaged 1.0 percent, and return on investment averaged 1.7 percent.

Table 6. Overall Efficiency Factors by Size of Farm

<table>
<thead>
<tr>
<th>Crops</th>
<th>Average</th>
<th>$100,000 to $199,999</th>
<th>$200,000 to $399,999</th>
<th>$400,000 to $799,999</th>
<th>$800,000 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres in crops</td>
<td>694</td>
<td>213</td>
<td>419</td>
<td>721</td>
<td>1,204</td>
</tr>
<tr>
<td>Crop value per acre</td>
<td>$635</td>
<td>$595</td>
<td>$596</td>
<td>$637</td>
<td>$691</td>
</tr>
<tr>
<td>Crop acres per person</td>
<td>435</td>
<td>300</td>
<td>421</td>
<td>564</td>
<td>415</td>
</tr>
<tr>
<td>Machinery cost per crop acre</td>
<td>$131</td>
<td>$137</td>
<td>$134</td>
<td>$129</td>
<td>$127</td>
</tr>
<tr>
<td>Machinery investment per crop acre</td>
<td>$486</td>
<td>$444</td>
<td>$494</td>
<td>$516</td>
<td>$480</td>
</tr>
</tbody>
</table>

| Livestock            | $117    | $101                 | $98                  | $126                 | $134              |

<table>
<thead>
<tr>
<th>Financial</th>
<th>$420,420</th>
<th>$213,551</th>
<th>$305,096</th>
<th>$463,096</th>
<th>$609,057</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross revenue per person</td>
<td>$1.12</td>
<td>$1.20</td>
<td>$1.13</td>
<td>$1.14</td>
<td>$1.02</td>
</tr>
<tr>
<td>Gross revenue per $1 expense</td>
<td>$0.27</td>
<td>$0.16</td>
<td>$0.20</td>
<td>$0.25</td>
<td>$0.42</td>
</tr>
<tr>
<td>Value of farm production per $1 assets</td>
<td>$0.22</td>
<td>$0.15</td>
<td>$0.19</td>
<td>$0.23</td>
<td>$0.27</td>
</tr>
<tr>
<td>Return on assets (ROA)</td>
<td>1.7%</td>
<td>1.1%</td>
<td>1.5%</td>
<td>2.7%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Return on equity (ROE)</td>
<td>1.0%</td>
<td>0.7%</td>
<td>0.7%</td>
<td>2.3%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Operating profit margin ratio (as % of gross revenue)</td>
<td>7.1%</td>
<td>7.1%</td>
<td>7.3%</td>
<td>10.7%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Operating profit margin ratio (as % of value of farm production)</td>
<td>8.1%</td>
<td>7.4%</td>
<td>7.6%</td>
<td>11.5%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Average interest rate on debt</td>
<td>4.5%</td>
<td>4.6%</td>
<td>4.9%</td>
<td>4.1%</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

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 is the one with the lowest machinery costs per acre and the highest livestock returns per $100 feed fed, and its average return to management was $41,200 in 2016. 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 smallest livestock sales and expenses, and the highest share of depreciation expenses in gross revenue, and its return to management averaged -$59,640. The low third group averaged a return to management of -$223,020, and farms in that group had the highest number of acres in crops, the highest machinery investment per crop acre, and the highest livestock sales and expenses. However, their net worth per acre is the highest among the three groups.

\(^v\) (Accrual Net Farm Income + Interest - Unpaid labor) / Gross revenue
## High-, Middle-, and Low-profit Farms

Table 7. Comparison of High-, Middle-, and Low-profit Farms, Ranked by Return to Management

<table>
<thead>
<tr>
<th>Farm Income</th>
<th>High Third</th>
<th>Middle Third</th>
<th>Low Third</th>
<th>Your Farm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop sales</td>
<td>$428,378</td>
<td>$370,895</td>
<td>$550,337</td>
<td></td>
</tr>
<tr>
<td>Livestock sales</td>
<td>164,653</td>
<td>80,352</td>
<td>638,305</td>
<td></td>
</tr>
<tr>
<td>Other income and inventory</td>
<td>130,096</td>
<td>74,531</td>
<td>14,450</td>
<td></td>
</tr>
<tr>
<td>Accrued income</td>
<td>30,114</td>
<td>18,420</td>
<td>105,229</td>
<td></td>
</tr>
<tr>
<td>Gross revenue</td>
<td>$753,241</td>
<td>$544,197</td>
<td>$1,308,321</td>
<td></td>
</tr>
<tr>
<td>Operating expenses</td>
<td>$269,475</td>
<td>$227,768</td>
<td>$439,851</td>
<td></td>
</tr>
<tr>
<td>Fixed expenses (incl. depreciation)</td>
<td>224,450</td>
<td>210,643</td>
<td>401,336</td>
<td></td>
</tr>
<tr>
<td>Feed purchased</td>
<td>66,350</td>
<td>39,714</td>
<td>278,677</td>
<td></td>
</tr>
<tr>
<td>Livestock purchased</td>
<td>56,043</td>
<td>34,230</td>
<td>241,850</td>
<td></td>
</tr>
<tr>
<td>Total expenses</td>
<td>$616,318</td>
<td>$512,354</td>
<td>$1,361,715</td>
<td></td>
</tr>
<tr>
<td>Accrual Net Farm Income</td>
<td>$136,923</td>
<td>$31,844</td>
<td>$53,394</td>
<td></td>
</tr>
<tr>
<td>Operator and family labor charge</td>
<td>$29,818</td>
<td>$28,117</td>
<td>$33,755</td>
<td></td>
</tr>
<tr>
<td>Charge for equity capital</td>
<td>65,905</td>
<td>63,367</td>
<td>135,871</td>
<td></td>
</tr>
<tr>
<td>Return to Management</td>
<td>$41,200</td>
<td>-$59,640</td>
<td>-$223,020</td>
<td></td>
</tr>
</tbody>
</table>

| Crops                |            |              |           |           |
| Acres in crops       | 702        | 603          | 980       |           |
| Crop value per acre  | $653       | $645         | $669      |           |
| Crop acres per person| 490        | 495          | 397       |           |
| Machinery cost per crop acre | $116   | $141         | $139      |           |
| Machinery investment per crop acre | $405  | $545         | $559      |           |

| Livestock            |            |              |           |           |
| Livestock returns per $100 feed fed | $162 | $120 | $110       |

| Value of Farm Production | $630,848 | $470,254 | $787,793 |

| Financial             |            |              |           |           |
| Gross revenue per person | $525,018  | $446,475    | $330,030  |           |
| Gross revenue per $1 expense | $1.22 | $1.06 | $0.96 |           |
| Gross revenue per $1 assets | $0.37 | $0.29 | $0.31 |           |
| Value of farm production per $1 assets | $0.31 | $0.25 | $0.19 |           |
| Return on assets (ROA) | 6.3% | 1.3% | -1.0% |           |
| Return on equity (ROE)  | 7.0% | 0.3% | -2.9% |           |
| Operating profit margin ratio (as % of gross revenue) | 0.17 | 0.05 | -0.03 |           |
| Operating profit margin ratio (as % of value of farm production) | 0.21 | 0.05 | -0.05 |           |
| Debt-to-asset ratio | 0.25 | 0.25 | 0.27 |           |
| Net worth per acre farmed | $2,175 | $2,374 | $3,106 |           |

| Allocation of Value of Gross Revenue |            |              |           |           |
| Operating expense | 71% | 80% | 92% |           |
| Interest expense | 3% | 4% | 4% |           |
| Depreciation expense | 8% | 10% | 9% |           |
| Net farm income | 18% | 6% | -4% |           |

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

<table>
<thead>
<tr>
<th></th>
<th>All Corn</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total operator acres per crop*</td>
<td>444</td>
<td>334</td>
</tr>
<tr>
<td>Yield, bushels per acre</td>
<td>209</td>
<td>63</td>
</tr>
<tr>
<td>Selling price per bushel</td>
<td>$3.43</td>
<td>$9.04</td>
</tr>
<tr>
<td>Crop value per acre</td>
<td>$718</td>
<td>$570</td>
</tr>
<tr>
<td><strong>Crop Expenses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed per acre</td>
<td>$114.11</td>
<td>$57.16</td>
</tr>
<tr>
<td>Fertilizer and lime</td>
<td>135.64</td>
<td>27.52</td>
</tr>
<tr>
<td>Herbicide</td>
<td>41.96</td>
<td>43.71</td>
</tr>
<tr>
<td>Insecticide</td>
<td>5.34</td>
<td>7.33</td>
</tr>
<tr>
<td>Drying and storage</td>
<td>12.99</td>
<td>2.57</td>
</tr>
<tr>
<td>Machinery, fuel, repairs, machine hire</td>
<td>73.56</td>
<td>68.95</td>
</tr>
<tr>
<td>Utilities</td>
<td>10.03</td>
<td>8.80</td>
</tr>
<tr>
<td>Insurance</td>
<td>27.53</td>
<td>26.80</td>
</tr>
<tr>
<td>Hired labor</td>
<td>11.74</td>
<td>9.81</td>
</tr>
<tr>
<td>Interest</td>
<td>28.39</td>
<td>27.98</td>
</tr>
<tr>
<td>Cash rent</td>
<td>129.77</td>
<td>126.72</td>
</tr>
<tr>
<td>Property taxes and building repairs</td>
<td>19.69</td>
<td>19.45</td>
</tr>
<tr>
<td>Other crop expenses</td>
<td>16.11</td>
<td>14.18</td>
</tr>
<tr>
<td><strong>Total cash crop expenses</strong></td>
<td>$626.86</td>
<td>$440.99</td>
</tr>
<tr>
<td>Machinery depreciation</td>
<td>$58.60</td>
<td>$56.38</td>
</tr>
<tr>
<td>Building depreciation</td>
<td>16.01</td>
<td>15.13</td>
</tr>
<tr>
<td>Charge for equity capital</td>
<td>111.33</td>
<td>111.61</td>
</tr>
<tr>
<td>Unpaid labor value</td>
<td>46.10</td>
<td>46.51</td>
</tr>
<tr>
<td><strong>Total economic cost per acre</strong></td>
<td>$858.90</td>
<td>$670.62</td>
</tr>
<tr>
<td><strong>Total economic cost per bushel</strong></td>
<td>$4.10</td>
<td>$10.63</td>
</tr>
<tr>
<td><strong>Total cash flow needed per acre</strong></td>
<td>$626.86</td>
<td>$440.99</td>
</tr>
<tr>
<td><strong>Total cash flow needed per bushel</strong></td>
<td>$2.99</td>
<td>$6.99</td>
</tr>
</tbody>
</table>

*Operator’s share is not available for 2016 data.
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 2016 it was 16 percent lower than the 10-year average. The average corn yield of 209 was the highest ever, and 17 percent higher than the 10-year average.

The value of farm production per dollar of expense, $1.12 was the second lowest in the 10-year period, as was the percent return to owned assets at 1.7 percent.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Livestock Income per $100 Feed Fed</th>
<th>Corn Yield Bushels per Acre</th>
<th>Value of Farm Production per $1 Expense</th>
<th>Crop Value per Acre</th>
<th>Percent Return to Owned Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>147</td>
<td>171</td>
<td>1.57</td>
<td>576</td>
<td>13.9%</td>
</tr>
<tr>
<td>2008</td>
<td>124</td>
<td>179</td>
<td>1.39</td>
<td>541</td>
<td>10.6%</td>
</tr>
<tr>
<td>2009</td>
<td>118</td>
<td>183</td>
<td>1.43</td>
<td>562</td>
<td>7.4%</td>
</tr>
<tr>
<td>2010</td>
<td>149</td>
<td>174</td>
<td>1.52</td>
<td>584</td>
<td>7.6%</td>
</tr>
<tr>
<td>2011</td>
<td>135</td>
<td>172</td>
<td>1.71</td>
<td>671</td>
<td>10.6%</td>
</tr>
<tr>
<td>2012&lt;sup&gt;1&lt;/sup&gt;</td>
<td>102</td>
<td>149</td>
<td>1.68</td>
<td>882</td>
<td>10.6%</td>
</tr>
<tr>
<td>2013</td>
<td>145</td>
<td>169</td>
<td>1.19</td>
<td>821</td>
<td>2.2%</td>
</tr>
<tr>
<td>2014</td>
<td>223</td>
<td>184</td>
<td>1.20</td>
<td>667</td>
<td>2.5%</td>
</tr>
<tr>
<td>2015&lt;sup&gt;2&lt;/sup&gt;</td>
<td>133</td>
<td>200</td>
<td>1.09</td>
<td>588</td>
<td>1.1%</td>
</tr>
<tr>
<td>2016</td>
<td>117</td>
<td>209</td>
<td>1.12</td>
<td>635</td>
<td>1.7%</td>
</tr>
<tr>
<td>10-year average</td>
<td>$139</td>
<td>179</td>
<td>$1.39</td>
<td>$653</td>
<td>6.8%</td>
</tr>
</tbody>
</table>

<sup>1</sup> Revised using weights from the 2012 Census of Agriculture.
<sup>2</sup> Revised with additional farm data.

Percent Return to Owned Assets

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Ann Johanns extension program specialist

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