

# Summary Measures of the Economic Importance of Agri-food Industries in Cass County, Iowa

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This summary report provides county-level statistics for Cass County, Iowa as a supplement to *The Economic Importance of Agri-food Industries in Iowa*<sup>1</sup> (hereafter referred to as the “state report”). Throughout this summary, local data will be presented that reflects the data provided in the state report. Brief descriptions of the data will be provided along with references back to the state report for more detailed explanations of the data and its use.

Table 1 shows that Cass County had 764 farms in 2002. These farms averaged 441 acres apiece compared to an average of 350 acres per farm, statewide. Nationwide, farms are generally larger than in Iowa. The average US farm included 441 acres in 2002. The estimated market value of land and buildings per farm in Cass County was \$813,234 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Cass County farms marketed an average of \$153,289 worth of farm products according to the US Census of Agriculture.

Table 1. Cass County Farm Statistics from the US Census of Agriculture

	Cass County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	764	852	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	336,625	343,530	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	441	403	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	695,234	517,505	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	118,000	73,258	100,422	79,607	66,570	53,861
Farm products sold (\$)	153,289	111,888	135,388	125,766	94,245	90,880

Table 2 shows employment data for Cass County and the state of Iowa compiled within a framework used by the US Department of Agriculture (USDA) to identify a broad range of farm and farm-related employment. These numbers are a reduced set of the statistics provided as Table 4 in the state report. The USDA compiles these employment numbers annually for each of the 50 states<sup>2</sup>. For this summary, we have used the USDA classification system and data from the US Bureau of Economic Analysis and the Iowa Department of Workforce Development to generate similar results for Cass County. Detail is restricted in this summary, due to the smaller employment base and privacy issues at the county level.

<sup>1</sup> Mark Imerman, David Swenson, Liesl Eathington, Daniel Otto. Iowa State University Department of Economics. 2005.

<sup>2</sup> The USDA's definition of farm-related industries includes all food-based businesses through retailing and restaurants. Substantial portions of packaging manufacture, of gravel and lime extraction, and apparel manufacturing are also included. A discussion of the implications of the breadth of this framework is included on pages 6-9 of the state report.

Table 2. USDA-style Compilation of 2002 Farm and Farm-related Employment (Jobs)

	Cass County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	1,199	13.03	0.59	201,967	10.57
Peripherally-related	794	8.63	0.41	191,669	10.04
Total farm and farm-related	1,992	21.67	0.51	393,636	20.61
Total employment	9,196	100.00	0.48	1,909,934	100.00

Data derived from the US Bureau of Economic Analysis and the Iowa Department of Workforce Development within a framework obtained from the USDA.

Tables 3 and 4 estimate the value of a more restricted definition of the agri-food industries for Cass County. These tables are consistent with Tables 5 and 6 in the state report. Estimates included in these tables limit the agri-food industries to ag production (traditional farm production and nonfarm production facilities), food and other primary farm commodity processing, and ag input manufacturing (machinery, ag chemicals, and fertilizer)<sup>3</sup>.

Table 3 provides value estimates for an industry-only aggregation of the economic activity that takes place within Cass County's borders. Output is the value of total in-county production for each industry in 2002. Value-added is the value that was added to Output by each industry's in-county production process. The difference between Output and Value-added is the value of purchased inputs that go into the production process. For individual industries, these inputs may be sourced from out-of-county or from within the county. Value-added represents the value of Output minus the value of purchased inputs. Table 3 also provides an estimate of jobs<sup>4</sup> and labor income (compensation for employees and proprietors) within the agri-food industries in Cass County.

Table 3 shows that, in 2002, the total output value of Cass County's agricultural production industry was \$109.574 million. \$34.142 million of this output (31.16 percent of the total output value) was the value added to the output by Cass County's ag production activity (ag production's value added). The remainder came from purchased inputs into the process (from either in-county or out-of-county sources). 50.29 percent of this value added, or \$17.171 million, was paid out as compensation to the 1,114 production agriculture jobs in Cass County.

<sup>3</sup> Estimates were generated through a process of recompiling and analyzing statistics derived from the IMPLAN database system maintained by MIG, Inc. A detailed discussion of the estimates presented here, the differences between the two tables, and how they can be interpreted is provided in pages 9 through 17 of the state report.

<sup>4</sup> Jobs do not refer to the number of people working or to full-time-equivalent employment. Jobs can be full or part time. A single individual can hold multiple jobs. In short, jobs cannot be looked upon as interchangeable or comparable across industries, businesses, or location. Comparisons of wages and compensation are more appropriate in an economic value context.

Table 3. Industry-only Estimation Based on IMPLAN and Census Data

<b>Cass County</b>			<b>Labor</b>	<b>Value-Added</b>	
<b>Agricultural Production</b>	<b>Output*</b>	<b>Jobs</b>	<b>Income*</b>	<b>Value*</b>	<b>Pct. Of Tot.</b>
Oilseeds	21.765	201	7.163	11.702	3.10
Grain	30.522	424	7.321	13.822	3.67
Other Crops	4.924	19	1.029	2.635	0.70
Cattle	37.171	244	0.265	2.640	0.70
Poultry	5.474	10	0.696	1.787	0.47
Hogs and Pigs	8.165	178	0.525	1.268	0.34
Other Ag Production	1.553	38	0.172	0.288	0.08
<b>Sum of Ag Production</b>	<b>109.574</b>	<b>1,114</b>	<b>17.171</b>	<b>34.142</b>	<b>9.05</b>
<b>Primary Food Processing</b>					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.000	0	0.000	0.000	0.00
Meat	1.553	4	0.119	0.143	0.04
<b>Sum of Primary Food Proc.</b>	<b>1.553</b>	<b>4</b>	<b>0.119</b>	<b>0.143</b>	<b>0.04</b>
<b>Other Food/Ag Processing</b>					
Animal and Pet Foods	13.593	26	1.190	1.690	0.45
Other Food Processing	0.000	0	0.000	0.000	0.00
<b>Sum of Other Ag Proc.</b>	<b>13.593</b>	<b>26</b>	<b>1.190</b>	<b>1.690</b>	<b>0.45</b>
<b>Ag Input Manufacturing</b>					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	98.631	207	50.734	57.052	15.13
<b>Sum of Ag Input Mfg.</b>	<b>98.631</b>	<b>207</b>	<b>50.734</b>	<b>57.052</b>	<b>15.13</b>
<b>Sum of All Agri-food Ind.</b>	<b>223.351</b>	<b>1,351</b>	<b>69.214</b>	<b>93.027</b>	<b>24.67</b>
<b>NonAg Industries</b>	<b>516.141</b>	<b>7,133</b>	<b>195.962</b>	<b>284.091</b>	<b>75.33</b>
<b>Totals</b>	<b>739.492</b>	<b>8,484</b>	<b>265.176</b>	<b>377.118</b>	<b>100.00</b>

\* Numbers represent millions of dollars

If we add food and other ag processing and ag input manufacturing to agricultural production, the value of Cass County's agri-food industry output was \$223.351 million, or 30.20 percent of Cass County's total industrial production. Of this, \$93.027 million (41.65 percent) was value added within these industries in Cass County. \$69.214 million of this value added was paid out as wages and salaries to the 1,351 agri-food industry jobs in the county.

Overall, Table 3 shows that Cass County's agri-food industries directly accounted for 30.20 percent of the county's total output, 24.67 percent of total value added, 26.10 percent of labor income, and 15.93 percent of the county's jobs<sup>5</sup>.

<sup>5</sup> It is unusual but possible for counties to have negative output, value-added, and labor income values in some categories, resulting in negative percents of totals. Where this happens, it is generally due to write-downs of assets and proprietor interests due to firm closings or bankruptcies, market situations where output must be sold at less than production costs, or reverse flows of incomes, pensions, or benefits.

Table 4. Industry-of-output aggregation including local inputs

Cass County	Value Added				
	Output*	Income*	Value Added*	As a Percent of Nonhousehold Demand	
Total V.A.				Demand	
<b>Agricultural Production</b>					
Oilseeds	28.321	11.190	15.740	4.17	4.65
Grain	34.117	11.246	16.602	4.40	4.90
Other Crops	0.746	0.254	0.411	0.11	0.12
Cattle	49.124	5.692	10.073	2.67	2.97
Poultry	6.626	1.611	2.521	0.67	0.74
Hogs and Pigs	10.698	1.741	2.830	0.75	0.84
Other Ag Production	1.904	0.310	0.504	0.13	0.15
<b>Sum of Ag Production</b>	<b>131.536</b>	<b>32.044</b>	<b>48.680</b>	<b>12.91</b>	<b>14.37</b>
<b>Primary Food Processing</b>					
Crop	0.000	0.000	0.000	0.00	0.00
Dairy	0.000	0.000	0.000	0.00	0.00
Meat	1.042	0.121	0.189	0.05	0.06
<b>Sum of Primary Food Proc.</b>	<b>1.042</b>	<b>0.121</b>	<b>0.189</b>	<b>0.05</b>	<b>0.06</b>
<b>Other Food/Ag Processing</b>					
Animal and Pet Foods	18.113	2.971	4.259	1.13	1.26
Other Food Processing	0.000	0.000	0.000	0.00	0.00
<b>Sum of Other Ag Proc.</b>	<b>18.113</b>	<b>2.971</b>	<b>4.259</b>	<b>1.13</b>	<b>1.26</b>
<b>Ag Input Manufacturing</b>					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	129.267	63.019	75.584	20.04	22.32
<b>Sum of Ag Input Mfg.</b>	<b>129.267</b>	<b>63.019</b>	<b>75.584</b>	<b>20.04</b>	<b>22.32</b>
<b>Sum of All Agri-food Ind.</b>	<b>279.958</b>	<b>98.155</b>	<b>128.711</b>	<b>34.13</b>	<b>38.00</b>
<b>NonAg Industries</b>	<b>398.650</b>	<b>157.445</b>	<b>209.999</b>	<b>55.69</b>	<b>62.00</b>
<b>Household Consumption</b>	<b>60.883</b>	<b>169.226</b>	<b>38.407</b>	<b>10.18</b>	<b>11.34</b>
<b>Totals</b>	<b>739.492</b>	<b>424.825</b>	<b>377.118</b>	<b>100.00</b>	<b>111.34</b>

\* Numbers represent millions of dollars

Table 4 shows a different aggregation of the county's industrial output. Table 4 is derived from the same data as is Table 3, and total values for Table 4 are identical to total values for Table 3. The difference is the point at which values were counted. In Table 3, values were counted in each industry where productive activity took place. In Table 4, values were counted at the industry that made the final export (out-of-county) sale of goods and services produced<sup>6</sup>. This is final demand analysis. It helps illustrate the magnitude of inter-industrial linkages and the value of those linkages to local income generation from export sales<sup>7</sup>.

<sup>6</sup> Goods not sold out of county were counted under the heading of "Household Consumption" and not in industry totals in Table 4.

<sup>7</sup> The point at which final products are sold out-of-county was chosen as an endpoint because it coincides with the point at which industrial output brings revenue into the county. This point also avoids problems

Table 4 reallocates all industrial activity in the county to the sectors producing goods for sale beyond the county's borders (export sale). This means that if there is a local meat packer that purchases all of its live cattle from local farmers, the output value, value-added, and personal income generated in the production of those cattle is aggregated up to the meat packing industry. Similarly, the value of locally produced farm machinery purchased for use on local farms is not included in the aggregation under farm machinery, but is subsumed under agricultural production (and partially subsumed, again, into food processing if the farm output that it was used to produce passes through local food processors on its journey to final sale outside of the county). In a nutshell, the output, value-added, and income estimates in Table 4 estimate the total share of the local economic activity utilized to generate final output from the agri-food sectors.

Under this aggregation, the total exported output value of locally produced goods and services supporting Cass County's agricultural production industry was \$131.536 million. \$48.680 million of this output (37.01 percent of the total output value) was the value added to the output by economic activity within Cass County (value added). The remainder came from inputs purchased from out-of-county sources. 65.82 percent of this value added, or \$32.044 million, was paid out as personal income to residents of Cass County that were involved (as workers, owners, investors, etc) in these activities.

If we add food and other ag processing and ag input manufacturing to agricultural production, the export value of goods and services supporting Cass County's agri-food industry output was \$279.958 million, or 37.86 percent of Cass County's total industrial production. Of this, \$128.711 million (45.98 percent) was value added within these industries in Cass County. \$98.155 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Cass County's agri-food industries accounted for 37.86 percent of the county's total output, 34.13 percent of total value added, and 23.10 percent of the county's personal income.

Table 5. Crop Statistics From the U.S. Census of Agriculture

	Cass County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	117,112	95,329	12,273,634	12,162,165
Value of Crops Sold*	52,395	54,634	6,071,272	6,381,676
Total Cropland Harvested (acres)	254,695	244,324	23,994,343	24,008,826
Corn for grain	120,976	118,445	11,761,392	11,930,542
Corn for silage and green-chop	2,544	1,676	247,269	244,913
Soybeans	114,470	106,573	10,418,621	10,258,681
Oats	1,355	1,584	143,513	214,485
Harvested forage crops	18,230	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	15,687,393	13,716,417	1,851,276,224	1,581,093,092
Soybeans	4,695,331	4,156,606	487,380,897	459,309,682
Oats	91,288	86,806	10,761,952	14,451,930

\* Values are in \$1,000s

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that would accompany trying to separate local household consumption between that which consumes local food products and that which consumes food products imported from outside the county.

Table 5 shows Cass County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Cass County livestock. Data in both tables comes from the US Census of Agriculture. In both tables “(NA)” entries denote categories where data was not collected or compiled, and “(D)” entries designate that data was collected but results were suppressed to comply with personal disclosure restrictions.

Table 6. Livestock Statistics From the U.S. Census of Agriculture

	Cass County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	117,112	95,329	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	64,717	40,695	6,202,362	5,780,489
<b>Hogs and Pigs</b>				
Total inventory	64,364	62,684	15,486,531	14,513,319
Inventory of breeding stock	3,157	5,692	1,145,323	1,354,166
Number sold	158,400	109,521	41,232,492	27,340,921
Value of sales*	13,012	11,787	3,078,455	3,012,764
<b>Cattle and Calves</b>				
Total inventory	52,262	50,308	3,535,945	3,717,394
Beef cows	(D)	16,971	987,670	1,051,178
Milk cows	(D)	363	206,965	222,090
Number sold	51,968	38,587	2,929,704	2,936,978
Value of sales*	35,895	25,342	2,119,935	1,886,416
Value of Dairy Products Sold*	(D)	507	442,431	407,897
<b>Poultry and Poultry Products</b>				
Value of sales*	(D)	(D)	511,949	414,587
Inventory of layers 20 weeks and older	(D)	(D)	38,650,210	21,514,768
Broiler and meat-type chicken inventory	(D)	(D)	1,730,091	1,023,349
Broiler and meat-type chickens sold	(D)	(D)	9,558,127	6,919,963
Turkey inventory	(D)	(D)	3,681,862	2,552,845
Turkeys sold	(D)	-	9,145,415	7,279,822
<b>Sheep and Goats and Related Products</b>				
Value of sales	182	(NA)	23,366	(NA)
Inventory of sheep and lambs	2,200	2,551	249,908	272,913
Number of sheep and lambs sold	2,104	2,348	257,130	326,868

\* Values are in \$1,000s

The first three data columns of Table 7 show aggregated annual earnings in thousands of dollars from farm employment, nonfarm employment, and totals employment in Cass County from 1990 through 2003. The values are not adjusted for inflation. Note that nonfarm earnings steadily rise throughout the period. Total earnings rise, but with somewhat more variation. Farm earnings swing significantly from year-to-year. This is typical of earnings in economies with a substantial ag production sector.

The final three data columns of Table 7 show the data again. In Table 7, however, the data is differenced year-by-year. Entries for 1991, for example, are the difference between, change from, 1990 to 1991. Positive numbers denote unadjusted growth. Negative numbers denote unadjusted decline. This representation shows that nonfarm earnings tend to be growing over time, causing total earnings to trend upward over time. The variability in this growth, however, is strongly associated with the variability of farm earnings. This is due to the weather and market factors that make production agriculture returns highly variable (which is also true of many basic mining industries).

While ag production's growth in most areas is limited by the availability of suitable land, its variability has a substantial effect upon rural areas. Even in urbanized areas, the difference between a good earnings year and a bad earnings year is often heavily influenced by conditions affecting agricultural production and marketing.

A more detailed state-level discussion and illustrations are included in the state report on pages 22 through 24.

Table 7. Annual Earnings and Annual Earnings Changes

Year	Annual County Earnings by Source			Annual Changes in County Earnings		
	Farm	Nonfarm	Total	Farm	Nonfarm	Total
1990	17,415	132,344	149,759	(NA)	(NA)	(NA)
1991	15,145	134,979	150,124	-2,270	2,635	365
1992	23,245	146,072	169,317	8,100	11,093	19,193
1993	1,806	155,105	156,911	-21,439	9,033	-12,406
1994	22,891	158,864	181,755	21,085	3,759	24,844
1995	8,371	165,929	174,300	-14,520	7,065	-7,455
1996	25,736	169,654	195,390	17,365	3,725	21,090
1997	23,513	182,760	206,273	-2,223	13,106	10,883
1998	18,344	198,113	216,457	-5,169	15,353	10,184
1999	7,576	206,686	214,262	-10,768	8,573	-2,195
2000	13,427	207,241	220,668	5,851	555	6,406
2001	6,016	197,498	203,514	-7,411	-9,743	-17,154
2002	6,679	204,893	211,572	663	7,395	8,058
2003	2,863	213,921	216,784	-3,816	9,028	5,212

Data from the US Bureau of Economic Analysis