

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

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 By Mark Imerman, David Swenson, Liesl Eathington, and Daniel Otto
 Iowa State University Department of Economics
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This summary report provides county-level statistics for Bremer County, Iowa as a supplement to *The Economic Importance of Agri-food Industries in Iowa*¹ (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 Bremer County had 956 farms in 2002. These farms averaged 267 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 Bremer County was \$795,566 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Bremer County farms marketed an average of \$113,041 worth of farm products according to the US Census of Agriculture.

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

	Bremer County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	956	1,044	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	254,923	246,107	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	267	236	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	674,166	489,261	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	121,400	75,413	100,422	79,607	66,570	53,861
Farm products sold (\$)	113,041	99,188	135,388	125,766	94,245	90,880

Table 2 shows employment data for Bremer 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 states². 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 Bremer County. Detail is restricted in this summary, due to the smaller employment base and privacy issues at the county level.

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

² 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)

	Bremer County			Iowa	
	Jobs	County total	As a percent of State Category	Jobs	% of state total
Farm and closely-related	1,442	10.47	0.71	201,967	10.57
Peripherally-related	1,013	7.36	0.53	191,669	10.04
Total farm and farm-related	2,455	17.83	0.62	393,636	20.61
Total employment	13,771	100.00	0.72	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 Bremer 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)³.

Table 3 provides value estimates for an industry-only aggregation of the economic activity that takes place within Bremer 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 jobs⁴ and labor income (compensation for employees and proprietors) within the agri-food industries in Bremer County.

Table 3 shows that, in 2002, the total output value of Bremer County's agricultural production industry was \$111.812 million. \$39.689 million of this output (35.50 percent of the total output value) was the value added to the output by Bremer 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). 51.95 percent of this value added, or \$20.620 million, was paid out as compensation to the 1,245 production agriculture jobs in Bremer County.

³ 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.

⁴ 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

Bremer County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	22.059	188	7.256	11.860	2.27
Grain	40.182	516	9.611	18.197	3.48
Other Crops	3.149	11	0.600	1.589	0.30
Cattle	15.921	96	0.088	1.133	0.22
Poultry	10.728	18	1.342	3.502	0.67
Hogs and Pigs	16.197	326	0.985	2.515	0.48
Other Ag Production	3.576	90	0.738	0.893	0.17
Sum of Ag Production	111.812	1,245	20.620	39.689	7.60
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	77.030	186	8.997	11.384	2.18
Meat	11.147	31	1.049	1.259	0.24
Sum of Primary Food Proc.	88.177	217	10.046	12.643	2.42
Other Food/Ag Processing					
Animal and Pet Foods	1.271	3	0.065	0.092	0.02
Other Food Processing	20.022	36	0.972	1.648	0.32
Sum of Other Ag Proc.	21.293	39	1.037	1.740	0.33
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	6.713	79	-7.156	-4.199	-0.80
Sum of Ag Input Mfg.	6.713	79	-7.156	-4.199	-0.80
Sum of All Agri-food Ind.	227.995	1,580	24.547	49.873	9.55
NonAg Industries	948.693	10,103	308.631	472.362	90.45
Totals	1,176.688	11,683	333.178	522.235	100.00

* Numbers represent millions of dollars

If we add food and other ag processing and ag input manufacturing to agricultural production, the value of Bremer County's agri-food industry output was \$227.995 million, or 19.38 percent of Bremer County's total industrial production. Of this, \$49.873 million (21.87 percent) was value added within these industries in Bremer County. \$24.547 million of this value added was paid out as wages and salaries to the 1,580 agri-food industry jobs in the county.

Overall, Table 3 shows that Bremer County's agri-food industries directly accounted for 19.38 percent of the county's total output, 9.55 percent of total value added, 7.37 percent of labor income, and 13.52 percent of the county's jobs⁵.

⁵ 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

Bremer County	Output*	Income*	Value Added*	Value Added As a Percent of Nonhousehold Demand	
				Total V.A.	Demand
Agricultural Production					
Oilseeds	29.116	11.414	16.074	3.08	3.77
Grain	48.701	16.015	23.634	4.53	5.54
Other Crops	0.225	0.072	0.118	0.02	0.03
Cattle	0.078	0.008	0.015	0.00	0.00
Poultry	13.223	3.185	5.021	0.96	1.18
Hogs and Pigs	19.630	3.018	5.021	0.96	1.18
Other Ag Production	3.494	0.538	0.894	0.17	0.21
Sum of Ag Production	114.468	34.252	50.778	9.72	11.89
Primary Food Processing					
Crop	0.000	0.000	0.000	0.00	0.00
Dairy	104.923	15.401	21.949	4.20	5.14
Meat	12.043	1.536	2.259	0.43	0.53
Sum of Primary Food Proc.	116.966	16.937	24.208	4.64	5.67
Other Food/Ag Processing					
Animal and Pet Foods	1.698	0.224	0.323	0.06	0.08
Other Food Processing	28.664	4.463	6.688	1.28	1.57
Sum of Other Ag Proc.	30.362	4.688	7.011	1.34	1.64
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	5.709	-6.041	-4.450	-0.85	-1.04
Sum of Ag Input Mfg.	5.709	-6.041	-4.450	-0.85	-1.04
Sum of All Agri-food Ind.	267.505	49.836	77.547	14.85	18.16
NonAg Industries	752.923	252.219	349.356	66.90	81.84
Household Consumption	156.260	355.183	95.333	18.25	22.33
Totals	1,176.688	657.238	522.235	100.00	122.33

* 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 produced⁶. 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 sales⁷.

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

⁷ 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 Bremer County's agricultural production industry was \$114.468 million. \$50.778 million of this output (44.36 percent of the total output value) was the value added to the output by economic activity within Bremer County (value added). The remainder came from inputs purchased from out-of-county sources. 67.45 percent of this value added, or \$34.252 million, was paid out as personal income to residents of Bremer 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 Bremer County's agri-food industry output was \$267.505 million, or 22.73 percent of Bremer County's total industrial production. Of this, \$77.547 million (28.99 percent) was value added within these industries in Bremer County. \$49.836 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Bremer County's agri-food industries accounted for 22.73 percent of the county's total output, 14.85 percent of total value added, and 7.58 percent of the county's personal income.

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

	Bremer County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	108,067	103,552	12,273,634	12,162,165
Value of Crops Sold*	62,661	57,502	6,071,272	6,381,676
Total Cropland Harvested (acres)	218,189	205,940	23,994,343	24,008,826
Corn for grain	115,017	108,811	11,761,392	11,930,542
Corn for silage and green-chop	2,155	2,493	247,269	244,913
Soybeans	90,780	84,150	10,418,621	10,258,681
Oats	1,353	2,001	143,513	214,485
Harvested forage crops	9,953	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	20,456,080	15,228,774	1,851,276,224	1,581,093,092
Soybeans	4,758,658	3,979,859	487,380,897	459,309,682
Oats	109,236	138,409	10,761,952	14,451,930

* Values are in \$1,000s

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 Bremer County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Bremer 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

	Bremer County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	108,067	103,552	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	45,406	46,050	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	127,374	88,325	15,486,531	14,513,319
Inventory of breeding stock	7,167	9,826	1,145,323	1,354,166
Number sold	330,867	204,599	41,232,492	27,340,921
Value of sales*	25,818	21,916	3,078,455	3,012,764
Cattle and Calves				
Total inventory	21,479	25,689	3,535,945	3,717,394
Beef cows	3,518	4,001	987,670	1,051,178
Milk cows	4,101	5,317	206,965	222,090
Number sold	11,980	21,640	2,929,704	2,936,978
Value of sales*	(D)	12,011	2,119,935	1,886,416
Value of Dairy Products Sold*	8,337	10,552	442,431	407,897
Poultry and Poultry Products				
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	1,478	1,635	1,730,091	1,023,349
Broiler and meat-type chickens sold	(D)	1,541	9,558,127	6,919,963
Turkey inventory	(D)	(D)	3,681,862	2,552,845
Turkeys sold	(D)	(D)	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	(D)	(NA)	23,366	(NA)
Inventory of sheep and lambs	3,277	1,781	249,908	272,913
Number of sheep and lambs sold	1,892	1,348	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 Bremer 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	22,073	192,781	214,854	(NA)	(NA)	(NA)
1991	16,471	204,611	221,082	-5,602	11,830	6,228
1992	26,683	220,609	247,292	10,212	15,998	26,210
1993	9,828	234,345	244,173	-16,855	13,736	-3,119
1994	28,972	242,074	271,046	19,144	7,729	26,873
1995	25,620	246,224	271,844	-3,352	4,150	798
1996	42,097	263,117	305,214	16,477	16,893	33,370
1997	40,310	282,657	322,967	-1,787	19,540	17,753
1998	34,866	300,389	335,255	-5,444	17,732	12,288
1999	25,134	307,369	332,503	-9,732	6,980	-2,752
2000	27,131	328,822	355,953	1,997	21,453	23,450
2001	21,507	334,220	355,727	-5,624	5,398	-226
2002	26,170	343,224	369,394	4,663	9,004	13,667
2003	13,115	351,289	364,404	-13,055	8,065	-4,990

Data from the US Bureau of Economic Analysis