

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

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This summary report provides county-level statistics for Keokuk 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 Keokuk County had 1,093 farms in 2002. These farms averaged 315 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 Keokuk County was \$646,671 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Keokuk County farms marketed an average of \$90,431 worth of farm products according to the US Census of Agriculture.

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

	Keokuk County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	1,093	1,035	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	343,858	332,196	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	315	321	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	541,271	495,576	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	105,400	70,833	100,422	79,607	66,570	53,861
Farm products sold (\$)	90,431	94,075	135,388	125,766	94,245	90,880

Table 2 shows employment data for Keokuk 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 Keokuk 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)

	Keokuk County			Iowa	
	Jobs	County As a percent of total	State Category	Jobs	% of state total
Farm and closely-related	1,373	26.77	0.68	201,967	10.57
Peripherally-related	242	4.72	0.13	191,669	10.04
Total farm and farm-related	1,615	31.50	0.41	393,636	20.61
Total employment	5,127	100.00	0.27	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 Keokuk 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 Keokuk 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 Keokuk County.

Table 3 shows that, in 2002, the total output value of Keokuk County's agricultural production industry was \$95.710 million. \$33.408 million of this output (34.91 percent of the total output value) was the value added to the output by Keokuk 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). 53.59 percent of this value added, or \$17.904 million, was paid out as compensation to the 1,170 production agriculture jobs in Keokuk 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

Keokuk County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	19.356	160	6.361	10.407	5.61
Grain	30.968	385	7.367	14.024	7.55
Other Crops	4.684	17	0.943	2.514	1.35
Cattle	13.775	81	0.036	0.986	0.53
Poultry	0.352	1	0.043	0.115	0.06
Hogs and Pigs	23.090	450	1.254	3.586	1.93
Other Ag Production	3.485	76	1.900	1.776	0.96
Sum of Ag Production	95.710	1,170	17.904	33.408	18.00
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.000	0	0.000	0.000	0.00
Meat	46.297	163	7.243	8.435	4.54
Sum of Primary Food Proc.	46.297	163	7.243	8.435	4.54
Other Food/Ag Processing					
Animal and Pet Foods	46.619	80	7.212	10.217	5.50
Other Food Processing	0.000	0	0.000	0.000	0.00
Sum of Other Ag Proc.	46.619	80	7.212	10.217	5.50
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	18.826	47	8.836	9.936	5.35
Sum of Ag Input Mfg.	18.826	47	8.836	9.936	5.35
Sum of All Agri-food Ind.	207.452	1,460	41.195	61.996	33.39
NonAg Industries	205.141	2,582	76.457	123.651	66.61
Totals	412.593	4,042	117.652	185.647	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 Keokuk County's agri-food industry output was \$207.452 million, or 50.28 percent of Keokuk County's total industrial production. Of this, \$61.996 million (29.88 percent) was value added within these industries in Keokuk County. \$41.195 million of this value added was paid out as wages and salaries to the 1,460 agri-food industry jobs in the county.

Overall, Table 3 shows that Keokuk County's agri-food industries directly accounted for 50.28 percent of the county's total output, 33.39 percent of total value added, 35.01 percent of labor income, and 36.12 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

Keokuk County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	23.698	10.090	13.204	7.11	8.49
Grain	30.609	11.033	14.911	8.03	9.59
Other Crops	0.635	0.243	0.352	0.19	0.23
Cattle	0.141	0.018	0.029	0.02	0.02
Poultry	0.007	0.002	0.003	0.00	0.00
Hogs and Pigs	24.681	4.224	6.424	3.46	4.13
Other Ag Production	1.442	0.462	0.577	0.31	0.37
Sum of Ag Production	81.213	26.072	35.500	19.12	22.84
Primary Food Processing					
Crop	0.000	0.000	0.000	0.00	0.00
Dairy	0.000	0.000	0.000	0.00	0.00
Meat	70.181	11.382	15.835	8.53	10.19
Sum of Primary Food Proc.	70.181	11.382	15.835	8.53	10.19
Other Food/Ag Processing					
Animal and Pet Foods	59.856	12.704	17.432	9.39	11.21
Other Food Processing	0.000	0.000	0.000	0.00	0.00
Sum of Other Ag Proc.	59.856	12.704	17.432	9.39	11.21
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	22.681	10.633	12.346	6.65	7.94
Sum of Ag Input Mfg.	22.681	10.633	12.346	6.65	7.94
Sum of All Agri-food Ind.	233.930	60.790	81.112	43.69	52.18
NonAg Industries	132.177	56.600	74.336	40.04	47.82
Household Consumption	46.486	171.583	30.198	16.27	19.43
Totals	412.593	288.973	185.647	100.00	119.43

* 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 Keokuk County's agricultural production industry was \$81.213 million. \$35.500 million of this output (43.71 percent of the total output value) was the value added to the output by economic activity within Keokuk County (value added). The remainder came from inputs purchased from out-of-county sources. 73.44 percent of this value added, or \$26.072 million, was paid out as personal income to residents of Keokuk 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 Keokuk County's agri-food industry output was \$233.930 million, or 56.70 percent of Keokuk County's total industrial production. Of this, \$81.112 million (34.67 percent) was value added within these industries in Keokuk County. \$60.790 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Keokuk County's agri-food industries accounted for 56.70 percent of the county's total output, 43.69 percent of total value added, and 21.04 percent of the county's personal income.

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

	Keokuk County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	98,841	97,367	12,273,634	12,162,165
Value of Crops Sold*	50,478	52,345	6,071,272	6,381,676
Total Cropland Harvested (acres)	211,257	198,930	23,994,343	24,008,826
Corn for grain	101,240	101,418	11,761,392	11,930,542
Corn for silage and green-chop	1,680	945	247,269	244,913
Soybeans	94,567	82,388	10,418,621	10,258,681
Oats	1,420	2,183	143,513	214,485
Harvested forage crops	14,192	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	15,699,259	13,929,730	1,851,276,224	1,581,093,092
Soybeans	4,175,616	4,068,946	487,380,897	459,309,682
Oats	103,409	141,885	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 Keokuk County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Keokuk 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

	Keokuk County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	98,841	97,367	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	48,363	45,023	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	159,048	141,111	15,486,531	14,513,319
Inventory of breeding stock	14,243	15,725	1,145,323	1,354,166
Number sold	444,629	251,587	41,232,492	27,340,921
Value of sales*	33,426	30,050	3,078,455	3,012,764
Cattle and Calves				
Total inventory	29,863	28,749	3,535,945	3,717,394
Beef cows	13,231	13,430	987,670	1,051,178
Milk cows	314	203	206,965	222,090
Number sold	19,322	23,975	2,929,704	2,936,978
Value of sales*	13,302	12,258	2,119,935	1,886,416
Value of Dairy Products Sold*	838	398	442,431	407,897
Poultry and Poultry Products				
Value of sales*	(D)	1,779	511,949	414,587
Inventory of layers 20 weeks and older	454	(D)	38,650,210	21,514,768
Broiler and meat-type chicken inventory	(D)	900	1,730,091	1,023,349
Broiler and meat-type chickens sold	724	960	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	338	(NA)	23,366	(NA)
Inventory of sheep and lambs	3,656	3,026	249,908	272,913
Number of sheep and lambs sold	3,421	4,047	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 Keokuk 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	23,258	62,211	85,469	(NA)	(NA)	(NA)
1991	19,820	64,772	84,592	-3,438	2,561	-877
1992	22,480	64,860	87,340	2,660	88	2,748
1993	10,428	65,052	75,480	-12,052	192	-11,860
1994	23,515	67,282	90,797	13,087	2,230	15,317
1995	4,461	68,895	73,356	-19,054	1,613	-17,441
1996	20,366	74,979	95,345	15,905	6,084	21,989
1997	27,628	85,524	113,152	7,262	10,545	17,807
1998	9,074	86,856	95,930	-18,554	1,332	-17,222
1999	7,903	89,026	96,929	-1,171	2,170	999
2000	12,980	93,067	106,047	5,077	4,041	9,118
2001	7,568	95,597	103,165	-5,412	2,530	-2,882
2002	9,887	99,122	109,009	2,319	3,525	5,844
2003	7,294	103,817	111,111	-2,593	4,695	2,102

Data from the US Bureau of Economic Analysis