

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

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This summary report provides county-level statistics for Clarke 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 Clarke County had 726 farms in 2002. These farms averaged 298 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 Clarke County was \$407,576 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Clarke County farms marketed an average of \$60,132 worth of farm products according to the US Census of Agriculture.

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

	Clarke County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	726	737	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	216,187	233,349	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	298	317	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	356,121	243,065	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	51,455	41,469	100,422	79,607	66,570	53,861
Farm products sold (\$)	60,132	52,989	135,388	125,766	94,245	90,880

Table 2 shows employment data for Clarke 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 Clarke 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)

	Clarke County			Iowa	
	Jobs	County total	As a percent of State Category	Jobs	% of state total
Farm and closely-related	1,590	23.67	0.79	201,967	10.57
Peripherally-related	507	7.55	0.26	191,669	10.04
Total farm and farm-related	2,097	31.22	0.53	393,636	20.61
Total employment	6,718	100.00	0.35	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 Clarke 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 Clarke 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 Clarke County.

Table 3 shows that, in 2002, the total output value of Clarke County's agricultural production industry was \$65.892 million. \$14.472 million of this output (21.96 percent of the total output value) was the value added to the output by Clarke 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). 39.94 percent of this value added, or \$5.781 million, was paid out as compensation to the 843 production agriculture jobs in Clarke 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

Clarke County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	4.234	42	1.389	2.277	1.00
Grain	6.297	94	1.483	2.852	1.25
Other Crops	7.431	29	1.318	3.749	1.64
Cattle	28.861	205	-0.083	2.082	0.91
Poultry	0.000	0	0.000	0.000	0.00
Hogs and Pigs	16.898	397	0.713	2.624	1.15
Other Ag Production	2.171	76	0.961	0.888	0.39
Sum of Ag Production	65.892	843	5.781	14.472	6.33
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.000	0	0.000	0.000	0.00
Meat	90.678	407	14.421	17.398	7.61
Sum of Primary Food Proc.	90.678	407	14.421	17.398	7.61
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0	0.000	0.000	0.00
Other Food Processing	0.000	0	0.000	0.000	0.00
Sum of Other Ag Proc.	0.000	0	0.000	0.000	0.00
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	0.000	0	0.000	0.000	0.00
Sum of Ag Input Mfg.	0.000	0	0.000	0.000	0.00
Sum of All Agri-food Ind.	156.570	1,250	20.202	31.870	13.95
NonAg Industries	350.556	4,995	131.444	196.620	86.05
Totals	507.126	6,245	151.646	228.490	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 Clarke County's agri-food industry output was \$156.570 million, or 30.87 percent of Clarke County's total industrial production. Of this, \$31.870 million (20.36 percent) was value added within these industries in Clarke County. \$20.202 million of this value added was paid out as wages and salaries to the 1,250 agri-food industry jobs in the county.

Overall, Table 3 shows that Clarke County's agri-food industries directly accounted for 30.87 percent of the county's total output, 13.95 percent of total value added, 13.32 percent of labor income, and 20.01 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

Clarke County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	5.325	1.983	2.990	1.31	1.44
Grain	4.890	1.499	2.397	1.05	1.15
Other Crops	0.520	0.147	0.276	0.12	0.13
Cattle	33.432	3.606	7.312	3.20	3.52
Poultry	0.000	0.000	0.000	0.00	0.00
Hogs and Pigs	20.052	2.799	5.437	2.38	2.62
Other Ag Production	1.240	0.174	0.337	0.15	0.16
Sum of Ag Production	65.458	10.209	18.749	8.21	9.03
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	113.212	20.149	28.963	12.68	13.95
Sum of Primary Food Proc.	113.212	20.149	28.963	12.68	13.95
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0.000	0.000	0.00	0.00
Other Food Processing	0.000	0.000	0.000	0.00	0.00
Sum of Other Ag Proc.	0.000	0.000	0.000	0.00	0.00
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	0.000	0.000	0.000	0.00	0.00
Sum of Ag Input Mfg.	0.000	0.000	0.000	0.00	0.00
Sum of All Agri-food Ind.	178.670	30.357	47.713	20.88	22.98
NonAg Industries	296.819	111.262	159.913	69.99	77.02
Household Consumption	31.637	87.177	20.864	9.13	10.05
Totals	507.126	228.797	228.490	100.00	110.05

* 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 Clarke County's agricultural production industry was \$65.458 million. \$18.749 million of this output (28.64 percent of the total output value) was the value added to the output by economic activity within Clarke County (value added). The remainder came from inputs purchased from out-of-county sources. 54.45 percent of this value added, or \$10.209 million, was paid out as personal income to residents of Clarke 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 Clarke County's agri-food industry output was \$178.670 million, or 35.23 percent of Clarke County's total industrial production. Of this, \$47.713 million (26.70 percent) was value added within these industries in Clarke County. \$30.357 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Clarke County's agri-food industries accounted for 35.23 percent of the county's total output, 20.88 percent of total value added, and 13.27 percent of the county's personal income.

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

	Clarke County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	43,656	39,053	12,273,634	12,162,165
Value of Crops Sold*	11,499	13,040	6,071,272	6,381,676
Total Cropland Harvested (acres)	82,352	82,930	23,994,343	24,008,826
Corn for grain	23,946	26,298	11,761,392	11,930,542
Corn for silage and green-chop	972	1,701	247,269	244,913
Soybeans	24,359	26,919	10,418,621	10,258,681
Oats	1,933	1,706	143,513	214,485
Harvested forage crops	32,564	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	3,153,356	2,881,555	1,851,276,224	1,581,093,092
Soybeans	913,450	1,117,156	487,380,897	459,309,682
Oats	128,726	88,022	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 Clarke County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Clarke 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

	Clarke County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	43,656	39,053	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	32,157	26,013	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	(D)	67,350	15,486,531	14,513,319
Inventory of breeding stock	(D)	16,017	1,145,323	1,354,166
Number sold	(D)	103,507	41,232,492	27,340,921
Value of sales*	(D)	14,631	3,078,455	3,012,764
Cattle and Calves				
Total inventory	37,103	42,159	3,535,945	3,717,394
Beef cows	(D)	20,951	987,670	1,051,178
Milk cows	(D)	366	206,965	222,090
Number sold	18,796	21,035	2,929,704	2,936,978
Value of sales*	(D)	10,563	2,119,935	1,886,416
Value of Dairy Products Sold*	64	390	442,431	407,897
Poultry and Poultry Products				
Value of sales*	6	12	511,949	414,587
Inventory of layers 20 weeks and older	907	1,307	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	39	(D)	3,681,862	2,552,845
Turkeys sold	(D)	-	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	130	(NA)	23,366	(NA)
Inventory of sheep and lambs	2,059	2,568	249,908	272,913
Number of sheep and lambs sold	1,580	2,519	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 Clarke 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	7,069	73,814	80,883	(NA)	(NA)	(NA)
1991	4,379	74,246	78,625	-2,690	432	-2,258
1992	6,888	75,209	82,097	2,509	963	3,472
1993	2,638	68,009	70,647	-4,250	-7,200	-11,450
1994	10,380	70,800	81,180	7,742	2,791	10,533
1995	988	72,894	73,882	-9,392	2,094	-7,298
1996	3,713	80,242	83,955	2,725	7,348	10,073
1997	10,859	91,671	102,530	7,146	11,429	18,575
1998	7,900	104,305	112,205	-2,959	12,634	9,675
1999	8,784	119,654	128,438	884	15,349	16,233
2000	12,181	140,916	153,097	3,397	21,262	24,659
2001	7,112	153,446	160,558	-5,069	12,530	7,461
2002	9,688	155,789	165,477	2,576	2,343	4,919
2003	6,193	155,687	161,880	-3,495	-102	-3,597

Data from the US Bureau of Economic Analysis