

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

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This summary report provides county-level statistics for Lucas 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 Lucas County had 747 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 Lucas County was \$371,767 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Lucas County farms marketed an average of \$35,930 worth of farm products according to the US Census of Agriculture.

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

	Lucas County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	747	771	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	222,234	239,541	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	298	311	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	331,099	240,142	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	40,668	42,788	100,422	79,607	66,570	53,861
Farm products sold (\$)	35,930	38,744	135,388	125,766	94,245	90,880

Table 2 shows employment data for Lucas 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 Lucas 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)

	Lucas County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	919	17.19	0.45	201,967	10.57
Peripherally-related	352	6.58	0.18	191,669	10.04
Total farm and farm-related	1,270	23.76	0.32	393,636	20.61
Total employment	5,346	100.00	0.28	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 Lucas 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 Lucas 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 Lucas County.

Table 3 shows that, in 2002, the total output value of Lucas County's agricultural production industry was \$30.968 million. \$9.538 million of this output (30.80 percent of the total output value) was the value added to the output by Lucas 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). 37.33 percent of this value added, or \$3.561 million, was paid out as compensation to the 497 production agriculture jobs in Lucas 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

Lucas County			Labor	Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	3.607	62	1.179	1.939	1.22
Grain	6.008	155	1.384	2.721	1.72
Other Crops	6.952	49	1.149	3.658	2.31
Cattle	12.415	151	-0.183	0.912	0.58
Poultry	0.000	0	0.000	0.000	0.00
Hogs and Pigs	1.683	68	0.027	0.261	0.16
Other Ag Production	0.303	12	0.005	0.047	0.03
Sum of Ag Production	30.968	497	3.561	9.538	6.03
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.000	0	0.000	0.000	0.00
Meat	0.000	0	0.000	0.000	0.00
Sum of Primary Food Proc.	0.000	0	0.000	0.000	0.00
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0	0.000	0.000	0.00
Other Food Processing	0.777	5	0.115	0.280	0.18
Sum of Other Ag Proc.	0.777	5	0.115	0.280	0.18
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.	31.745	502	3.676	9.818	6.20
NonAg Industries	241.875	2,873	94.809	148.485	93.80
Totals	273.620	3,375	98.485	158.303	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 Lucas County's agri-food industry output was \$31.745 million, or 11.60 percent of Lucas County's total industrial production. Of this, \$9.818 million (30.93 percent) was value added within these industries in Lucas County. \$3.676 million of this value added was paid out as wages and salaries to the 502 agri-food industry jobs in the county.

Overall, Table 3 shows that Lucas County's agri-food industries directly accounted for 11.60 percent of the county's total output, 6.20 percent of total value added, 3.73 percent of labor income, and 14.88 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

Lucas County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	4.780	1.923	2.743	1.73	2.27
Grain	6.819	2.284	3.434	2.17	2.84
Other Crops	4.604	1.531	2.573	1.63	2.13
Cattle	18.564	2.438	4.627	2.92	3.83
Poultry	0.000	0.000	0.000	0.00	0.00
Hogs and Pigs	2.400	0.395	0.717	0.45	0.59
Other Ag Production	0.432	0.071	0.129	0.08	0.11
Sum of Ag Production	37.600	8.642	14.224	8.99	11.76
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	0.000	0.000	0.000	0.00	0.00
Sum of Primary Food Proc.	0.000	0.000	0.000	0.00	0.00
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0.000	0.000	0.00	0.00
Other Food Processing	0.971	0.251	0.410	0.26	0.34
Sum of Other Ag Proc.	0.971	0.251	0.410	0.26	0.34
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.	38.571	8.893	14.634	9.24	12.10
NonAg Industries	180.419	75.913	106.270	67.13	87.90
Household Consumption	54.631	146.449	37.400	23.63	30.93
Totals	273.620	231.255	158.303	100.00	130.93

* 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 Lucas County's agricultural production industry was \$37.600 million. \$14.224 million of this output (37.83 percent of the total output value) was the value added to the output by economic activity within Lucas County (value added). The remainder came from inputs purchased from out-of-county sources. 60.76 percent of this value added, or \$8.642 million, was paid out as personal income to residents of Lucas 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 Lucas County's agri-food industry output was \$38.571 million, or 14.10 percent of Lucas County's total industrial production. Of this, \$14.634 million (37.94 percent) was value added within these industries in Lucas County. \$8.893 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Lucas County's agri-food industries accounted for 14.10 percent of the county's total output, 9.24 percent of total value added, and 3.85 percent of the county's personal income.

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

	Lucas County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	26,840	29,871	12,273,634	12,162,165
Value of Crops Sold*	11,125	13,789	6,071,272	6,381,676
Total Cropland Harvested (acres)	72,176	78,245	23,994,343	24,008,826
Corn for grain	21,227	24,035	11,761,392	11,930,542
Corn for silage and green-chop	1,033	699	247,269	244,913
Soybeans	20,355	24,775	10,418,621	10,258,681
Oats	1,488	1,596	143,513	214,485
Harvested forage crops	29,035	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	2,964,925	2,966,656	1,851,276,224	1,581,093,092
Soybeans	778,143	1,074,802	487,380,897	459,309,682
Oats	82,816	96,936	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 Lucas County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Lucas 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

	Lucas County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	26,840	29,871	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	15,715	16,083	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	10,358	18,650	15,486,531	14,513,319
Inventory of breeding stock	178	2,178	1,145,323	1,354,166
Number sold	40,490	41,054	41,232,492	27,340,921
Value of sales*	3,205	4,234	3,078,455	3,012,764
Cattle and Calves				
Total inventory	37,489	41,387	3,535,945	3,717,394
Beef cows	19,312	21,525	987,670	1,051,178
Milk cows	85	264	206,965	222,090
Number sold	20,182	23,098	2,929,704	2,936,978
Value of sales*	11,989	10,858	2,119,935	1,886,416
Value of Dairy Products Sold*	276	293	442,431	407,897
Poultry and Poultry Products				
Value of sales*	5	3	511,949	414,587
Inventory of layers 20 weeks and older	484	444	38,650,210	21,514,768
Broiler and meat-type chicken inventory	291	1,020	1,730,091	1,023,349
Broiler and meat-type chickens sold	(D)	950	9,558,127	6,919,963
Turkey inventory	51	(D)	3,681,862	2,552,845
Turkeys sold	-	-	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	1,713	3,194	249,908	272,913
Number of sheep and lambs sold	498	4,254	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 Lucas 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	3,690	83,976	87,666	(NA)	(NA)	(NA)
1991	2,773	89,071	91,844	-917	5,095	4,178
1992	4,680	91,105	95,785	1,907	2,034	3,941
1993	108	91,426	91,534	-4,572	321	-4,251
1994	5,739	95,998	101,737	5,631	4,572	10,203
1995	872	80,930	81,802	-4,867	-15,068	-19,935
1996	4,732	86,082	90,814	3,860	5,152	9,012
1997	7,311	93,905	101,216	2,579	7,823	10,402
1998	2,742	105,335	108,077	-4,569	11,430	6,861
1999	3,528	111,873	115,401	786	6,538	7,324
2000	3,999	113,344	117,343	471	1,471	1,942
2001	1,026	117,556	118,582	-2,973	4,212	1,239
2002	1,628	120,456	122,084	602	2,900	3,502
2003	1,639	124,599	126,238	11	4,143	4,154

Data from the US Bureau of Economic Analysis