

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

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This summary report provides county-level statistics for Lee 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 Lee County had 945 farms in 2002. These farms averaged 286 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 Lee County was \$550,523 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Lee County farms marketed an average of \$69,398 worth of farm products according to the US Census of Agriculture.

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

	Lee County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	945	932	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	270,342	264,570	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	286	284	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	478,396	369,568	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	72,127	67,670	100,422	79,607	66,570	53,861
Farm products sold (\$)	69,398	84,583	135,388	125,766	94,245	90,880

Table 2 shows employment data for Lee 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 Lee 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)

	Lee County			Iowa	
	Jobs	County total	As a percent of State Category	Jobs	% of state total
Farm and closely-related	2,339	10.74	1.16	201,967	10.57
Peripherally-related	2,289	10.51	1.19	191,669	10.04
Total farm and farm-related	4,628	21.24	1.18	393,636	20.61
Total employment	21,786	100.00	1.14	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 Lee 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 Lee 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 Lee County.

Table 3 shows that, in 2002, the total output value of Lee County's agricultural production industry was \$77.681 million. \$28.347 million of this output (36.49 percent of the total output value) was the value added to the output by Lee 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). 55.49 percent of this value added, or \$15.729 million, was paid out as compensation to the 1,106 production agriculture jobs in Lee 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

Lee County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	14.000	164	4.620	7.527	0.69
Grain	20.533	362	5.005	9.298	0.85
Other Crops	6.823	42	1.978	4.389	0.40
Cattle	9.437	79	0.153	0.661	0.06
Poultry	0.000	0	0.000	0.000	0.00
Hogs and Pigs	11.243	311	0.947	1.746	0.16
Other Ag Production	15.645	148	3.026	4.726	0.43
Sum of Ag Production	77.681	1,106	15.729	28.347	2.59
Primary Food Processing					
Crop	488.781	550	41.608	104.776	9.56
Dairy	0.000	0	0.000	0.000	0.00
Meat	62.403	263	12.205	14.684	1.34
Sum of Primary Food Proc.	551.184	813	53.813	119.460	10.90
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0	0.000	0.000	0.00
Other Food Processing	1.723	11	0.326	0.556	0.05
Sum of Other Ag Proc.	1.723	11	0.326	0.556	0.05
Ag Input Manufacturing					
Ag Chemical and Fertilizer	41.604	123	10.251	15.508	1.42
Farm Machinery	0.000	0	0.000	0.000	0.00
Sum of Ag Input Mfg.	41.604	123	10.251	15.508	1.42
Sum of All Agri-food Ind.	672.192	2,053	80.119	163.871	14.95
NonAg Industries	1,844.914	19,864	608.141	932.097	85.05
Totals	2,517.106	21,917	688.260	1,095.968	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 Lee County's agri-food industry output was \$672.192 million, or 26.70 percent of Lee County's total industrial production. Of this, \$163.871 million (24.38 percent) was value added within these industries in Lee County. \$80.119 million of this value added was paid out as wages and salaries to the 2,053 agri-food industry jobs in the county.

Overall, Table 3 shows that Lee County's agri-food industries directly accounted for 26.70 percent of the county's total output, 14.95 percent of total value added, 11.64 percent of labor income, and 9.37 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

Lee County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	12.203	4.373	6.777	0.62	0.68
Grain	10.806	3.158	5.236	0.48	0.53
Other Crops	4.161	1.430	2.631	0.24	0.27
Cattle	8.062	0.782	1.653	0.15	0.17
Poultry	0.000	0.000	0.000	0.00	0.00
Hogs and Pigs	12.378	1.720	3.219	0.29	0.32
Other Ag Production	6.925	1.467	2.302	0.21	0.23
Sum of Ag Production	54.535	12.930	21.818	1.99	2.20
Primary Food Processing					
Crop	644.895	104.787	201.153	18.35	20.29
Dairy	0.000	0.000	0.000	0.00	0.00
Meat	73.923	13.949	21.529	1.96	2.17
Sum of Primary Food Proc.	718.818	118.736	222.682	20.32	22.46
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0.000	0.000	0.00	0.00
Other Food Processing	0.340	0.073	0.127	0.01	0.01
Sum of Other Ag Proc.	0.340	0.073	0.127	0.01	0.01
Ag Input Manufacturing					
Ag Chemical and Fertilizer	50.253	12.703	21.029	1.92	2.12
Farm Machinery	0.000	0.000	0.000	0.00	0.00
Sum of Ag Input Mfg.	50.253	12.703	21.029	1.92	2.12
Sum of All Agri-food Ind.	823.946	144.442	265.656	24.24	26.79
NonAg Industries	1,524.053	456.611	725.936	66.24	73.21
Household Consumption	169.107	387.349	104.376	9.52	10.53
Totals	2,517.106	988.402	1,095.968	100.00	110.53

* 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 Lee County's agricultural production industry was \$54.535 million. \$21.818 million of this output (40.01 percent of the total output value) was the value added to the output by economic activity within Lee County (value added). The remainder came from inputs purchased from out-of-county sources. 59.26 percent of this value added, or \$12.930 million, was paid out as personal income to residents of Lee 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 Lee County's agri-food industry output was \$823.946 million, or 32.73 percent of Lee County's total industrial production. Of this, \$265.656 million (32.24 percent) was value added within these industries in Lee County. \$144.442 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Lee County's agri-food industries accounted for 32.73 percent of the county's total output, 24.24 percent of total value added, and 14.61 percent of the county's personal income.

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

	Lee County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	65,581	78,831	12,273,634	12,162,165
Value of Crops Sold*	38,106	43,200	6,071,272	6,381,676
Total Cropland Harvested (acres)	170,119	158,698	23,994,343	24,008,826
Corn for grain	79,091	75,570	11,761,392	11,930,542
Corn for silage and green-chop	1,678	2,079	247,269	244,913
Soybeans	73,104	64,226	10,418,621	10,258,681
Oats	813	796	143,513	214,485
Harvested forage crops	16,199	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	10,449,531	10,130,274	1,851,276,224	1,581,093,092
Soybeans	3,020,070	3,080,597	487,380,897	459,309,682
Oats	43,661	52,627	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 Lee County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Lee 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

	Lee County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	65,581	78,831	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	27,474	35,631	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	84,080	111,744	15,486,531	14,513,319
Inventory of breeding stock	4,118	13,021	1,145,323	1,354,166
Number sold	186,090	200,735	41,232,492	27,340,921
Value of sales*	16,147	22,974	3,078,455	3,012,764
Cattle and Calves				
Total inventory	22,302	27,534	3,535,945	3,717,394
Beef cows	8,989	10,476	987,670	1,051,178
Milk cows	900	1,527	206,965	222,090
Number sold	14,198	16,162	2,929,704	2,936,978
Value of sales*	9,113	9,191	2,119,935	1,886,416
Value of Dairy Products Sold*	1,821	2,972	442,431	407,897
Poultry and Poultry Products				
Value of sales*	(D)	214	511,949	414,587
Inventory of layers 20 weeks and older	633	1,440	38,650,210	21,514,768
Broiler and meat-type chicken inventory	112	75	1,730,091	1,023,349
Broiler and meat-type chickens sold	637	-	9,558,127	6,919,963
Turkey inventory	18	(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	174	(NA)	23,366	(NA)
Inventory of sheep and lambs	3,043	3,128	249,908	272,913
Number of sheep and lambs sold	1,993	2,231	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 Lee 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	12,637	493,628	506,265	(NA)	(NA)	(NA)
1991	10,109	504,070	514,179	-2,528	10,442	7,914
1992	17,111	528,516	545,627	7,002	24,446	31,448
1993	5,516	538,113	543,629	-11,595	9,597	-1,998
1994	18,064	579,166	597,230	12,548	41,053	53,601
1995	5,322	612,061	617,383	-12,742	32,895	20,153
1996	22,012	632,453	654,465	16,690	20,392	37,082
1997	22,798	637,194	659,992	786	4,741	5,527
1998	9,013	673,195	682,208	-13,785	36,001	22,216
1999	5,580	679,441	685,021	-3,433	6,246	2,813
2000	8,942	677,153	686,095	3,362	-2,288	1,074
2001	6,141	668,379	674,520	-2,801	-8,774	-11,575
2002	5,626	667,185	672,811	-515	-1,194	-1,709
2003	4,993	698,472	703,465	-633	31,287	30,654

Data from the US Bureau of Economic Analysis