

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

Report prepared with funding from the Coalition to Support Iowa's Farmers
 By Mark Imerman, David Swenson, Liesl Eathington, and Daniel Otto
 Iowa State University Department of Economics
 September 23, 2005

This summary report provides county-level statistics for Fayette 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 Fayette County had 1,344 farms in 2002. These farms averaged 309 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 Fayette County was \$743,197 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Fayette County farms marketed an average of \$134,548 worth of farm products according to the US Census of Agriculture.

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

	Fayette County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	1,344	1,369	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	414,853	416,104	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	309	304	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	626,654	457,633	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	116,543	83,248	100,422	79,607	66,570	53,861
Farm products sold (\$)	134,548	133,934	135,388	125,766	94,245	90,880

Table 2 shows employment data for Fayette 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 Fayette 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)

	Fayette County			Iowa	
	Jobs	County total	As a percent of State Category	Jobs	% of state total
Farm and closely-related	1,906	16.30	0.94	201,967	10.57
Peripherally-related	866	7.41	0.45	191,669	10.04
Total farm and farm-related	2,772	23.71	0.70	393,636	20.61
Total employment	11,691	100.00	0.61	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 Fayette 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 Fayette 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 Fayette County.

Table 3 shows that, in 2002, the total output value of Fayette County's agricultural production industry was \$160.244 million. \$55.450 million of this output (34.60 percent of the total output value) was the value added to the output by Fayette 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). 52.93 percent of this value added, or \$29.351 million, was paid out as compensation to the 1,685 production agriculture jobs in Fayette 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

Fayette County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	28.440	219	9.380	15.291	3.39
Grain	54.869	636	13.322	24.848	5.50
Other Crops	9.985	33	2.212	5.342	1.18
Cattle	22.707	124	0.317	1.595	0.35
Poultry	8.215	13	1.114	2.682	0.59
Hogs and Pigs	22.383	407	1.776	3.476	0.77
Other Ag Production	13.645	253	1.230	2.216	0.49
Sum of Ag Production	160.244	1,685	29.351	55.450	12.28
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	97.089	172	10.381	35.236	7.80
Meat	15.747	64	2.165	2.602	0.58
Sum of Primary Food Proc.	112.836	236	12.546	37.838	8.38
Other Food/Ag Processing					
Animal and Pet Foods	6.839	14	0.477	0.677	0.15
Other Food Processing	0.883	10	0.248	0.434	0.10
Sum of Other Ag Proc.	7.722	24	0.725	1.111	0.25
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	25.216	44	14.527	15.667	3.47
Sum of Ag Input Mfg.	25.216	44	14.527	15.667	3.47
Sum of All Agri-food Ind.	306.018	1,989	57.149	110.066	24.38
NonAg Industries	581.806	8,427	221.966	341.464	75.62
Totals	887.824	10,416	279.115	451.530	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 Fayette County's agri-food industry output was \$306.018 million, or 34.47 percent of Fayette County's total industrial production. Of this, \$110.066 million (35.97 percent) was value added within these industries in Fayette County. \$57.149 million of this value added was paid out as wages and salaries to the 1,989 agri-food industry jobs in the county.

Overall, Table 3 shows that Fayette County's agri-food industries directly accounted for 34.47 percent of the county's total output, 24.38 percent of total value added, 20.48 percent of labor income, and 19.10 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

Fayette County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	37.583	14.437	20.991	4.65	5.61
Grain	65.371	20.977	32.130	7.12	8.59
Other Crops	1.619	0.532	0.896	0.20	0.24
Cattle	0.253	0.033	0.059	0.01	0.02
Poultry	10.316	2.481	4.044	0.90	1.08
Hogs and Pigs	31.552	5.542	9.114	2.02	2.44
Other Ag Production	18.953	3.329	5.475	1.21	1.46
Sum of Ag Production	165.647	47.332	72.709	16.10	19.44
Primary Food Processing					
Crop	0.000	0.000	0.000	0.00	0.00
Dairy	142.049	29.589	54.626	12.10	14.61
Meat	18.624	3.213	4.733	1.05	1.27
Sum of Primary Food Proc.	160.673	32.802	59.359	13.15	15.87
Other Food/Ag Processing					
Animal and Pet Foods	9.702	1.552	2.345	0.52	0.63
Other Food Processing	0.146	0.049	0.076	0.02	0.02
Sum of Other Ag Proc.	9.849	1.601	2.422	0.54	0.65
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	34.823	17.919	21.577	4.78	5.77
Sum of Ag Input Mfg.	34.823	17.919	21.577	4.78	5.77
Sum of All Agri-food Ind.	370.992	99.654	156.067	34.56	41.73
NonAg Industries	389.827	155.752	217.924	48.26	58.27
Household Consumption	127.006	276.958	77.538	17.17	20.73
Totals	887.824	532.365	451.530	100.00	120.73

* 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 Fayette County's agricultural production industry was \$165.647 million. \$72.709 million of this output (43.89 percent of the total output value) was the value added to the output by economic activity within Fayette County (value added). The remainder came from inputs purchased from out-of-county sources. 65.10 percent of this value added, or \$47.332 million, was paid out as personal income to residents of Fayette 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 Fayette County's agri-food industry output was \$370.992 million, or 41.79 percent of Fayette County's total industrial production. Of this, \$156.067 million (42.07 percent) was value added within these industries in Fayette County. \$99.654 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Fayette County's agri-food industries accounted for 41.79 percent of the county's total output, 34.56 percent of total value added, and 18.72 percent of the county's personal income.

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

	Fayette County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	180,832	183,356	12,273,634	12,162,165
Value of Crops Sold*	79,952	79,576	6,071,272	6,381,676
Total Cropland Harvested (acres)	326,110	324,935	23,994,343	24,008,826
Corn for grain	165,064	175,058	11,761,392	11,930,542
Corn for silage and green-chop	6,833	7,949	247,269	244,913
Soybeans	125,968	110,802	10,418,621	10,258,681
Oats	3,622	6,326	143,513	214,485
Harvested forage crops	26,101	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	27,870,975	23,935,731	1,851,276,224	1,581,093,092
Soybeans	6,135,314	5,127,720	487,380,897	459,309,682
Oats	303,311	417,386	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 Fayette County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Fayette 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

	Fayette County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	180,832	183,356	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	100,879	103,780	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	241,077	240,210	15,486,531	14,513,319
Inventory of breeding stock	17,042	22,107	1,145,323	1,354,166
Number sold	587,887	505,751	41,232,492	27,340,921
Value of sales*	46,062	56,506	3,078,455	3,012,764
Cattle and Calves				
Total inventory	54,698	59,109	3,535,945	3,717,394
Beef cows	8,948	9,441	987,670	1,051,178
Milk cows	10,853	12,729	206,965	222,090
Number sold	35,052	32,815	2,929,704	2,936,978
Value of sales*	21,928	19,640	2,119,935	1,886,416
Value of Dairy Products Sold*	23,957	25,003	442,431	407,897
Poultry and Poultry Products				
Value of sales*	8,159	(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	740	389	1,730,091	1,023,349
Broiler and meat-type chickens sold	815	315	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	469	(NA)	23,366	(NA)
Inventory of sheep and lambs	5,481	5,272	249,908	272,913
Number of sheep and lambs sold	5,926	5,256	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 Fayette 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	47,691	148,995	196,686	(NA)	(NA)	(NA)
1991	39,420	154,170	193,590	-8,271	5,175	-3,096
1992	44,919	162,920	207,839	5,499	8,750	14,249
1993	21,139	171,023	192,162	-23,780	8,103	-15,677
1994	46,760	188,711	235,471	25,621	17,688	43,309
1995	39,373	195,778	235,151	-7,387	7,067	-320
1996	64,604	201,466	266,070	25,231	5,688	30,919
1997	62,230	212,622	274,852	-2,374	11,156	8,782
1998	53,132	216,762	269,894	-9,098	4,140	-4,958
1999	33,276	229,827	263,103	-19,856	13,065	-6,791
2000	40,934	233,681	274,615	7,658	3,854	11,512
2001	32,936	232,987	265,923	-7,998	-694	-8,692
2002	33,507	242,571	276,078	571	9,584	10,155
2003	21,545	253,798	275,343	-11,962	11,227	-735

Data from the US Bureau of Economic Analysis