

Summary Measures of the Economic Importance of Agri-food Industries in Jones 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 Jones 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 Jones County had 1,024 farms in 2002. These farms averaged 304 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 Jones County was \$765,581 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Jones County farms marketed an average of \$116,670 worth of farm products according to the US Census of Agriculture.

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

	Jones County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	1,024	1,100	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	311,640	334,789	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	304	304	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	668,794	481,425	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	96,787	75,976	100,422	79,607	66,570	53,861
Farm products sold (\$)	116,670	127,301	135,388	125,766	94,245	90,880

Table 2 shows employment data for Jones 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 Jones 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)

	Jones County			Iowa	
	Jobs	As a percent of County total	As a percent of State Category	Jobs	% of state total
Farm and closely-related	1,377	14.54	0.68	201,967	10.57
Peripherally-related	799	8.44	0.42	191,669	10.04
Total farm and farm-related	2,177	22.98	0.55	393,636	20.61
Total employment	9,472	100.00	0.50	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 Jones 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 Jones 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 Jones County.

Table 3 shows that, in 2002, the total output value of Jones County's agricultural production industry was \$120.362 million. \$37.198 million of this output (30.91 percent of the total output value) was the value added to the output by Jones 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). 52.55 percent of this value added, or \$19.549 million, was paid out as compensation to the 1,325 production agriculture jobs in Jones 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

Jones County			Labor	Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	18.138	165	5.988	9.752	2.90
Grain	40.393	554	9.861	18.292	5.45
Other Crops	7.651	29	1.737	4.088	1.22
Cattle	39.187	254	0.669	2.738	0.82
Poultry	0.000	0	0.000	0.000	0.00
Hogs and Pigs	10.671	230	0.921	1.657	0.49
Other Ag Production	4.322	93	0.373	0.671	0.20
Sum of Ag Production	120.362	1,325	19.549	37.198	11.08
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.000	0	0.000	0.000	0.00
Meat	1.537	5	0.073	0.087	0.03
Sum of Primary Food Proc.	1.537	5	0.073	0.087	0.03
Other Food/Ag Processing					
Animal and Pet Foods	28.851	57	2.218	3.142	0.94
Other Food Processing	0.000	0	0.000	0.000	0.00
Sum of Other Ag Proc.	28.851	57	2.218	3.142	0.94
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	1.757	6	0.659	0.740	0.22
Sum of Ag Input Mfg.	1.757	6	0.659	0.740	0.22
Sum of All Agri-food Ind.	152.507	1,393	22.499	41.167	12.26
NonAg Industries	524.838	6,921	187.779	294.617	87.74
Totals	677.345	8,314	210.278	335.784	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 Jones County's agri-food industry output was \$152.507 million, or 22.52 percent of Jones County's total industrial production. Of this, \$41.167 million (26.99 percent) was value added within these industries in Jones County. \$22.499 million of this value added was paid out as wages and salaries to the 1,393 agri-food industry jobs in the county.

Overall, Table 3 shows that Jones County's agri-food industries directly accounted for 22.52 percent of the county's total output, 12.26 percent of total value added, 10.70 percent of labor income, and 16.75 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

Jones County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	23.580	9.544	13.226	3.94	5.01
Grain	44.258	15.064	21.747	6.48	8.24
Other Crops	1.155	0.415	0.640	0.19	0.24
Cattle	53.269	6.852	11.682	3.48	4.42
Poultry	0.000	0.000	0.000	0.00	0.00
Hogs and Pigs	14.520	2.573	4.002	1.19	1.52
Other Ag Production	5.880	1.042	1.621	0.48	0.61
Sum of Ag Production	142.663	35.489	52.919	15.76	20.04
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	1.022	0.114	0.179	0.05	0.07
Sum of Primary Food Proc.	1.022	0.114	0.179	0.05	0.07
Other Food/Ag Processing					
Animal and Pet Foods	38.604	6.049	8.762	2.61	3.32
Other Food Processing	0.000	0.000	0.000	0.00	0.00
Sum of Other Ag Proc.	38.604	6.049	8.762	2.61	3.32
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	1.954	0.749	0.914	0.27	0.35
Sum of Ag Input Mfg.	1.954	0.749	0.914	0.27	0.35
Sum of All Agri-food Ind.	184.242	42.401	62.774	18.69	23.77
NonAg Industries	380.045	147.711	201.289	59.95	76.23
Household Consumption	113.058	283.795	71.722	21.36	27.16
Totals	677.345	473.908	335.784	100.00	127.16

* 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 Jones County's agricultural production industry was \$142.663 million. \$52.919 million of this output (37.09 percent of the total output value) was the value added to the output by economic activity within Jones County (value added). The remainder came from inputs purchased from out-of-county sources. 67.06 percent of this value added, or \$35.489 million, was paid out as personal income to residents of Jones 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 Jones County's agri-food industry output was \$184.242 million, or 27.20 percent of Jones County's total industrial production. Of this, \$62.774 million (34.07 percent) was value added within these industries in Jones County. \$42.401 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Jones County's agri-food industries accounted for 27.20 percent of the county's total output, 18.69 percent of total value added, and 8.95 percent of the county's personal income.

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

	Jones County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	119,470	140,031	12,273,634	12,162,165
Value of Crops Sold*	57,708	62,530	6,071,272	6,381,676
Total Cropland Harvested (acres)	224,933	240,792	23,994,343	24,008,826
Corn for grain	121,856	139,975	11,761,392	11,930,542
Corn for silage and green-chop	2,909	3,752	247,269	244,913
Soybeans	80,087	72,777	10,418,621	10,258,681
Oats	1,909	4,179	143,513	214,485
Harvested forage crops	20,188	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	20,750,196	19,165,491	1,851,276,224	1,581,093,092
Soybeans	3,912,823	3,624,462	487,380,897	459,309,682
Oats	133,228	247,813	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 Jones County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Jones 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

	Jones County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	119,470	140,031	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	61,763	77,501	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	97,419	148,207	15,486,531	14,513,319
Inventory of breeding stock	12,961	20,781	1,145,323	1,354,166
Number sold	239,410	286,727	41,232,492	27,340,921
Value of sales*	17,548	30,790	3,078,455	3,012,764
Cattle and Calves				
Total inventory	57,416	62,399	3,535,945	3,717,394
Beef cows	13,394	15,710	987,670	1,051,178
Milk cows	2,724	3,381	206,965	222,090
Number sold	48,115	56,262	2,929,704	2,936,978
Value of sales*	37,842	38,955	2,119,935	1,886,416
Value of Dairy Products Sold*	5,860	7,332	442,431	407,897
Poultry and Poultry Products				
Value of sales*	(D)	4	511,949	414,587
Inventory of layers 20 weeks and older	1,218	369	38,650,210	21,514,768
Broiler and meat-type chicken inventory	2,875	348	1,730,091	1,023,349
Broiler and meat-type chickens sold	7,700	1,176	9,558,127	6,919,963
Turkey inventory	69	32	3,681,862	2,552,845
Turkeys sold	(D)	46	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	137	(NA)	23,366	(NA)
Inventory of sheep and lambs	2,177	2,616	249,908	272,913
Number of sheep and lambs sold	1,857	2,267	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 Jones 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	23,413	127,523	150,936	(NA)	(NA)	(NA)
1991	16,650	134,521	151,171	-6,763	6,998	235
1992	27,786	144,621	172,407	11,136	10,100	21,236
1993	13,440	146,535	159,975	-14,346	1,914	-12,432
1994	27,368	154,300	181,668	13,928	7,765	21,693
1995	15,632	160,205	175,837	-11,736	5,905	-5,831
1996	35,165	164,250	199,415	19,533	4,045	23,578
1997	33,796	173,753	207,549	-1,369	9,503	8,134
1998	24,110	181,338	205,448	-9,686	7,585	-2,101
1999	18,502	187,285	205,787	-5,608	5,947	339
2000	14,323	198,328	212,651	-4,179	11,043	6,864
2001	16,265	195,805	212,070	1,942	-2,523	-581
2002	13,419	202,179	215,598	-2,846	6,374	3,528
2003	9,992	216,912	226,904	-3,427	14,733	11,306

Data from the US Bureau of Economic Analysis