

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

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This summary report provides county-level statistics for Dubuque 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 Dubuque County had 1,481 farms in 2002. These farms averaged 213 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 Dubuque County was \$566,770 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Dubuque County farms marketed an average of \$102,612 worth of farm products according to the US Census of Agriculture.

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

	Dubuque County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	1,481	1,669	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	315,895	344,383	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	213	206	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	478,042	329,206	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	88,728	66,912	100,422	79,607	66,570	53,861
Farm products sold (\$)	102,612	102,675	135,388	125,766	94,245	90,880

Table 2 shows employment data for Dubuque 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 Dubuque 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)

	Dubuque County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	2,941	4.73	1.46	201,967	10.57
Peripherally-related	5,921	9.53	3.09	191,669	10.04
Total farm and farm-related	8,862	14.27	2.25	393,636	20.61
Total employment	62,113	100.00	3.25	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 Dubuque 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 Dubuque 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 Dubuque County.

Table 3 shows that, in 2002, the total output value of Dubuque County's agricultural production industry was \$163.065 million. \$40.863 million of this output (25.06 percent of the total output value) was the value added to the output by Dubuque 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). 42.98 percent of this value added, or \$17.564 million, was paid out as compensation to the 2,222 production agriculture jobs in Dubuque 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

Dubuque County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	8.603	102	2.828	4.625	0.16
Grain	34.591	620	8.246	15.665	0.53
Other Crops	20.148	96	3.822	10.258	0.35
Cattle	53.065	449	0.199	3.790	0.13
Poultry	0.000	0	0.000	0.000	0.00
Hogs and Pigs	8.810	247	0.500	1.368	0.05
Other Ag Production	37.848	708	1.969	5.157	0.18
Sum of Ag Production	163.065	2,222	17.564	40.863	1.39
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	52.262	126	6.133	7.744	0.26
Meat	11.477	32	1.091	1.307	0.04
Sum of Primary Food Proc.	63.739	158	7.224	9.051	0.31
Other Food/Ag Processing					
Animal and Pet Foods	44.176	86	3.945	5.595	0.19
Other Food Processing	51.124	389	13.801	25.936	0.88
Sum of Other Ag Proc.	95.300	475	17.746	31.531	1.07
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	14.029	45	3.814	6.167	0.21
Sum of Ag Input Mfg.	14.029	45	3.814	6.167	0.21
Sum of All Agri-food Ind.	336.133	2,900	46.348	87.612	2.98
NonAg Industries	5,583.759	61,337	1,936.339	2,851.189	97.02
Totals	5,919.892	64,237	1,982.687	2,938.801	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 Dubuque County's agri-food industry output was \$336.133 million, or 5.68 percent of Dubuque County's total industrial production. Of this, \$87.612 million (26.06 percent) was value added within these industries in Dubuque County. \$46.348 million of this value added was paid out as wages and salaries to the 2,900 agri-food industry jobs in the county.

Overall, Table 3 shows that Dubuque County's agri-food industries directly accounted for 5.68 percent of the county's total output, 2.98 percent of total value added, 2.34 percent of labor income, and 4.51 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

Dubuque County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	12.836	4.732	7.180	0.24	0.27
Grain	36.990	11.400	18.311	0.62	0.70
Other Crops	10.937	3.235	5.829	0.20	0.22
Cattle	31.947	3.986	7.920	0.27	0.30
Poultry	0.000	0.000	0.000	0.00	0.00
Hogs and Pigs	12.267	1.960	3.651	0.12	0.14
Other Ag Production	45.634	6.081	11.382	0.39	0.43
Sum of Ag Production	150.612	31.393	54.273	1.85	2.07
Primary Food Processing					
Crop	0.000	0.000	0.000	0.00	0.00
Dairy	91.461	13.125	22.370	0.76	0.85
Meat	5.719	0.741	1.297	0.04	0.05
Sum of Primary Food Proc.	97.180	13.865	23.666	0.81	0.90
Other Food/Ag Processing					
Animal and Pet Foods	65.402	10.864	17.636	0.60	0.67
Other Food Processing	61.597	19.251	32.930	1.12	1.26
Sum of Other Ag Proc.	126.999	30.115	50.566	1.72	1.93
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	19.621	5.882	9.524	0.32	0.36
Sum of Ag Input Mfg.	19.621	5.882	9.524	0.32	0.36
Sum of All Agri-food Ind.	394.411	81.255	138.029	4.70	5.26
NonAg Industries	5,014.575	1,616.008	2,485.197	84.57	94.74
Household Consumption	510.906	868.653	315.574	10.74	12.03
Totals	5,919.892	2,565.917	2,938.801	100.00	112.03

* 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 Dubuque County's agricultural production industry was \$150.612 million. \$54.273 million of this output (36.03 percent of the total output value) was the value added to the output by economic activity within Dubuque County (value added). The remainder came from inputs purchased from out-of-county sources. 57.84 percent of this value added, or \$31.393 million, was paid out as personal income to residents of Dubuque 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 Dubuque County's agri-food industry output was \$394.411 million, or 6.66 percent of Dubuque County's total industrial production. Of this, \$138.029 million (35.00 percent) was value added within these industries in Dubuque County. \$81.255 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Dubuque County's agri-food industries accounted for 6.66 percent of the county's total output, 4.70 percent of total value added, and 3.17 percent of the county's personal income.

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

	Dubuque County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	151,969	171,364	12,273,634	12,162,165
Value of Crops Sold*	34,562	31,134	6,071,272	6,381,676
Total Cropland Harvested (acres)	201,526	213,944	23,994,343	24,008,826
Corn for grain	102,842	116,588	11,761,392	11,930,542
Corn for silage and green-chop	8,261	9,648	247,269	244,913
Soybeans	36,016	19,833	10,418,621	10,258,681
Oats	6,593	10,675	143,513	214,485
Harvested forage crops	52,217	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	17,335,039	15,537,305	1,851,276,224	1,581,093,092
Soybeans	1,855,899	976,640	487,380,897	459,309,682
Oats	499,561	684,588	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 Dubuque County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Dubuque 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

	Dubuque County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	151,969	171,364	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	117,407	140,229	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	173,844	255,107	15,486,531	14,513,319
Inventory of breeding stock	13,735	27,146	1,145,323	1,354,166
Number sold	344,235	420,302	41,232,492	27,340,921
Value of sales*	23,861	44,778	3,078,455	3,012,764
Cattle and Calves				
Total inventory	103,537	112,834	3,535,945	3,717,394
Beef cows	14,492	16,797	987,670	1,051,178
Milk cows	20,844	27,852	206,965	222,090
Number sold	69,726	67,401	2,929,704	2,936,978
Value of sales*	51,244	42,498	2,119,935	1,886,416
Value of Dairy Products Sold*	41,672	52,446	442,431	407,897
Poultry and Poultry Products				
Value of sales*	45	171	511,949	414,587
Inventory of layers 20 weeks and older	668	1,322	38,650,210	21,514,768
Broiler and meat-type chicken inventory	667	563	1,730,091	1,023,349
Broiler and meat-type chickens sold	385	687	9,558,127	6,919,963
Turkey inventory	68	25	3,681,862	2,552,845
Turkeys sold	(D)	25	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	189	(NA)	23,366	(NA)
Inventory of sheep and lambs	898	1,261	249,908	272,913
Number of sheep and lambs sold	813	996	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 Dubuque 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	43,867	1,188,632	1,232,499	(NA)	(NA)	(NA)
1991	34,716	1,244,386	1,279,102	-9,151	55,754	46,603
1992	52,959	1,352,405	1,405,364	18,243	108,019	126,262
1993	36,040	1,417,127	1,453,167	-16,919	64,722	47,803
1994	46,117	1,534,421	1,580,538	10,077	117,294	127,371
1995	29,471	1,620,477	1,649,948	-16,646	86,056	69,410
1996	56,272	1,595,120	1,651,392	26,801	-25,357	1,444
1997	48,649	1,666,689	1,715,338	-7,623	71,569	63,946
1998	44,884	1,739,269	1,784,153	-3,765	72,580	68,815
1999	29,151	1,790,639	1,819,790	-15,733	51,370	35,637
2000	34,008	1,851,515	1,885,523	4,857	60,876	65,733
2001	28,131	1,877,182	1,905,313	-5,877	25,667	19,790
2002	20,895	1,949,100	1,969,995	-7,236	71,918	64,682
2003	15,320	2,065,959	2,081,279	-5,575	116,859	111,284

Data from the US Bureau of Economic Analysis