

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

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This summary report provides county-level statistics for Des Moines 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 Des Moines County had 674 farms in 2002. These farms averaged 269 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 Des Moines County was \$670,156 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Des Moines County farms marketed an average of \$70,473 worth of farm products according to the US Census of Agriculture.

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

	Des Moines County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	674	697	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	181,197	199,778	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	269	287	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	581,231	440,144	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	88,925	67,870	100,422	79,607	66,570	53,861
Farm products sold (\$)	70,473	102,550	135,388	125,766	94,245	90,880

Table 2 shows employment data for Des Moines 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 Des Moines 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)

	Des Moines County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	1,424	4.98	0.70	201,967	10.57
Peripherally-related	2,813	9.84	1.47	191,669	10.04
Total farm and farm-related	4,236	14.82	1.08	393,636	20.61
Total employment	28,575	100.00	1.50	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 Des Moines 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 Des Moines 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 Des Moines County.

Table 3 shows that, in 2002, the total output value of Des Moines County's agricultural production industry was \$48.594 million. \$21.853 million of this output (44.97 percent of the total output value) was the value added to the output by Des Moines 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). 66.42 percent of this value added, or \$14.515 million, was paid out as compensation to the 960 production agriculture jobs in Des Moines 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

Des Moines County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	13.312	173	4.397	7.157	0.52
Grain	21.434	418	5.252	9.707	0.70
Other Crops	1.723	10	0.409	0.940	0.07
Cattle	2.792	26	0.053	0.194	0.01
Poultry	0.000	0	0.000	0.000	0.00
Hogs and Pigs	4.158	128	0.378	0.646	0.05
Other Ag Production	5.175	205	4.026	3.209	0.23
Sum of Ag Production	48.594	960	14.515	21.853	1.58
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	159.775	637	25.383	66.192	4.79
Sum of Other Ag Proc.	159.775	637	25.383	66.192	4.79
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.	208.369	1,597	39.898	88.045	6.38
NonAg Industries	2,581.768	26,248	883.184	1,292.652	93.62
Totals	2,790.137	27,845	923.082	1,380.697	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 Des Moines County's agri-food industry output was \$208.369 million, or 7.47 percent of Des Moines County's total industrial production. Of this, \$88.045 million (42.25 percent) was value added within these industries in Des Moines County. \$39.898 million of this value added was paid out as wages and salaries to the 1,597 agri-food industry jobs in the county.

Overall, Table 3 shows that Des Moines County's agri-food industries directly accounted for 7.47 percent of the county's total output, 6.38 percent of total value added, 4.32 percent of labor income, and 5.73 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

Des Moines County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	18.986	7.042	10.681	0.77	0.86
Grain	28.195	9.014	14.181	1.03	1.14
Other Crops	1.680	0.542	0.952	0.07	0.08
Cattle	3.769	0.454	0.826	0.06	0.07
Poultry	0.000	0.000	0.000	0.00	0.00
Hogs and Pigs	5.217	0.837	1.439	0.10	0.12
Other Ag Production	4.458	2.370	2.677	0.19	0.22
Sum of Ag Production	62.305	20.258	30.755	2.23	2.47
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	190.164	43.991	86.982	6.30	6.99
Sum of Other Ag Proc.	190.164	43.991	86.982	6.30	6.99
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.	252.470	64.249	117.736	8.53	9.47
NonAg Industries	2,318.633	725.846	1,126.012	81.55	90.53
Household Consumption	219.034	437.267	136.949	9.92	11.01
Totals	2,790.137	1,227.362	1,380.697	100.00	111.01

* 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 Des Moines County's agricultural production industry was \$62.305 million. \$30.755 million of this output (49.36 percent of the total output value) was the value added to the output by economic activity within Des Moines County (value added). The remainder came from inputs purchased from out-of-county sources. 65.87 percent of this value added, or \$20.258 million, was paid out as personal income to residents of Des Moines 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 Des Moines County's agri-food industry output was \$252.470 million, or 9.05 percent of Des Moines County's total industrial production. Of this, \$117.736 million (46.63 percent) was value added within these industries in Des Moines County. \$64.249 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Des Moines County's agri-food industries accounted for 9.05 percent of the county's total output, 8.53 percent of total value added, and 5.23 percent of the county's personal income.

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

	Des Moines County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	47,499	71,477	12,273,634	12,162,165
Value of Crops Sold*	37,259	44,641	6,071,272	6,381,676
Total Cropland Harvested (acres)	136,795	144,197	23,994,343	24,008,826
Corn for grain	69,285	70,002	11,761,392	11,930,542
Corn for silage and green-chop	518	884	247,269	244,913
Soybeans	62,127	66,761	10,418,621	10,258,681
Oats	282	419	143,513	214,485
Harvested forage crops	4,787	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	10,938,520	9,606,586	1,851,276,224	1,581,093,092
Soybeans	2,871,729	3,241,994	487,380,897	459,309,682
Oats	22,029	32,037	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 Des Moines County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Des Moines 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

	Des Moines County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	47,499	71,477	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	10,240	26,836	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	26,201	123,346	15,486,531	14,513,319
Inventory of breeding stock	3,682	6,310	1,145,323	1,354,166
Number sold	86,172	210,665	41,232,492	27,340,921
Value of sales*	5,233	18,888	3,078,455	3,012,764
Cattle and Calves				
Total inventory	10,202	16,377	3,535,945	3,717,394
Beef cows	4,141	5,795	987,670	1,051,178
Milk cows	494	520	206,965	222,090
Number sold	4,532	12,141	2,929,704	2,936,978
Value of sales*	2,696	6,690	2,119,935	1,886,416
Value of Dairy Products Sold*	(D)	1,080	442,431	407,897
Poultry and Poultry Products				
Value of sales*	3	4	511,949	414,587
Inventory of layers 20 weeks and older	240	379	38,650,210	21,514,768
Broiler and meat-type chicken inventory	80	245	1,730,091	1,023,349
Broiler and meat-type chickens sold	41	200	9,558,127	6,919,963
Turkey inventory	30	(D)	3,681,862	2,552,845
Turkeys sold	-	-	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	23	(NA)	23,366	(NA)
Inventory of sheep and lambs	453	715	249,908	272,913
Number of sheep and lambs sold	310	693	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 Des Moines 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	14,928	633,275	648,203	(NA)	(NA)	(NA)
1991	8,189	652,166	660,355	-6,739	18,891	12,152
1992	13,602	678,196	691,798	5,413	26,030	31,443
1993	9,980	694,479	704,459	-3,622	16,283	12,661
1994	16,337	738,547	754,884	6,357	44,068	50,425
1995	8,579	755,479	764,058	-7,758	16,932	9,174
1996	18,256	777,740	795,996	9,677	22,261	31,938
1997	21,461	808,482	829,943	3,205	30,742	33,947
1998	10,628	867,961	878,589	-10,833	59,479	48,646
1999	5,693	896,413	902,106	-4,935	28,452	23,517
2000	5,565	934,527	940,092	-128	38,114	37,986
2001	3,853	949,743	953,596	-1,712	15,216	13,504
2002	5,666	934,108	939,774	1,813	-15,635	-13,822
2003	3,328	948,526	951,854	-2,338	14,418	12,080

Data from the US Bureau of Economic Analysis