

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

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This summary report provides county-level statistics for Marshall 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 Marshall County had 848 farms in 2002. These farms averaged 395 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 Marshall County was \$1,008,174 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Marshall County farms marketed an average of \$155,772 worth of farm products according to the US Census of Agriculture.

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

	Marshall County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	848	979	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	335,043	332,537	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	395	340	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	870,878	645,876	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	137,296	79,627	100,422	79,607	66,570	53,861
Farm products sold (\$)	155,772	122,572	135,388	125,766	94,245	90,880

Table 2 shows employment data for Marshall 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 Marshall 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)

	Marshall County			Iowa	
	Jobs	County total	As a percent of State Category	Jobs	% of state total
Farm and closely-related	3,342	14.04	1.65	201,967	10.57
Peripherally-related	2,006	8.43	1.05	191,669	10.04
Total farm and farm-related	5,348	22.47	1.36	393,636	20.61
Total employment	23,804	100.00	1.25	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 Marshall 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 Marshall 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 Marshall County.

Table 3 shows that, in 2002, the total output value of Marshall County's agricultural production industry was \$122.749 million. \$48.799 million of this output (39.76 percent of the total output value) was the value added to the output by Marshall 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). 62.36 percent of this value added, or \$30.431 million, was paid out as compensation to the 1,472 production agriculture jobs in Marshall 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

Marshall County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	31.858	239	10.541	17.128	1.56
Grain	47.132	532	11.655	21.345	1.94
Other Crops	3.867	15	1.121	2.360	0.21
Cattle	13.500	72	0.329	0.931	0.08
Poultry	0.985	1	0.146	0.321	0.03
Hogs and Pigs	17.832	316	1.826	2.769	0.25
Other Ag Production	7.575	297	4.813	3.945	0.36
Sum of Ag Production	122.749	1,472	30.431	48.799	4.44
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.000	0	0.000	0.000	0.00
Meat	651.795	1,820	61.655	74.002	6.73
Sum of Primary Food Proc.	651.795	1,820	61.655	74.002	6.73
Other Food/Ag Processing					
Animal and Pet Foods	4.362	8	0.466	0.662	0.06
Other Food Processing	0.741	8	0.217	0.381	0.03
Sum of Other Ag Proc.	5.103	16	0.683	1.043	0.09
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	6.934	6	4.803	5.098	0.46
Sum of Ag Input Mfg.	6.934	6	4.803	5.098	0.46
Sum of All Agri-food Ind.	786.581	3,314	97.572	128.942	11.72
NonAg Industries	1,767.351	19,198	626.802	971.244	88.28
Totals	2,553.932	22,512	724.374	1,100.186	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 Marshall County's agri-food industry output was \$786.581 million, or 30.80 percent of Marshall County's total industrial production. Of this, \$128.942 million (16.39 percent) was value added within these industries in Marshall County. \$97.572 million of this value added was paid out as wages and salaries to the 3,314 agri-food industry jobs in the county.

Overall, Table 3 shows that Marshall County's agri-food industries directly accounted for 30.80 percent of the county's total output, 11.72 percent of total value added, 13.47 percent of labor income, and 14.72 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

Marshall County	Output*	Income*	Value Added*	Value Added As a Percent of Nonhousehold	
				Total V.A.	Demand
Agricultural Production					
Oilseeds	45.135	17.518	25.620	2.33	2.67
Grain	63.104	21.318	32.019	2.91	3.33
Other Crops	3.158	1.207	1.945	0.18	0.20
Cattle	0.085	0.012	0.020	0.00	0.00
Poultry	0.988	0.240	0.389	0.04	0.04
Hogs and Pigs	1.489	0.273	0.423	0.04	0.04
Other Ag Production	0.946	0.497	0.548	0.05	0.06
Sum of Ag Production	114.906	41.065	60.963	5.54	6.34
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	776.314	97.799	140.698	12.79	14.64
Sum of Primary Food Proc.	776.314	97.799	140.698	12.79	14.64
Other Food/Ag Processing					
Animal and Pet Foods	6.101	1.071	1.603	0.15	0.17
Other Food Processing	0.155	0.053	0.084	0.01	0.01
Sum of Other Ag Proc.	6.256	1.124	1.686	0.15	0.18
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	9.473	5.570	6.640	0.60	0.69
Sum of Ag Input Mfg.	9.473	5.570	6.640	0.60	0.69
Sum of All Agri-food Ind.	906.950	145.558	209.988	19.09	21.85
NonAg Industries	1,426.391	519.666	751.011	68.26	78.15
Household Consumption	220.592	471.320	139.187	12.65	14.48
Totals	2,553.932	1,136.545	1,100.186	100.00	114.48

* 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 Marshall County's agricultural production industry was \$114.906 million. \$60.963 million of this output (53.05 percent of the total output value) was the value added to the output by economic activity within Marshall County (value added). The remainder came from inputs purchased from out-of-county sources. 67.36 percent of this value added, or \$41.065 million, was paid out as personal income to residents of Marshall 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 Marshall County's agri-food industry output was \$906.950 million, or 35.51 percent of Marshall County's total industrial production. Of this, \$209.988 million (23.15 percent) was value added within these industries in Marshall County. \$145.558 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Marshall County's agri-food industries accounted for 35.51 percent of the county's total output, 19.09 percent of total value added, and 12.81 percent of the county's personal income.

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

	Marshall County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	132,095	119,998	12,273,634	12,162,165
Value of Crops Sold*	85,597	81,561	6,071,272	6,381,676
Total Cropland Harvested (acres)	279,661	268,016	23,994,343	24,008,826
Corn for grain	138,383	134,248	11,761,392	11,930,542
Corn for silage and green-chop	1,603	1,412	247,269	244,913
Soybeans	132,204	123,808	10,418,621	10,258,681
Oats	737	1,044	143,513	214,485
Harvested forage crops	7,605	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	24,268,989	17,849,996	1,851,276,224	1,581,093,092
Soybeans	6,872,601	6,124,419	487,380,897	459,309,682
Oats	66,932	75,992	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 Marshall County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Marshall 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

	Marshall County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	132,095	119,998	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	46,498	38,437	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	132,689	117,693	15,486,531	14,513,319
Inventory of breeding stock	9,592	14,102	1,145,323	1,354,166
Number sold	412,195	221,852	41,232,492	27,340,921
Value of sales*	29,597	23,374	3,078,455	3,012,764
Cattle and Calves				
Total inventory	19,576	26,362	3,535,945	3,717,394
Beef cows	(D)	8,499	987,670	1,051,178
Milk cows	(D)	855	206,965	222,090
Number sold	16,334	19,004	2,929,704	2,936,978
Value of sales*	(D)	12,802	2,119,935	1,886,416
Value of Dairy Products Sold*	(D)	1,807	442,431	407,897
Poultry and Poultry Products				
Value of sales*	15	56	511,949	414,587
Inventory of layers 20 weeks and older	251	(D)	38,650,210	21,514,768
Broiler and meat-type chicken inventory	(D)	400	1,730,091	1,023,349
Broiler and meat-type chickens sold	500	1,645	9,558,127	6,919,963
Turkey inventory	-	-	3,681,862	2,552,845
Turkeys sold	(D)	96	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	198	(NA)	23,366	(NA)
Inventory of sheep and lambs	3,135	3,269	249,908	272,913
Number of sheep and lambs sold	2,504	2,284	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 Marshall 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	25,303	495,435	520,738	(NA)	(NA)	(NA)
1991	23,306	522,578	545,884	-1,997	27,143	25,146
1992	30,698	533,362	564,060	7,392	10,784	18,176
1993	11,750	546,836	558,586	-18,948	13,474	-5,474
1994	27,559	592,285	619,844	15,809	45,449	61,258
1995	26,341	605,675	632,016	-1,218	13,390	12,172
1996	33,749	596,404	630,153	7,408	-9,271	-1,863
1997	33,803	630,089	663,892	54	33,685	33,739
1998	23,756	655,203	678,959	-10,047	25,114	15,067
1999	14,985	682,033	697,018	-8,771	26,830	18,059
2000	9,098	694,035	703,133	-5,887	12,002	6,115
2001	10,183	733,972	744,155	1,085	39,937	41,022
2002	16,972	737,370	754,342	6,789	3,398	10,187
2003	11,599	772,979	784,578	-5,373	35,609	30,236

Data from the US Bureau of Economic Analysis