

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

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This summary report provides county-level statistics for Greene 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 Greene County had 727 farms in 2002. These farms averaged 477 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 Greene County was \$1,185,942 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Greene County farms marketed an average of \$165,154 worth of farm products according to the US Census of Agriculture.

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

	Greene County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	727	802	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	347,078	354,797	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	477	442	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	1,053,534	858,508	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	132,408	93,626	100,422	79,607	66,570	53,861
Farm products sold (\$)	165,154	156,219	135,388	125,766	94,245	90,880

Table 2 shows employment data for Greene 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 Greene 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)

	Greene County			Iowa	
	Jobs	County total	As a percent of State Category	Jobs	% of state total
Farm and closely-related	936	16.89	0.46	201,967	10.57
Peripherally-related	365	6.58	0.19	191,669	10.04
Total farm and farm-related	1,301	23.47	0.33	393,636	20.61
Total employment	5,543	100.00	0.29	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 Greene 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 Greene 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 Greene County.

Table 3 shows that, in 2002, the total output value of Greene County's agricultural production industry was \$124.254 million. \$47.794 million of this output (38.47 percent of the total output value) was the value added to the output by Greene 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). 58.97 percent of this value added, or \$28.185 million, was paid out as compensation to the 1,207 production agriculture jobs in Greene 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

Greene County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	31.493	205	10.386	16.932	7.93
Grain	48.061	472	11.668	21.765	10.19
Other Crops	3.018	10	0.790	1.827	0.86
Cattle	19.574	91	0.273	1.375	0.64
Poultry	1.912	3	0.259	0.624	0.29
Hogs and Pigs	13.463	207	1.068	2.091	0.98
Other Ag Production	6.733	219	3.741	3.180	1.49
Sum of Ag Production	124.254	1,207	28.185	47.794	22.38
Primary Food Processing					
Crop	10.780	9	0.400	0.541	0.25
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.	10.780	9	0.400	0.541	0.25
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0	0.000	0.000	0.00
Other Food Processing	0.000	0	0.000	0.000	0.00
Sum of Other Ag Proc.	0.000	0	0.000	0.000	0.00
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	1.744	4	0.892	1.003	0.47
Sum of Ag Input Mfg.	1.744	4	0.892	1.003	0.47
Sum of All Agri-food Ind.	136.778	1,220	29.477	49.338	23.10
NonAg Industries	300.818	3,517	110.940	164.241	76.90
Totals	437.596	4,737	140.417	213.579	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 Greene County's agri-food industry output was \$136.778 million, or 31.26 percent of Greene County's total industrial production. Of this, \$49.338 million (36.07 percent) was value added within these industries in Greene County. \$29.477 million of this value added was paid out as wages and salaries to the 1,220 agri-food industry jobs in the county.

Overall, Table 3 shows that Greene County's agri-food industries directly accounted for 31.26 percent of the county's total output, 23.10 percent of total value added, 20.99 percent of labor income, and 25.75 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

Greene County	Value Added				
	As a Percent of				
				Total V.A.	Nonhousehold Demand
Agricultural Production	Output*	Income*	Value Added*		
Oilseeds	35.493	15.187	20.119	9.42	10.76
Grain	60.116	22.220	30.160	14.12	16.13
Other Crops	1.031	0.442	0.635	0.30	0.34
Cattle	25.517	3.334	5.271	2.47	2.82
Poultry	2.240	0.605	0.866	0.41	0.46
Hogs and Pigs	17.605	3.242	4.753	2.23	2.54
Other Ag Production	3.146	0.585	0.854	0.40	0.46
Sum of Ag Production	145.147	45.615	62.657	29.34	33.52
Primary Food Processing					
Crop	18.448	3.768	5.163	2.42	2.76
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.	18.448	3.768	5.163	2.42	2.76
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0.000	0.000	0.00	0.00
Other Food Processing	0.000	0.000	0.000	0.00	0.00
Sum of Other Ag Proc.	0.000	0.000	0.000	0.00	0.00
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	1.875	0.948	1.108	0.52	0.59
Sum of Ag Input Mfg.	1.875	0.948	1.108	0.52	0.59
Sum of All Agri-food Ind.	165.470	50.331	68.928	32.27	36.87
NonAg Industries	231.815	91.858	118.014	55.26	63.13
Household Consumption	40.311	123.863	26.638	12.47	14.25
Totals	437.596	266.052	213.579	100.00	114.25

* 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 Greene County's agricultural production industry was \$145.147 million. \$62.657 million of this output (43.17 percent of the total output value) was the value added to the output by economic activity within Greene County (value added). The remainder came from inputs purchased from out-of-county sources. 72.80 percent of this value added, or \$45.615 million, was paid out as personal income to residents of Greene 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 Greene County's agri-food industry output was \$165.470 million, or 37.81 percent of Greene County's total industrial production. Of this, \$68.928 million (41.66 percent) was value added within these industries in Greene County. \$50.331 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Greene County's agri-food industries accounted for 37.81 percent of the county's total output, 32.27 percent of total value added, and 18.92 percent of the county's personal income.

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

	Greene County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	120,067	125,287	12,273,634	12,162,165
Value of Crops Sold*	78,470	89,999	6,071,272	6,381,676
Total Cropland Harvested (acres)	304,668	307,113	23,994,343	24,008,826
Corn for grain	152,611	152,933	11,761,392	11,930,542
Corn for silage and green-chop	443	1,096	247,269	244,913
Soybeans	144,763	151,040	10,418,621	10,258,681
Oats	632	655	143,513	214,485
Harvested forage crops	6,237	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	24,494,004	20,748,276	1,851,276,224	1,581,093,092
Soybeans	6,793,877	6,760,635	487,380,897	459,309,682
Oats	54,925	48,966	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 Greene County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Greene 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

	Greene County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	120,067	125,287	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	41,597	35,288	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	107,494	155,373	15,486,531	14,513,319
Inventory of breeding stock	1,229	5,136	1,145,323	1,354,166
Number sold	265,257	219,992	41,232,492	27,340,921
Value of sales*	22,543	22,276	3,078,455	3,012,764
Cattle and Calves				
Total inventory	18,742	21,450	3,535,945	3,717,394
Beef cows	(D)	5,874	987,670	1,051,178
Milk cows	(D)	8	206,965	222,090
Number sold	24,715	19,586	2,929,704	2,936,978
Value of sales*	18,902	12,820	2,119,935	1,886,416
Value of Dairy Products Sold*	(D)	(D)	442,431	407,897
Poultry and Poultry Products				
Value of sales*	(D)	(D)	511,949	414,587
Inventory of layers 20 weeks and older	(D)	918	38,650,210	21,514,768
Broiler and meat-type chicken inventory	(D)	2,859	1,730,091	1,023,349
Broiler and meat-type chickens sold	(D)	1,944	9,558,127	6,919,963
Turkey inventory	-	23	3,681,862	2,552,845
Turkeys sold	-	-	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	67	(NA)	23,366	(NA)
Inventory of sheep and lambs	1,194	963	249,908	272,913
Number of sheep and lambs sold	856	1,009	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 Greene 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	18,578	65,716	84,294	(NA)	(NA)	(NA)
1991	19,119	69,648	88,767	541	3,932	4,473
1992	33,493	76,541	110,034	14,374	6,893	21,267
1993	7,799	79,865	87,664	-25,694	3,324	-22,370
1994	32,690	82,187	114,877	24,891	2,322	27,213
1995	29,869	85,209	115,078	-2,821	3,022	201
1996	44,798	89,222	134,020	14,929	4,013	18,942
1997	36,392	91,768	128,160	-8,406	2,546	-5,860
1998	19,889	100,513	120,402	-16,503	8,745	-7,758
1999	9,587	103,532	113,119	-10,302	3,019	-7,283
2000	9,343	110,098	119,441	-244	6,566	6,322
2001	4,396	103,693	108,089	-4,947	-6,405	-11,352
2002	9,464	110,709	120,173	5,068	7,016	12,084
2003	7,415	119,882	127,297	-2,049	9,173	7,124

Data from the US Bureau of Economic Analysis