

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

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This summary report provides county-level statistics for Grundy County, Iowa as a supplement to *The Economic Importance of Agri-food Industries in Iowa*<sup>1</sup> (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 Grundy County had 724 farms in 2002. These farms averaged 448 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 Grundy County was \$1,312,697 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Grundy County farms marketed an average of \$193,844 worth of farm products according to the US Census of Agriculture.

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

	Grundy County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	724	791	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	324,139	330,840	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	448	418	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	1,161,631	968,077	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	151,066	122,229	100,422	79,607	66,570	53,861
Farm products sold (\$)	193,844	192,258	135,388	125,766	94,245	90,880

Table 2 shows employment data for Grundy 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 states<sup>2</sup>. 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 Grundy County. Detail is restricted in this summary, due to the smaller employment base and privacy issues at the county level.

<sup>1</sup> Mark Imerman, David Swenson, Liesl Eathington, Daniel Otto. Iowa State University Department of Economics. 2005.

<sup>2</sup> 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)

	Grundy County			Iowa	
	Jobs	As a percent of County total	As a percent of State Category	Jobs	% of state total
Farm and closely-related	1,120	18.42	0.55	201,967	10.57
Peripherally-related	439	7.22	0.23	191,669	10.04
Total farm and farm-related	1,559	25.65	0.40	393,636	20.61
Total employment	6,079	100.00	0.32	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 Grundy 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)<sup>3</sup>.

Table 3 provides value estimates for an industry-only aggregation of the economic activity that takes place within Grundy 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 jobs<sup>4</sup> and labor income (compensation for employees and proprietors) within the agri-food industries in Grundy County.

Table 3 shows that, in 2002, the total output value of Grundy County's agricultural production industry was \$130.005 million. \$48.811 million of this output (37.55 percent of the total output value) was the value added to the output by Grundy 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). 59.80 percent of this value added, or \$29.191 million, was paid out as compensation to the 1,107 production agriculture jobs in Grundy County.

<sup>3</sup> 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.

<sup>4</sup> 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

<b>Grundy County</b>			<b>Labor</b>	<b>Value-Added</b>	
<b>Agricultural Production</b>	<b>Output*</b>	<b>Jobs</b>	<b>Income*</b>	<b>Value*</b>	<b>Pct. Of Tot.</b>
Oilseeds	35.037	206	11.614	18.837	6.48
Grain	51.763	459	12.929	23.442	8.06
Other Crops	1.429	4	0.384	0.796	0.27
Cattle	16.586	70	0.501	1.134	0.39
Poultry	0.596	1	0.093	0.195	0.07
Hogs and Pigs	22.121	307	2.546	3.435	1.18
Other Ag Production	2.473	60	1.124	0.972	0.33
<b>Sum of Ag Production</b>	<b>130.005</b>	<b>1,107</b>	<b>29.191</b>	<b>48.811</b>	<b>16.78</b>
<b>Primary Food Processing</b>					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.000	0	0.000	0.000	0.00
Meat	1.159	3	0.065	0.077	0.03
<b>Sum of Primary Food Proc.</b>	<b>1.159</b>	<b>3</b>	<b>0.065</b>	<b>0.077</b>	<b>0.03</b>
<b>Other Food/Ag Processing</b>					
Animal and Pet Foods	3.912	8	0.354	0.503	0.17
Other Food Processing	34.532	76	3.700	11.477	3.95
<b>Sum of Other Ag Proc.</b>	<b>38.444</b>	<b>84</b>	<b>4.054</b>	<b>11.980</b>	<b>4.12</b>
<b>Ag Input Manufacturing</b>					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	47.079	103	23.780	26.741	9.19
<b>Sum of Ag Input Mfg.</b>	<b>47.079</b>	<b>103</b>	<b>23.780</b>	<b>26.741</b>	<b>9.19</b>
<b>Sum of All Agri-food Ind.</b>	<b>216.687</b>	<b>1,297</b>	<b>57.090</b>	<b>87.609</b>	<b>30.12</b>
<b>NonAg Industries</b>	<b>395.364</b>	<b>4,092</b>	<b>123.592</b>	<b>203.303</b>	<b>69.88</b>
<b>Totals</b>	<b>612.051</b>	<b>5,389</b>	<b>180.682</b>	<b>290.912</b>	<b>100.00</b>

\* Numbers represent millions of dollars

If we add food and other ag processing and ag input manufacturing to agricultural production, the value of Grundy County's agri-food industry output was \$216.687 million, or 35.40 percent of Grundy County's total industrial production. Of this, \$87.609 million (40.43 percent) was value added within these industries in Grundy County. \$57.090 million of this value added was paid out as wages and salaries to the 1,297 agri-food industry jobs in the county.

Overall, Table 3 shows that Grundy County's agri-food industries directly accounted for 35.40 percent of the county's total output, 30.12 percent of total value added, 31.60 percent of labor income, and 24.06 percent of the county's jobs<sup>5</sup>.

<sup>5</sup> 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

Grundy County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	44.808	17.790	24.901	8.56	9.87
Grain	61.997	20.814	30.245	10.40	11.99
Other Crops	0.319	0.118	0.181	0.06	0.07
Cattle	19.966	2.167	3.616	1.24	1.43
Poultry	0.623	0.156	0.236	0.08	0.09
Hogs and Pigs	28.178	4.865	7.113	2.45	2.82
Other Ag Production	1.656	0.287	0.419	0.14	0.17
<b>Sum of Ag Production</b>	<b>157.547</b>	<b>46.197</b>	<b>66.711</b>	<b>22.93</b>	<b>26.45</b>
<b>Primary Food Processing</b>					
Crop	0.000	0.000	0.000	0.00	0.00
Dairy	0.000	0.000	0.000	0.00	0.00
Meat	0.568	0.059	0.090	0.03	0.04
<b>Sum of Primary Food Proc.</b>	<b>0.568</b>	<b>0.059</b>	<b>0.090</b>	<b>0.03</b>	<b>0.04</b>
<b>Other Food/Ag Processing</b>					
Animal and Pet Foods	5.132	0.827	1.214	0.42	0.48
Other Food Processing	40.482	9.020	15.331	5.27	6.08
<b>Sum of Other Ag Proc.</b>	<b>45.614</b>	<b>9.847</b>	<b>16.545</b>	<b>5.69</b>	<b>6.56</b>
<b>Ag Input Manufacturing</b>					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	59.974	28.988	34.848	11.98	13.81
<b>Sum of Ag Input Mfg.</b>	<b>59.974</b>	<b>28.988</b>	<b>34.848</b>	<b>11.98</b>	<b>13.81</b>
<b>Sum of All Agri-food Ind.</b>	<b>263.702</b>	<b>85.091</b>	<b>118.195</b>	<b>40.63</b>	<b>46.85</b>
<b>NonAg Industries</b>	<b>287.540</b>	<b>96.546</b>	<b>134.066</b>	<b>46.08</b>	<b>53.15</b>
<b>Household Consumption</b>	<b>60.809</b>	<b>184.690</b>	<b>38.652</b>	<b>13.29</b>	<b>15.32</b>
<b>Totals</b>	<b>612.051</b>	<b>366.328</b>	<b>290.912</b>	<b>100.00</b>	<b>115.32</b>

\* 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 produced<sup>6</sup>. 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 sales<sup>7</sup>.

<sup>6</sup> Goods not sold out of county were counted under the heading of "Household Consumption" and not in industry totals in Table 4.

<sup>7</sup> 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 Grundy County's agricultural production industry was \$157.547 million. \$66.711 million of this output (42.34 percent of the total output value) was the value added to the output by economic activity within Grundy County (value added). The remainder came from inputs purchased from out-of-county sources. 69.25 percent of this value added, or \$46.197 million, was paid out as personal income to residents of Grundy 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 Grundy County's agri-food industry output was \$263.702 million, or 43.08 percent of Grundy County's total industrial production. Of this, \$118.195 million (44.82 percent) was value added within these industries in Grundy County. \$85.091 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Grundy County's agri-food industries accounted for 43.08 percent of the county's total output, 40.63 percent of total value added, and 23.23 percent of the county's personal income.

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

	Grundy County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	140,343	152,076	12,273,634	12,162,165
Value of Crops Sold*	92,431	94,697	6,071,272	6,381,676
Total Cropland Harvested (acres)	295,797	297,094	23,994,343	24,008,826
Corn for grain	149,650	154,644	11,761,392	11,930,542
Corn for silage and green-chop	1,351	831	247,269	244,913
Soybeans	141,506	137,812	10,418,621	10,258,681
Oats	451	991	143,513	214,485
Harvested forage crops	3,403	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	26,488,718	21,195,769	1,851,276,224	1,581,093,092
Soybeans	7,558,290	6,781,670	487,380,897	459,309,682
Oats	39,652	75,815	10,761,952	14,451,930

\* Values are in \$1,000s

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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 Grundy County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Grundy 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

	Grundy County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	140,343	152,076	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	47,912	57,379	6,202,362	5,780,489
<b>Hogs and Pigs</b>				
Total inventory	158,378	155,441	15,486,531	14,513,319
Inventory of breeding stock	10,133	12,694	1,145,323	1,354,166
Number sold	374,104	277,678	41,232,492	27,340,921
Value of sales*	30,338	34,993	3,078,455	3,012,764
<b>Cattle and Calves</b>				
Total inventory	16,461	20,361	3,535,945	3,717,394
Beef cows	3,557	4,418	987,670	1,051,178
Milk cows	630	745	206,965	222,090
Number sold	21,386	24,753	2,929,704	2,936,978
Value of sales*	16,017	18,584	2,119,935	1,886,416
Value of Dairy Products Sold*	816	1,372	442,431	407,897
<b>Poultry and Poultry Products</b>				
Value of sales*	(D)	1,965	511,949	414,587
Inventory of layers 20 weeks and older	398	163,891	38,650,210	21,514,768
Broiler and meat-type chicken inventory	1,067	1,500	1,730,091	1,023,349
Broiler and meat-type chickens sold	1,275	2,715	9,558,127	6,919,963
Turkey inventory	(D)	(D)	3,681,862	2,552,845
Turkeys sold	(D)	(D)	9,145,415	7,279,822
<b>Sheep and Goats and Related Products</b>				
Value of sales	(D)	(NA)	23,366	(NA)
Inventory of sheep and lambs	2,190	2,738	249,908	272,913
Number of sheep and lambs sold	1,478	2,431	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 Grundy 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	23,743	73,389	97,132	(NA)	(NA)	(NA)
1991	23,488	79,263	102,751	-255	5,874	5,619
1992	33,757	86,941	120,698	10,269	7,678	17,947
1993	16,475	91,662	108,137	-17,282	4,721	-12,561
1994	33,999	96,119	130,118	17,524	4,457	21,981
1995	39,134	98,911	138,045	5,135	2,792	7,927
1996	41,607	101,998	143,605	2,473	3,087	5,560
1997	50,982	112,766	163,748	9,375	10,768	20,143
1998	36,452	115,893	152,345	-14,530	3,127	-11,403
1999	27,421	123,382	150,803	-9,031	7,489	-1,542
2000	22,358	131,861	154,219	-5,063	8,479	3,416
2001	22,257	136,110	158,367	-101	4,249	4,148
2002	29,290	135,762	165,052	7,033	-348	6,685
2003	23,134	144,966	168,100	-6,156	9,204	3,048

Data from the US Bureau of Economic Analysis