

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

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This summary report provides county-level statistics for Linn 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 Linn County had 1,445 farms in 2002. These farms averaged 241 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 Linn County was \$722,098 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Linn County farms marketed an average of \$72,910 worth of farm products according to the US Census of Agriculture.

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

	Linn County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	1,445	1,608	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	348,782	353,635	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	241	220	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	641,286	511,346	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	80,812	57,573	100,422	79,607	66,570	53,861
Farm products sold (\$)	72,910	71,754	135,388	125,766	94,245	90,880

Table 2 shows employment data for Linn 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 Linn 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)

	Linn County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	5,610	3.97	2.78	201,967	10.57
Peripherally-related	12,528	8.87	6.54	191,669	10.04
Total farm and farm-related	18,137	12.84	4.61	393,636	20.61
Total employment	141,230	100.00	7.39	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 Linn 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 Linn 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 Linn County.

Table 3 shows that, in 2002, the total output value of Linn County's agricultural production industry was \$105.253 million. \$41.489 million of this output (39.42 percent of the total output value) was the value added to the output by Linn 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). 55.16 percent of this value added, or \$22.887 million, was paid out as compensation to the 1,850 production agriculture jobs in Linn 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

Linn County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	24.333	338	8.030	13.083	0.15
Grain	43.201	904	10.524	19.564	0.23
Other Crops	8.522	59	2.319	5.273	0.06
Cattle	17.697	175	0.280	1.239	0.01
Poultry	0.185	1	0.025	0.060	0.00
Hogs and Pigs	7.609	250	0.635	1.181	0.01
Other Ag Production	3.706	123	1.074	1.089	0.01
Sum of Ag Production	105.253	1,850	22.887	41.489	0.48
Primary Food Processing					
Crop	2,352.583	2,800	211.097	403.684	4.70
Dairy	11.637	28	1.490	1.879	0.02
Meat	5.224	14	0.546	0.652	0.01
Sum of Primary Food Proc.	2,369.444	2,842	213.133	406.215	4.73
Other Food/Ag Processing					
Animal and Pet Foods	110.438	201	13.931	19.755	0.23
Other Food Processing	128.142	443	21.384	79.193	0.92
Sum of Other Ag Proc.	238.580	644	35.315	98.948	1.15
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	7.314	78	-6.009	-3.527	-0.04
Sum of Ag Input Mfg.	7.314	78	-6.009	-3.527	-0.04
Sum of All Agri-food Ind.	2,720.591	5,414	265.326	543.125	6.32
NonAg Industries	14,700.038	148,124	5,253.414	8,048.291	93.68
Totals	17,420.629	153,538	5,518.740	8,591.416	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 Linn County's agri-food industry output was \$2,720.591 million, or 15.62 percent of Linn County's total industrial production. Of this, \$543.125 million (19.96 percent) was value added within these industries in Linn County. \$265.326 million of this value added was paid out as wages and salaries to the 5,414 agri-food industry jobs in the county.

Overall, Table 3 shows that Linn County's agri-food industries directly accounted for 15.62 percent of the county's total output, 6.32 percent of total value added, 4.81 percent of labor income, and 3.53 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

Linn County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	21.299	7.310	12.033	0.14	0.15
Grain	25.655	7.368	12.924	0.15	0.16
Other Crops	8.924	2.838	5.503	0.06	0.07
Cattle	16.510	1.600	3.535	0.04	0.04
Poultry	0.149	0.031	0.059	0.00	0.00
Hogs and Pigs	7.972	1.105	2.161	0.03	0.03
Other Ag Production	4.216	1.171	1.654	0.02	0.02
Sum of Ag Production	84.724	21.423	37.868	0.44	0.48
Primary Food Processing					
Crop	3,498.746	598.071	1,104.964	12.86	13.93
Dairy	6.271	0.903	1.563	0.02	0.02
Meat	2.250	0.281	0.491	0.01	0.01
Sum of Primary Food Proc.	3,507.266	599.255	1,107.019	12.89	13.95
Other Food/Ag Processing					
Animal and Pet Foods	149.937	25.173	42.600	0.50	0.54
Other Food Processing	157.598	40.278	96.310	1.12	1.21
Sum of Other Ag Proc.	307.536	65.452	138.911	1.62	1.75
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	6.392	-5.489	-3.589	-0.04	-0.05
Sum of Ag Input Mfg.	6.392	-5.489	-3.589	-0.04	-0.05
Sum of All Agri-food Ind.	3,905.918	680.640	1,280.208	14.90	16.14
NonAg Industries	12,451.028	4,087.678	6,652.740	77.43	83.86
Household Consumption	1,063.683	1,780.896	658.469	7.66	8.30
Totals	17,420.629	6,549.214	8,591.416	100.00	108.30

* 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 Linn County's agricultural production industry was \$84.724 million. \$37.868 million of this output (44.70 percent of the total output value) was the value added to the output by economic activity within Linn County (value added). The remainder came from inputs purchased from out-of-county sources. 56.57 percent of this value added, or \$21.423 million, was paid out as personal income to residents of Linn 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 Linn County's agri-food industry output was \$3,905.918 million, or 22.42 percent of Linn County's total industrial production. Of this, \$1,280.208 million (32.78 percent) was value added within these industries in Linn County. \$680.640 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Linn County's agri-food industries accounted for 22.42 percent of the county's total output, 14.90 percent of total value added, and 10.39 percent of the county's personal income.

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

	Linn County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	105,355	115,381	12,273,634	12,162,165
Value of Crops Sold*	73,348	77,083	6,071,272	6,381,676
Total Cropland Harvested (acres)	262,452	265,174	23,994,343	24,008,826
Corn for grain	128,667	132,650	11,761,392	11,930,542
Corn for silage and green-chop	2,308	2,770	247,269	244,913
Soybeans	113,066	108,887	10,418,621	10,258,681
Oats	2,060	3,970	143,513	214,485
Harvested forage crops	17,162	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	22,105,061	18,387,607	1,851,276,224	1,581,093,092
Soybeans	5,249,284	5,101,830	487,380,897	459,309,682
Oats	147,120	277,939	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 Linn County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Linn 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

	Linn County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	105,355	115,381	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	32,007	38,299	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	65,673	78,424	15,486,531	14,513,319
Inventory of breeding stock	4,010	8,535	1,145,323	1,354,166
Number sold	144,113	132,215	41,232,492	27,340,921
Value of sales*	11,332	15,108	3,078,455	3,012,764
Cattle and Calves				
Total inventory	33,007	37,589	3,535,945	3,717,394
Beef cows	9,800	10,734	987,670	1,051,178
Milk cows	1,664	2,080	206,965	222,090
Number sold	23,841	27,577	2,929,704	2,936,978
Value of sales*	17,090	17,783	2,119,935	1,886,416
Value of Dairy Products Sold*	3,049	3,808	442,431	407,897
Poultry and Poultry Products				
Value of sales*	(D)	21	511,949	414,587
Inventory of layers 20 weeks and older	1,218	1,475	38,650,210	21,514,768
Broiler and meat-type chicken inventory	590	463	1,730,091	1,023,349
Broiler and meat-type chickens sold	2,462	1,858	9,558,127	6,919,963
Turkey inventory	68	120	3,681,862	2,552,845
Turkeys sold	186	85	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	168	(NA)	23,366	(NA)
Inventory of sheep and lambs	3,462	3,143	249,908	272,913
Number of sheep and lambs sold	1,935	2,533	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 Linn 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	20,164	2,870,810	2,890,974	(NA)	(NA)	(NA)
1991	10,162	2,978,281	2,988,443	-10,002	107,471	97,469
1992	21,471	3,146,910	3,168,381	11,309	168,629	179,938
1993	5,398	3,355,167	3,360,565	-16,073	208,257	192,184
1994	24,211	3,605,370	3,629,581	18,813	250,203	269,016
1995	8,741	3,826,524	3,835,265	-15,470	221,154	205,684
1996	32,260	3,976,397	4,008,657	23,519	149,873	173,392
1997	31,327	4,209,297	4,240,624	-933	232,900	231,967
1998	21,087	4,762,089	4,783,176	-10,240	552,792	542,552
1999	13,580	5,136,672	5,150,252	-7,507	374,583	367,076
2000	8,650	5,449,211	5,457,861	-4,930	312,539	307,609
2001	10,012	5,439,802	5,449,814	1,362	-9,409	-8,047
2002	13,475	5,379,724	5,393,199	3,463	-60,078	-56,615
2003	10,402	5,571,228	5,581,630	-3,073	191,504	188,431

Data from the US Bureau of Economic Analysis