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

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This summary report provides county-level statistics for Clay 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 Clay County had 691 farms in 2002. These farms averaged 451 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 Clay County was $1,130,980 in 2002, compared to $808,152 for Iowa and $604,403, nationwide. In 2002, Clay County farms marketed an average of $227,306 worth of farm products according to the US Census of Agriculture.

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

	Clay County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	691	705	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	311,695	294,529	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	451	418	350	334	441	431
Market value, per farm, of						
Land and buildings ($)	1,010,030	810,436	707,730	559,678	537,833	416,007
Machinery and equipment ($)	120,950	111,492	100,422	79,607	66,570	53,861
Farm products sold ($)	227,306	174,513	135,388	125,766	94,245	90,880

Table 2 shows employment data for Clay 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[2]. 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 Clay County. Detail is restricted in this summary, due to the smaller employment base and privacy issues at the county level.

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[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)

	Clay County			Iowa	
		As a percent of			
	Jobs	County total	State Category	Jobs	% of state total
Farm and closely-related	1,019	8.30	0.50	201,967	10.57
Peripherally-related	1,245	10.14	0.65	191,669	10.04
Total farm and farm-related	2,264	18.43	0.58	393,636	20.61
Total employment	12,284	100.00	0.64	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 Clay 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 Clay 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[4] and labor income (compensation for employees and proprietors) within the agri-food industries in Clay County.

Table 3 shows that, in 2002, the total output value of Clay County's agricultural production industry was $130.367 million. $49.575 million of this output (38.03 percent of the total output value) was the value added to the output by Clay 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). 58.30 percent of this value added, or $28.902 million, was paid out as compensation to the 1,162 production agriculture jobs in Clay 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

Clay County Agricultural Production	**Output***	**Jobs**	**Labor Income***	**Value-Added Value***	**Pct. Of Tot.**
Oilseeds	24.863	127	8.174	13.367	2.48
Grain	37.390	287	8.923	16.933	3.14
Other Crops	6.046	18	1.813	4.433	0.82
Cattle	12.160	43	0.053	0.868	0.16
Poultry	12.928	13	1.597	4.220	0.78
Hogs and Pigs	*28.477*	*343*	*1.653*	*4.423*	0.82
Other Ag Production	8.503	331	6.689	5.331	0.99
Sum of Ag Production	**130.367**	**1,162**	**28.902**	**49.575**	**9.21**
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.000	0	0.000	0.000	0.00
Meat	3.551	13	0.331	0.545	0.10
Sum of Primary Food Proc.	**3.551**	**13**	**0.331**	**0.545**	**0.10**
Other Food/Ag Processing					
Animal and Pet Foods	3.267	7	0.178	0.253	0.05
Other Food Processing	0.538	6	0.148	0.258	0.05
Sum of Other Ag Proc.	**3.805**	**13**	**0.326**	**0.511**	**0.09**
Ag Input Manufacturing					
Ag Chemical and Fertilizer	1.324	6	0.224	0.540	0.10
Farm Machinery	0.215	1	-0.009	0.012	0.00
Sum of Ag Input Mfg.	**1.539**	**7**	**0.215**	**0.552**	**0.10**
Sum of All Agri-food Ind.	**139.262**	**1,195**	**29.774**	**51.183**	**9.51**
NonAg Industries	**814.572**	**10,711**	**321.546**	**487.232**	**90.49**
Totals	**953.834**	**11,906**	**351.320**	**538.415**	**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 Clay County's agri-food industry output was $139.262 million, or 14.60 percent of Clay County's total industrial production. Of this, $51.183 million (36.75 percent) was value added within these industries in Clay County. $29.774 million of this value added was paid out as wages and salaries to the 1,195 agri-food industry jobs in the county.

Overall, Table 3 shows that Clay County's agri-food industries directly accounted for 14.60 percent of the county's total output, 9.51 percent of total value added, 8.47 percent of labor income, and 10.04 percent of the county's jobs[5].

[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

Clay County			**Value Added**		
Agricultural Production	**Output***	**Income***	**Value Added***	**As a Percent of Total V.A.**	**As a Percent of Nonhousehold Demand**
Oilseeds	37.859	14.921	21.712	4.03	4.56
Grain	52.094	18.000	26.954	5.01	5.66
Other Crops	5.207	2.206	3.665	0.68	0.77
Cattle	15.568	2.242	3.869	0.72	0.81
Poultry	17.230	4.169	6.941	1.29	1.46
Hogs and Pigs	*40.346*	*7.251*	*12.148*	2.26	2.55
Other Ag Production	5.268	2.827	3.176	0.59	0.67
Sum of Ag Production	**173.572**	**51.616**	**78.465**	**14.57**	**16.49**
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	2.814	0.441	0.707	0.13	0.15
Sum of Primary Food Proc.	**2.814**	**0.441**	**0.707**	**0.13**	**0.15**
Other Food/Ag Processing					
Animal and Pet Foods	4.846	0.758	1.151	0.21	0.24
Other Food Processing	0.116	0.039	0.061	0.01	0.01
Sum of Other Ag Proc.	**4.962**	**0.797**	**1.212**	**0.23**	**0.25**
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.562	0.158	0.264	0.05	0.06
Farm Machinery	0.166	0.014	0.033	0.01	0.01
Sum of Ag Input Mfg.	**0.728**	**0.172**	**0.297**	**0.06**	**0.06**
Sum of All Agri-food Ind.	**182.076**	**53.026**	**80.681**	**14.98**	**16.95**
NonAg Industries	**674.684**	**275.474**	**395.182**	**73.40**	**83.05**
Household Consumption	**97.075**	**186.572**	**62.552**	**11.62**	**13.14**
Totals	**953.834**	**515.072**	**538.415**	**100.00**	**113.14**

* 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[6]. 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[7].

[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 Clay County's agricultural production industry was $173.572 million. $78.465 million of this output (45.21 percent of the total output value) was the value added to the output by economic activity within Clay County (value added). The remainder came from inputs purchased from out-of-county sources. 65.78 percent of this value added, or $51.616 million, was paid out as personal income to residents of Clay 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 Clay County's agri-food industry output was $182.076 million, or 19.09 percent of Clay County's total industrial production. Of this, $80.681 million (44.31 percent) was value added within these industries in Clay County. $53.026 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Clay County's agri-food industries accounted for 19.09 percent of the county's total output, 14.98 percent of total value added, and 10.29 percent of the county's personal income.

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

	Clay County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	157,068	123,032	12,273,634	12,162,165
Value of Crops Sold*	63,760	69,211	6,071,272	6,381,676
Total Cropland Harvested (acres)	270,329	250,866	23,994,343	24,008,826
Corn for grain	133,323	121,080	11,761,392	11,930,542
Corn for silage and green-chop	2,908	2,145	247,269	244,913
Soybeans	127,467	122,997	10,418,621	10,258,681
Oats	456	646	143,513	214,485
Harvested forage crops	7,519	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	19,111,070	16,004,509	1,851,276,224	1,581,093,092
Soybeans	5,363,547	5,499,126	487,380,897	459,309,682
Oats	36,740	45,234	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 Clay County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Clay 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

	Clay County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	157,068	123,032	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	93,308	53,820	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	194,532	106,955	15,486,531	14,513,319
Inventory of breeding stock	15,504	13,547	1,145,323	1,354,166
Number sold	692,565	219,767	41,232,492	27,340,921
Value of sales*	55,478	24,548	3,078,455	3,012,764
Cattle and Calves				
Total inventory	18,738	18,291	3,535,945	3,717,394
Beef cows	(D)	(D)	987,670	1,051,178
Milk cows	(D)	(D)	206,965	222,090
Number sold	16,461	16,941	2,929,704	2,936,978
Value of sales*	11,743	11,938	2,119,935	1,886,416
Value of Dairy Products Sold*	(D)	(D)	442,431	407,897
Poultry and Poultry Products				
Value of sales*	25,409	16,649	511,949	414,587
Inventory of layers 20 weeks and older	(D)	(D)	38,650,210	21,514,768
Broiler and meat-type chicken inventory	(D)	505	1,730,091	1,023,349
Broiler and meat-type chickens sold	1,040	2,477	9,558,127	6,919,963
Turkey inventory	(D)	(D)	3,681,862	2,552,845
Turkeys sold	-	-	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	(D)	(NA)	23,366	(NA)
Inventory of sheep and lambs	4,459	3,741	249,908	272,913
Number of sheep and lambs sold	3,026	4,366	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 Clay 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	26,510	192,363	218,873	(NA)	(NA)	(NA)
1991	17,168	196,200	213,368	-9,342	3,837	-5,505
1992	24,889	206,267	231,156	7,721	10,067	17,788
1993	-842	218,967	218,125	-25,731	12,700	-13,031
1994	36,629	232,319	268,948	37,471	13,352	50,823
1995	26,032	245,815	271,847	-10,597	13,496	2,899
1996	45,466	264,186	309,652	19,434	18,371	37,805
1997	35,660	283,380	319,040	-9,806	19,194	9,388
1998	27,321	294,279	321,600	-8,339	10,899	2,560
1999	17,976	303,575	321,551	-9,345	9,296	-49
2000	15,611	325,011	340,622	-2,365	21,436	19,071
2001	10,313	331,065	341,378	-5,298	6,054	756
2002	8,414	340,726	349,140	-1,899	9,661	7,762
2003	14,254	365,281	379,535	5,840	24,555	30,395

Data from the US Bureau of Economic Analysis