

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

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This summary report provides county-level statistics for Chickasaw 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 Chickasaw County had 951 farms in 2002. These farms averaged 285 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 Chickasaw County was \$721,906 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Chickasaw County farms marketed an average of \$126,073 worth of farm products according to the US Census of Agriculture.

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

	Chickasaw County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	951	979	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	271,098	281,157	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	285	287	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	608,608	434,372	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	113,298	80,267	100,422	79,607	66,570	53,861
Farm products sold (\$)	126,073	126,924	135,388	125,766	94,245	90,880

Table 2 shows employment data for Chickasaw 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 Chickasaw 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)

	Chickasaw County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	1,604	21.29	0.79	201,967	10.57
Peripherally-related	435	5.78	0.23	191,669	10.04
Total farm and farm-related	2,039	27.07	0.52	393,636	20.61
Total employment	7,533	100.00	0.39	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 Chickasaw 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 Chickasaw 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 Chickasaw County.

Table 3 shows that, in 2002, the total output value of Chickasaw County's agricultural production industry was \$110.605 million. \$36.007 million of this output (32.55 percent of the total output value) was the value added to the output by Chickasaw 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). 53.72 percent of this value added, or \$19.345 million, was paid out as compensation to the 1,352 production agriculture jobs in Chickasaw 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

Chickasaw County			Labor	Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	21.372	189	7.048	11.491	4.22
Grain	37.510	499	9.100	16.987	6.24
Other Crops	3.957	14	0.828	2.036	0.75
Cattle	24.094	151	0.327	1.694	0.62
Poultry	0.000	0	0.000	0.000	0.00
Hogs and Pigs	16.306	340	1.279	2.532	0.93
Other Ag Production	7.366	159	0.763	1.267	0.47
Sum of Ag Production	110.605	1,352	19.345	36.007	13.22
Primary Food Processing					
Crop	9.307	17	0.412	0.747	0.27
Dairy	167.099	297	12.004	16.807	6.17
Meat	0.000	0	0.000	0.000	0.00
Sum of Primary Food Proc.	176.406	314	12.416	17.554	6.45
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0	0.000	0.000	0.00
Other Food Processing	15.912	55	1.814	3.024	1.11
Sum of Other Ag Proc.	15.912	55	1.814	3.024	1.11
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	3.599	6	1.984	2.230	0.82
Sum of Ag Input Mfg.	3.599	6	1.984	2.230	0.82
Sum of All Agri-food Ind.	306.522	1,727	35.559	58.815	21.60
NonAg Industries	408.373	4,307	134.175	213.461	78.40
Totals	714.895	6,034	169.734	272.276	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 Chickasaw County's agri-food industry output was \$306.522 million, or 42.88 percent of Chickasaw County's total industrial production. Of this, \$58.815 million (19.19 percent) was value added within these industries in Chickasaw County. \$35.559 million of this value added was paid out as wages and salaries to the 1,727 agri-food industry jobs in the county.

Overall, Table 3 shows that Chickasaw County's agri-food industries directly accounted for 42.88 percent of the county's total output, 21.60 percent of total value added, 20.95 percent of labor income, and 28.62 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

Chickasaw County			Value Added As a Percent of Nonhousehold Demand		
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	
Oilseeds	27.373	10.997	15.255	5.60	6.61
Grain	41.776	14.056	20.381	7.49	8.84
Other Crops	0.344	0.117	0.184	0.07	0.08
Cattle	0.097	0.011	0.019	0.01	0.01
Poultry	0.000	0.000	0.000	0.00	0.00
Hogs and Pigs	21.292	3.512	5.518	2.03	2.39
Other Ag Production	9.290	1.532	2.407	0.88	1.04
Sum of Ag Production	100.171	30.224	43.764	16.07	18.97
Primary Food Processing					
Crop	13.099	2.087	3.151	1.16	1.37
Dairy	221.273	25.758	38.895	14.29	16.86
Meat	0.000	0.000	0.000	0.00	0.00
Sum of Primary Food Proc.	234.373	27.845	42.046	15.44	18.23
Other Food/Ag Processing					
Animal and Pet Foods	0.000	0.000	0.000	0.00	0.00
Other Food Processing	18.827	3.450	5.105	1.88	2.21
Sum of Other Ag Proc.	18.827	3.450	5.105	1.88	2.21
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	4.367	2.250	2.692	0.99	1.17
Sum of Ag Input Mfg.	4.367	2.250	2.692	0.99	1.17
Sum of All Agri-food Ind.	357.738	63.770	93.607	34.38	40.58
NonAg Industries	290.515	100.072	137.044	50.33	59.42
Household Consumption	66.642	177.637	41.625	15.29	18.05
Totals	714.895	341.479	272.276	100.00	118.05

* 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 Chickasaw County's agricultural production industry was \$100.171 million. \$43.764 million of this output (43.69 percent of the total output value) was the value added to the output by economic activity within Chickasaw County (value added). The remainder came from inputs purchased from out-of-county sources. 69.06 percent of this value added, or \$30.224 million, was paid out as personal income to residents of Chickasaw 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 Chickasaw County's agri-food industry output was \$357.738 million, or 50.04 percent of Chickasaw County's total industrial production. Of this, \$93.607 million (26.17 percent) was value added within these industries in Chickasaw County. \$63.770 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Chickasaw County's agri-food industries accounted for 50.04 percent of the county's total output, 34.38 percent of total value added, and 18.67 percent of the county's personal income.

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

	Chickasaw County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	119,896	124,259	12,273,634	12,162,165
Value of Crops Sold*	56,278	58,542	6,071,272	6,381,676
Total Cropland Harvested (acres)	224,672	229,138	23,994,343	24,008,826
Corn for grain	113,051	116,688	11,761,392	11,930,542
Corn for silage and green-chop	4,589	5,387	247,269	244,913
Soybeans	94,634	95,450	10,418,621	10,258,681
Oats	1,563	2,634	143,513	214,485
Harvested forage crops	12,248	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	19,255,462	15,893,239	1,851,276,224	1,581,093,092
Soybeans	4,610,567	4,249,783	487,380,897	459,309,682
Oats	127,576	172,759	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 Chickasaw County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Chickasaw 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

	Chickasaw County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	119,896	124,259	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	63,617	65,716	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	139,622	127,832	15,486,531	14,513,319
Inventory of breeding stock	8,430	12,861	1,145,323	1,354,166
Number sold	368,129	279,797	41,232,492	27,340,921
Value of sales*	29,004	28,528	3,078,455	3,012,764
Cattle and Calves				
Total inventory	34,810	40,140	3,535,945	3,717,394
Beef cows	5,105	6,433	987,670	1,051,178
Milk cows	4,722	5,767	206,965	222,090
Number sold	28,225	33,645	2,929,704	2,936,978
Value of sales*	23,267	24,809	2,119,935	1,886,416
Value of Dairy Products Sold*	9,647	10,940	442,431	407,897
Poultry and Poultry Products				
Value of sales*	34	(D)	511,949	414,587
Inventory of layers 20 weeks and older	773	782	38,650,210	21,514,768
Broiler and meat-type chicken inventory	185	450	1,730,091	1,023,349
Broiler and meat-type chickens sold	864	(D)	9,558,127	6,919,963
Turkey inventory	5	(D)	3,681,862	2,552,845
Turkeys sold	(D)	(D)	9,145,415	7,279,822
Sheep and Goats and Related Products				
Value of sales	425	(NA)	23,366	(NA)
Inventory of sheep and lambs	3,267	2,088	249,908	272,913
Number of sheep and lambs sold	4,745	2,739	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 Chickasaw 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	22,999	105,552	128,551	(NA)	(NA)	(NA)
1991	19,583	112,368	131,951	-3,416	6,816	3,400
1992	25,563	119,334	144,897	5,980	6,966	12,946
1993	8,584	124,756	133,340	-16,979	5,422	-11,557
1994	29,404	133,905	163,309	20,820	9,149	29,969
1995	26,555	142,428	168,983	-2,849	8,523	5,674
1996	40,104	147,597	187,701	13,549	5,169	18,718
1997	41,966	156,462	198,428	1,862	8,865	10,727
1998	32,773	168,658	201,431	-9,193	12,196	3,003
1999	23,357	191,310	214,667	-9,416	22,652	13,236
2000	26,874	166,501	193,375	3,517	-24,809	-21,292
2001	17,372	152,071	169,443	-9,502	-14,430	-23,932
2002	23,997	157,112	181,109	6,625	5,041	11,666
2003	17,369	157,096	174,465	-6,628	-16	-6,644

Data from the US Bureau of Economic Analysis