

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

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This summary report provides county-level statistics for Cherokee 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 Cherokee County had 837 farms in 2002. These farms averaged 401 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 Cherokee County was \$971,529 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Cherokee County farms marketed an average of \$184,780 worth of farm products according to the US Census of Agriculture.

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

	Cherokee County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	837	930	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	335,410	340,606	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	401	366	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	871,557	692,185	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	99,972	91,330	100,422	79,607	66,570	53,861
Farm products sold (\$)	184,780	159,736	135,388	125,766	94,245	90,880

Table 2 shows employment data for Cherokee 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 Cherokee 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)

	Cherokee County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	2,055	24.19	1.02	201,967	10.57
Peripherally-related	581	6.84	0.30	191,669	10.04
Total farm and farm-related	2,636	31.02	0.67	393,636	20.61
Total employment	8,495	100.00	0.44	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 Cherokee 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 Cherokee 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 Cherokee County.

Table 3 shows that, in 2002, the total output value of Cherokee County's agricultural production industry was \$156.282 million. \$47.363 million of this output (30.31 percent of the total output value) was the value added to the output by Cherokee 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). 53.55 percent of this value added, or \$25.363 million, was paid out as compensation to the 1,390 production agriculture jobs in Cherokee 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

Cherokee County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	32.118	203	10.572	17.268	4.19
Grain	39.984	380	9.601	18.107	4.39
Other Crops	3.568	10	0.811	2.028	0.49
Cattle	44.567	199	0.346	3.163	0.77
Poultry	0.873	1	0.112	0.285	0.07
Hogs and Pigs	28.015	417	1.840	4.351	1.06
Other Ag Production	7.157	180	2.081	2.161	0.52
Sum of Ag Production	156.282	1,390	25.363	47.363	11.49
Primary Food Processing					
Crop	9.764	8	0.301	0.499	0.12
Dairy	0.000	0	0.000	0.000	0.00
Meat	149.304	648	27.088	34.437	8.35
Sum of Primary Food Proc.	159.068	656	27.389	34.936	8.47
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	118.498	56	91.216	92.517	22.44
Sum of Ag Input Mfg.	118.498	56	91.216	92.517	22.44
Sum of All Agri-food Ind.	433.848	2,102	143.968	174.816	42.40
NonAg Industries	390.612	5,453	160.216	237.448	57.60
Totals	824.460	7,555	304.184	412.264	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 Cherokee County's agri-food industry output was \$433.848 million, or 52.62 percent of Cherokee County's total industrial production. Of this, \$174.816 million (40.29 percent) was value added within these industries in Cherokee County. \$143.968 million of this value added was paid out as wages and salaries to the 2,102 agri-food industry jobs in the county.

Overall, Table 3 shows that Cherokee County's agri-food industries directly accounted for 52.62 percent of the county's total output, 42.40 percent of total value added, 47.33 percent of labor income, and 27.82 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

Cherokee County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	37.700	15.399	21.016	5.10	5.49
Grain	44.487	15.276	21.681	5.26	5.67
Other Crops	0.864	0.324	0.500	0.12	0.13
Cattle	46.753	5.148	8.739	2.12	2.28
Poultry	0.179	0.045	0.068	0.02	0.02
Hogs and Pigs	31.833	5.122	8.030	1.95	2.10
Other Ag Production	5.669	0.914	1.431	0.35	0.37
Sum of Ag Production	167.486	42.229	61.466	14.91	16.06
Primary Food Processing					
Crop	13.753	2.119	2.968	0.72	0.78
Dairy	0.000	0.000	0.000	0.00	0.00
Meat	189.609	40.529	54.844	13.30	14.33
Sum of Primary Food Proc.	203.362	42.648	57.812	14.02	15.11
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	154.951	103.859	115.143	27.93	30.09
Sum of Ag Input Mfg.	154.951	103.859	115.143	27.93	30.09
Sum of All Agri-food Ind.	525.799	188.735	234.421	56.86	61.26
NonAg Industries	251.608	112.441	148.218	35.95	38.74
Household Consumption	47.052	146.741	29.626	7.19	7.74
Totals	824.460	447.917	412.264	100.00	107.74

* 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 Cherokee County's agricultural production industry was \$167.486 million. \$61.466 million of this output (36.70 percent of the total output value) was the value added to the output by economic activity within Cherokee County (value added). The remainder came from inputs purchased from out-of-county sources. 68.70 percent of this value added, or \$42.229 million, was paid out as personal income to residents of Cherokee 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 Cherokee County's agri-food industry output was \$525.799 million, or 63.78 percent of Cherokee County's total industrial production. Of this, \$234.421 million (44.58 percent) was value added within these industries in Cherokee County. \$188.735 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Cherokee County's agri-food industries accounted for 63.78 percent of the county's total output, 56.86 percent of total value added, and 42.14 percent of the county's personal income.

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

	Cherokee County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	154,661	148,555	12,273,634	12,162,165
Value of Crops Sold*	66,407	72,811	6,071,272	6,381,676
Total Cropland Harvested (acres)	271,900	271,754	23,994,343	24,008,826
Corn for grain	131,673	132,373	11,761,392	11,930,542
Corn for silage and green-chop	4,535	4,830	247,269	244,913
Soybeans	126,624	127,721	10,418,621	10,258,681
Oats	1,008	1,199	143,513	214,485
Harvested forage crops	9,632	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	20,578,381	17,714,641	1,851,276,224	1,581,093,092
Soybeans	6,928,567	6,109,631	487,380,897	459,309,682
Oats	78,367	96,207	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 Cherokee County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Cherokee 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

	Cherokee County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	154,661	148,555	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	88,253	75,743	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	223,059	219,006	15,486,531	14,513,319
Inventory of breeding stock	14,167	18,034	1,145,323	1,354,166
Number sold	547,713	388,162	41,232,492	27,340,921
Value of sales*	42,448	41,413	3,078,455	3,012,764
Cattle and Calves				
Total inventory	59,703	50,743	3,535,945	3,717,394
Beef cows	12,195	11,083	987,670	1,051,178
Milk cows	649	813	206,965	222,090
Number sold	55,327	42,988	2,929,704	2,936,978
Value of sales*	43,037	29,721	2,119,935	1,886,416
Value of Dairy Products Sold*	1,099	1,276	442,431	407,897
Poultry and Poultry Products				
Value of sales*	(D)	(D)	511,949	414,587
Inventory of layers 20 weeks and older	589	(D)	38,650,210	21,514,768
Broiler and meat-type chicken inventory	200	(D)	1,730,091	1,023,349
Broiler and meat-type chickens sold	(D)	1,850	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
Sheep and Goats and Related Products				
Value of sales	(D)	(NA)	23,366	(NA)
Inventory of sheep and lambs	1,127	1,596	249,908	272,913
Number of sheep and lambs sold	907	2,058	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 Cherokee 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	33,594	128,551	162,145	(NA)	(NA)	(NA)
1991	32,781	133,401	166,182	-813	4,850	4,037
1992	32,232	136,945	169,177	-549	3,544	2,995
1993	17,369	143,280	160,649	-14,863	6,335	-8,528
1994	30,732	147,005	177,737	13,363	3,725	17,088
1995	26,488	150,162	176,650	-4,244	3,157	-1,087
1996	47,418	156,447	203,865	20,930	6,285	27,215
1997	43,827	163,863	207,690	-3,591	7,416	3,825
1998	30,171	172,417	202,588	-13,656	8,554	-5,102
1999	19,674	183,024	202,698	-10,497	10,607	110
2000	11,065	187,112	198,177	-8,609	4,088	-4,521
2001	17,245	191,914	209,159	6,180	4,802	10,982
2002	18,437	199,411	217,848	1,192	7,497	8,689
2003	16,113	204,687	220,800	-2,324	5,276	2,952

Data from the US Bureau of Economic Analysis