

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

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This summary report provides county-level statistics for Buchanan 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 Buchanan County had 1,067 farms in 2002. These farms averaged 319 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 Buchanan County was \$823,218 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Buchanan County farms marketed an average of \$132,719 worth of farm products according to the US Census of Agriculture.

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

	Buchanan County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	1,067	1,203	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	340,422	347,257	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	319	289	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	718,027	507,239	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	105,191	75,773	100,422	79,607	66,570	53,861
Farm products sold (\$)	132,719	116,236	135,388	125,766	94,245	90,880

Table 2 shows employment data for Buchanan 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 Buchanan 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)

	Buchanan County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	1,852	19.13	0.92	201,967	10.57
Peripherally-related	725	7.49	0.38	191,669	10.04
Total farm and farm-related	2,578	26.62	0.65	393,636	20.61
Total employment	9,684	100.00	0.51	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 Buchanan 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 Buchanan 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 Buchanan County.

Table 3 shows that, in 2002, the total output value of Buchanan County's agricultural production industry was \$125.284 million. \$46.831 million of this output (37.38 percent of the total output value) was the value added to the output by Buchanan 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). 57.90 percent of this value added, or \$27.117 million, was paid out as compensation to the 1,572 production agriculture jobs in Buchanan 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

Buchanan County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	28.645	249	9.489	15.401	4.22
Grain	54.118	708	13.469	24.508	6.71
Other Crops	3.279	11	0.757	1.685	0.46
Cattle	11.942	74	0.335	0.820	0.22
Poultry	0.957	2	0.147	0.313	0.09
Hogs and Pigs	21.670	445	2.394	3.365	0.92
Other Ag Production	4.673	83	0.526	0.739	0.20
Sum of Ag Production	125.284	1,572	27.117	46.831	12.83
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	16.281	28	1.356	1.900	0.52
Meat	56.441	251	8.865	10.695	2.93
Sum of Primary Food Proc.	72.722	279	10.221	12.595	3.45
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	0.000	0	0.000	0.000	0.00
Sum of Ag Input Mfg.	0.000	0	0.000	0.000	0.00
Sum of All Agri-food Ind.	198.006	1,851	37.338	59.426	16.28
NonAg Industries	523.568	6,746	196.144	305.689	83.72
Totals	721.574	8,597	233.482	365.115	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 Buchanan County's agri-food industry output was \$198.006 million, or 27.44 percent of Buchanan County's total industrial production. Of this, \$59.426 million (30.01 percent) was value added within these industries in Buchanan County. \$37.338 million of this value added was paid out as wages and salaries to the 1,851 agri-food industry jobs in the county.

Overall, Table 3 shows that Buchanan County's agri-food industries directly accounted for 27.44 percent of the county's total output, 16.28 percent of total value added, 15.99 percent of labor income, and 21.53 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

Buchanan County	Value Added				
	As a Percent of				
	Nonhousehold				
Agricultural Production	Output*	Income*	Value Added*	Total V.A.	Demand
Oilseeds	36.360	15.249	20.473	5.61	6.95
Grain	64.630	22.925	31.831	8.72	10.80
Other Crops	0.417	0.154	0.226	0.06	0.08
Cattle	1.357	0.175	0.279	0.08	0.09
Poultry	0.683	0.188	0.267	0.07	0.09
Hogs and Pigs	26.962	5.052	7.250	1.99	2.46
Other Ag Production	4.719	0.872	1.235	0.34	0.42
Sum of Ag Production	135.128	44.616	61.560	16.86	20.89
Primary Food Processing					
Crop	0.000	0.000	0.000	0.00	0.00
Dairy	24.849	3.328	4.900	1.34	1.66
Meat	71.385	14.092	18.984	5.20	6.44
Sum of Primary Food Proc.	96.234	17.419	23.884	6.54	8.10
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	0.000	0.000	0.000	0.00	0.00
Sum of Ag Input Mfg.	0.000	0.000	0.000	0.00	0.00
Sum of All Agri-food Ind.	231.362	62.036	85.444	23.40	29.00
NonAg Industries	381.072	158.609	209.240	57.31	71.00
Household Consumption	109.140	306.082	70.430	19.29	23.90
Totals	721.574	526.727	365.115	100.00	123.90

* 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 Buchanan County's agricultural production industry was \$135.128 million. \$61.560 million of this output (45.56 percent of the total output value) was the value added to the output by economic activity within Buchanan County (value added). The remainder came from inputs purchased from out-of-county sources. 72.48 percent of this value added, or \$44.616 million, was paid out as personal income to residents of Buchanan 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 Buchanan County's agri-food industry output was \$231.362 million, or 32.06 percent of Buchanan County's total industrial production. Of this, \$85.444 million (36.93 percent) was value added within these industries in Buchanan County. \$62.036 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Buchanan County's agri-food industries accounted for 32.06 percent of the county's total output, 23.40 percent of total value added, and 11.78 percent of the county's personal income.

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

	Buchanan County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	141,612	139,832	12,273,634	12,162,165
Value of Crops Sold*	83,936	81,430	6,071,272	6,381,676
Total Cropland Harvested (acres)	298,590	293,232	23,994,343	24,008,826
Corn for grain	158,154	160,637	11,761,392	11,930,542
Corn for silage and green-chop	2,094	3,412	247,269	244,913
Soybeans	126,117	115,666	10,418,621	10,258,681
Oats	2,613	3,876	143,513	214,485
Harvested forage crops	10,184	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	27,777,523	21,183,789	1,851,276,224	1,581,093,092
Soybeans	6,179,353	5,436,112	487,380,897	459,309,682
Oats	222,360	266,203	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 Buchanan County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Buchanan 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

	Buchanan County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	141,612	139,832	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	57,676	58,402	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	169,285	189,445	15,486,531	14,513,319
Inventory of breeding stock	22,302	22,123	1,145,323	1,354,166
Number sold	552,193	397,000	41,232,492	27,340,921
Value of sales*	39,639	38,603	3,078,455	3,012,764
Cattle and Calves				
Total inventory	21,600	28,606	3,535,945	3,717,394
Beef cows	4,302	5,650	987,670	1,051,178
Milk cows	2,949	3,867	206,965	222,090
Number sold	16,287	19,155	2,929,704	2,936,978
Value of sales*	11,532	12,304	2,119,935	1,886,416
Value of Dairy Products Sold*	4,995	6,102	442,431	407,897
Poultry and Poultry Products				
Value of sales*	1,241	900	511,949	414,587
Inventory of layers 20 weeks and older	10,118	(D)	38,650,210	21,514,768
Broiler and meat-type chicken in ventory	127,403	40,413	1,730,091	1,023,349
Broiler and meat-type chickens sold	617,665	118,225	9,558,127	6,919,963
Turkey inventory	54	(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	71	(NA)	23,366	(NA)
Inventory of sheep and lambs	702	1,402	249,908	272,913
Number of sheep and lambs sold	1,024	1,186	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 Buchanan 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	30,580	128,774	159,354	(NA)	(NA)	(NA)
1991	24,168	137,169	161,337	-6,412	8,395	1,983
1992	31,885	144,768	176,653	7,717	7,599	15,316
1993	8,438	153,801	162,239	-23,447	9,033	-14,414
1994	30,379	167,356	197,735	21,941	13,555	35,496
1995	16,423	175,167	191,590	-13,956	7,811	-6,145
1996	44,319	178,376	222,695	27,896	3,209	31,105
1997	45,063	198,704	243,767	744	20,328	21,072
1998	31,885	212,611	244,496	-13,178	13,907	729
1999	13,139	215,584	228,723	-18,746	2,973	-15,773
2000	19,137	225,289	244,426	5,998	9,705	15,703
2001	16,135	222,573	238,708	-3,002	-2,716	-5,718
2002	20,203	225,256	245,459	4,068	2,683	6,751
2003	8,573	241,688	250,261	-11,630	16,432	4,802

Data from the US Bureau of Economic Analysis