

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

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This summary report provides county-level statistics for Black Hawk 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 Black Hawk County had 939 farms in 2002. These farms averaged 293 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 Black Hawk County was \$945,616 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Black Hawk County farms marketed an average of \$121,814 worth of farm products according to the US Census of Agriculture.

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

	Black Hawk County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	939	1,061	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	275,014	292,620	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	293	276	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	838,929	633,322	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	106,687	83,096	100,422	79,607	66,570	53,861
Farm products sold (\$)	121,814	122,429	135,388	125,766	94,245	90,880

Table 2 shows employment data for Black Hawk 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 Black Hawk 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)

	Black Hawk County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	8,532	9.80	4.22	201,967	10.57
Peripherally-related	8,623	9.90	4.50	191,669	10.04
Total farm and farm-related	17,154	19.71	4.36	393,636	20.61
Total employment	87,055	100.00	4.56	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 Black Hawk 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 Black Hawk 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 Black Hawk County.

Table 3 shows that, in 2002, the total output value of Black Hawk County's agricultural production industry was \$106.437 million. \$41.041 million of this output (38.56 percent of the total output value) was the value added to the output by Black Hawk 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). 60.38 percent of this value added, or \$24.779 million, was paid out as compensation to the 1,366 production agriculture jobs in Black Hawk 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

Black Hawk County		Labor		Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	25.063	212	8.311	13.475	0.35
Grain	42.544	541	10.645	19.267	0.51
Other Crops	4.386	21	1.571	2.991	0.08
Cattle	8.713	52	0.271	0.595	0.02
Poultry	0.303	1	0.047	0.099	0.00
Hogs and Pigs	21.703	433	2.547	3.370	0.09
Other Ag Production	3.725	106	1.387	1.244	0.03
Sum of Ag Production	106.437	1,366	24.779	41.041	1.08
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.809	2	0.039	0.049	0.00
Meat	1,155.823	3,285	117.767	140.881	3.70
Sum of Primary Food Proc.	1,156.632	3,287	117.806	140.930	3.70
Other Food/Ag Processing					
Animal and Pet Foods	35.257	69	3.057	4.330	0.11
Other Food Processing	46.910	211	11.382	19.310	0.51
Sum of Other Ag Proc.	82.167	280	14.439	23.640	0.62
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	393.444	3,718	-327.367	-131.622	-3.45
Sum of Ag Input Mfg.	393.444	3,718	-327.367	-131.622	-3.45
Sum of All Agri-food Ind.	1,738.680	8,651	-170.343	73.989	1.94
NonAg Industries	6,371.340	80,114	2,366.501	3,737.684	98.06
Totals	8,110.020	88,765	2,196.158	3,811.673	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 Black Hawk County's agri-food industry output was \$1,738.680 million, or 21.44 percent of Black Hawk County's total industrial production. Of this, \$73.989 million (4.26 percent) was value added within these industries in Black Hawk County. \$-170.343 million of this value added was paid out as wages and salaries to the 8,651 agri-food industry jobs in the county.

Overall, Table 3 shows that Black Hawk County's agri-food industries directly accounted for 21.44 percent of the county's total output, 1.94 percent of total value added, -7.76 percent of labor income, and 9.75 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

Black Hawk County	Output*	Income*	Value Added*	Value Added As a Percent of Nonhousehold	
				Total V.A.	Demand
Agricultural Production					
Oilseeds	37.202	12.941	21.339	0.56	0.68
Grain	51.518	15.092	26.313	0.69	0.84
Other Crops	5.628	2.064	3.754	0.10	0.12
Cattle	0.110	0.012	0.024	0.00	0.00
Poultry	0.191	0.042	0.077	0.00	0.00
Hogs and Pigs	1.925	0.313	0.552	0.01	0.02
Other Ag Production	1.629	0.822	0.966	0.03	0.03
Sum of Ag Production	98.202	31.286	53.025	1.39	1.69
Primary Food Processing					
Crop	0.000	0.000	0.000	0.00	0.00
Dairy	0.335	0.035	0.059	0.00	0.00
Meat	1,405.518	184.837	299.585	7.86	9.56
Sum of Primary Food Proc.	1,405.853	184.872	299.644	7.86	9.57
Other Food/Ag Processing					
Animal and Pet Foods	54.779	8.885	15.203	0.40	0.49
Other Food Processing	37.061	9.856	17.707	0.46	0.57
Sum of Other Ag Proc.	91.840	18.741	32.910	0.86	1.05
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	388.212	-323.338	-143.929	-3.78	-4.59
Sum of Ag Input Mfg.	388.212	-323.338	-143.929	-3.78	-4.59
Sum of All Agri-food Ind.	1,984.107	-88.439	241.651	6.34	7.71
NonAg Industries	5,037.957	1,732.472	2,890.748	75.84	92.29
Household Consumption	1,087.956	1,794.131	679.274	17.82	21.69
Totals	8,110.020	3,438.163	3,811.673	100.00	121.69

* 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 Black Hawk County's agricultural production industry was \$98.202 million. \$53.025 million of this output (54.00 percent of the total output value) was the value added to the output by economic activity within Black Hawk County (value added). The remainder came from inputs purchased from out-of-county sources. 59.00 percent of this value added, or \$31.286 million, was paid out as personal income to residents of Black Hawk 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 Black Hawk County's agri-food industry output was \$1,984.107 million, or 24.46 percent of Black Hawk County's total industrial production. Of this, \$241.651 million (12.18 percent) was value added within these industries in Black Hawk County. \$88.439 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Black Hawk County's agri-food industries accounted for 24.46 percent of the county's total output, 6.34 percent of total value added, and -2.57 percent of the county's personal income.

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

	Black Hawk County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	114,383	129,897	12,273,634	12,162,165
Value of Crops Sold*	69,697	79,024	6,071,272	6,381,676
Total Cropland Harvested (acres)	241,295	258,606	23,994,343	24,008,826
Corn for grain	124,214	134,596	11,761,392	11,930,542
Corn for silage and green-chop	1,085	1,773	247,269	244,913
Soybeans	109,283	114,576	10,418,621	10,258,681
Oats	1,007	1,261	143,513	214,485
Harvested forage crops	5,659	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	21,803,101	17,949,662	1,851,276,224	1,581,093,092
Soybeans	5,406,809	5,395,750	487,380,897	459,309,682
Oats	85,042	89,421	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 Black Hawk County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Black Hawk 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

	Black Hawk County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	114,383	129,897	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	44,686	50,874	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	161,464	169,969	15,486,531	14,513,319
Inventory of breeding stock	9,158	12,543	1,145,323	1,354,166
Number sold	371,830	296,862	41,232,492	27,340,921
Value of sales*	32,604	35,319	3,078,455	3,012,764
Cattle and Calves				
Total inventory	14,833	17,019	3,535,945	3,717,394
Beef cows	3,577	3,638	987,670	1,051,178
Milk cows	1,270	1,476	206,965	222,090
Number sold	10,893	12,965	2,929,704	2,936,978
Value of sales*	8,414	8,558	2,119,935	1,886,416
Value of Dairy Products Sold*	2,496	2,906	442,431	407,897
Poultry and Poultry Products				
Value of sales*	(D)	3,553	511,949	414,587
Inventory of layers 20 weeks and older	674	(D)	38,650,210	21,514,768
Broiler and meat-type chicken inventory	(D)	288	1,730,091	1,023,349
Broiler and meat-type chickens sold	1,445	2,651	9,558,127	6,919,963
Turkey inventory	15	(D)	3,681,862	2,552,845
Turkeys sold	-	(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	2,152	3,295	249,908	272,913
Number of sheep and lambs sold	1,738	3,499	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 Black Hawk 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	26,096	1,715,287	1,741,383	(NA)	(NA)	(NA)
1991	18,945	1,767,651	1,786,596	-7,151	52,364	45,213
1992	31,289	1,896,485	1,927,774	12,344	128,834	141,178
1993	10,450	1,977,200	1,987,650	-20,839	80,715	59,876
1994	33,297	2,087,877	2,121,174	22,847	110,677	133,524
1995	30,572	2,162,442	2,193,014	-2,725	74,565	71,840
1996	46,396	2,201,114	2,247,510	15,824	38,672	54,496
1997	43,373	2,372,948	2,416,321	-3,023	171,834	168,811
1998	31,324	2,463,904	2,495,228	-12,049	90,956	78,907
1999	16,601	2,458,591	2,475,192	-14,723	-5,313	-20,036
2000	14,532	2,606,390	2,620,922	-2,069	147,799	145,730
2001	14,609	2,748,922	2,763,531	77	142,532	142,609
2002	18,284	2,876,738	2,895,022	3,675	127,816	131,491
2003	5,578	3,009,059	3,014,637	-12,706	132,321	119,615

Data from the US Bureau of Economic Analysis