

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

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This summary report provides county-level statistics for Dickinson 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 Dickinson County had 492 farms in 2002. These farms averaged 413 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 Dickinson County was \$902,410 in 2002, compared to \$808,152 for Iowa and \$604,403, nationwide. In 2002, Dickinson County farms marketed an average of \$155,302 worth of farm products according to the US Census of Agriculture.

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

	Dickinson County		Iowa		United States	
	2002	1997	2002	1997	2002	1997
Number of farms	492	551	90,655	96,705	2,128,982	2,215,876
Land in farms (acres)	203,174	210,180	31,729,490	32,313,119	938,279,056	954,752,502
Average farm size (acres)	413	381	350	334	441	431
Market value, per farm, of						
Land and buildings (\$)	787,747	654,759	707,730	559,678	537,833	416,007
Machinery and equipment (\$)	114,663	79,218	100,422	79,607	66,570	53,861
Farm products sold (\$)	155,302	135,503	135,388	125,766	94,245	90,880

Table 2 shows employment data for Dickinson 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 Dickinson 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)

	Dickinson County			Iowa	
	Jobs	As a percent of County total	State Category	Jobs	% of state total
Farm and closely-related	638	5.01	0.32	201,967	10.57
Peripherally-related	1,745	13.71	0.91	191,669	10.04
Total farm and farm-related	2,383	18.72	0.61	393,636	20.61
Total employment	12,728	100.00	0.67	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 Dickinson 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 Dickinson 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 Dickinson County.

Table 3 shows that, in 2002, the total output value of Dickinson County's agricultural production industry was \$79.019 million. \$25.704 million of this output (32.53 percent of the total output value) was the value added to the output by Dickinson 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). 50.92 percent of this value added, or \$13.090 million, was paid out as compensation to the 831 production agriculture jobs in Dickinson 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

Dickinson County			Labor	Value-Added	
Agricultural Production	Output*	Jobs	Income*	Value*	Pct. Of Tot.
Oilseeds	17.107	147	5.619	9.198	1.13
Grain	23.379	303	5.549	10.587	1.30
Other Crops	2.506	12	0.635	1.644	0.20
Cattle	26.016	160	0.031	1.863	0.23
Poultry	1.193	2	0.142	0.389	0.05
Hogs and Pigs	4.882	99	0.251	0.758	0.09
Other Ag Production	3.936	108	0.863	1.265	0.16
Sum of Ag Production	79.019	831	13.090	25.704	3.16
Primary Food Processing					
Crop	0.000	0	0.000	0.000	0.00
Dairy	0.000	0	0.000	0.000	0.00
Meat	0.000	0	0.000	0.000	0.00
Sum of Primary Food Proc.	0.000	0	0.000	0.000	0.00
Other Food/Ag Processing					
Animal and Pet Foods	3.728	7	0.431	0.612	0.08
Other Food Processing	7.297	39	1.037	1.616	0.20
Sum of Other Ag Proc.	11.025	46	1.468	2.228	0.27
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0	0.000	0.000	0.00
Farm Machinery	19.334	14	14.089	14.442	1.78
Sum of Ag Input Mfg.	19.334	14	14.089	14.442	1.78
Sum of All Agri-food Ind.	109.378	891	28.647	42.374	5.21
NonAg Industries	1,230.810	9,915	308.994	770.856	94.79
Totals	1,340.188	10,806	337.641	813.230	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 Dickinson County's agri-food industry output was \$109.378 million, or 8.16 percent of Dickinson County's total industrial production. Of this, \$42.374 million (38.74 percent) was value added within these industries in Dickinson County. \$28.647 million of this value added was paid out as wages and salaries to the 891 agri-food industry jobs in the county.

Overall, Table 3 shows that Dickinson County's agri-food industries directly accounted for 8.16 percent of the county's total output, 5.21 percent of total value added, 8.48 percent of labor income, and 8.24 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

Dickinson County	Value Added				
	As a Percent of				
				Total V.A.	Nonhousehold Demand
Agricultural Production	Output*	Income*	Value Added*		
Oilseeds	23.334	7.906	13.722	1.69	1.82
Grain	28.141	7.679	14.521	1.79	1.93
Other Crops	1.138	0.346	0.756	0.09	0.10
Cattle	34.468	2.920	7.743	0.95	1.03
Poultry	1.254	0.231	0.487	0.06	0.06
Hogs and Pigs	6.021	0.727	1.685	0.21	0.22
Other Ag Production	3.890	0.903	1.473	0.18	0.20
Sum of Ag Production	98.246	20.713	40.386	4.97	5.36
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	0.000	0.000	0.000	0.00	0.00
Sum of Primary Food Proc.	0.000	0.000	0.000	0.00	0.00
Other Food/Ag Processing					
Animal and Pet Foods	4.772	0.746	1.247	0.15	0.17
Other Food Processing	8.293	1.456	2.527	0.31	0.34
Sum of Other Ag Proc.	13.065	2.202	3.775	0.46	0.50
Ag Input Manufacturing					
Ag Chemical and Fertilizer	0.000	0.000	0.000	0.00	0.00
Farm Machinery	26.682	16.141	19.331	2.38	2.57
Sum of Ag Input Mfg.	26.682	16.141	19.331	2.38	2.57
Sum of All Agri-food Ind.	137.993	39.056	63.492	7.81	8.42
NonAg Industries	1,113.862	307.115	690.141	84.86	91.58
Household Consumption	88.333	203.835	59.598	7.33	7.91
Totals	1,340.188	550.006	813.230	100.00	107.91

* 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 Dickinson County's agricultural production industry was \$98.246 million. \$40.386 million of this output (41.11 percent of the total output value) was the value added to the output by economic activity within Dickinson County (value added). The remainder came from inputs purchased from out-of-county sources. 51.29 percent of this value added, or \$20.713 million, was paid out as personal income to residents of Dickinson 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 Dickinson County's agri-food industry output was \$137.993 million, or 10.30 percent of Dickinson County's total industrial production. Of this, \$63.492 million (46.01 percent) was value added within these industries in Dickinson County. \$39.056 million of this value added was paid out as personal income.

Overall, Table 4 shows that exports from Dickinson County's agri-food industries accounted for 10.30 percent of the county's total output, 7.81 percent of total value added, and 7.10 percent of the county's personal income.

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

	Dickinson County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold*	76,409	74,662	12,273,634	12,162,165
Value of Crops Sold*	42,919	43,083	6,071,272	6,381,676
Total Cropland Harvested (acres)	179,208	172,476	23,994,343	24,008,826
Corn for grain	86,181	81,530	11,761,392	11,930,542
Corn for silage and green-chop	3,349	2,891	247,269	244,913
Soybeans	84,595	83,333	10,418,621	10,258,681
Oats	469	409	143,513	214,485
Harvested forage crops	5,571	(NA)	1,533,027	(NA)
Bushels harvested				
Corn	12,036,484	10,100,178	1,851,276,224	1,581,093,092
Soybeans	3,690,516	3,326,205	487,380,897	459,309,682
Oats	38,337	30,679	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 Dickinson County crop inventories and sales for 1997 and 2002. State statistics are included for comparison. Table 6 provides similar information for Dickinson 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

	Dickinson County		Iowa	
	2002	1997	2002	1997
Value of All Farm Products Sold	76,409	74,662	12,273,634	12,162,165
Value of Livestock and Livestock Products Sold*	33,489	31,579	6,202,362	5,780,489
Hogs and Pigs				
Total inventory	34,735	45,433	15,486,531	14,513,319
Inventory of breeding stock	2,098	5,337	1,145,323	1,354,166
Number sold	78,195	76,496	41,232,492	27,340,921
Value of sales*	6,936	9,112	3,078,455	3,012,764
Cattle and Calves				
Total inventory	25,108	27,360	3,535,945	3,717,394
Beef cows	3,607	4,134	987,670	1,051,178
Milk cows	190	616	206,965	222,090
Number sold	30,636	29,226	2,929,704	2,936,978
Value of sales*	25,123	21,493	2,119,935	1,886,416
Value of Dairy Products Sold*	(D)	728	442,431	407,897
Poultry and Poultry Products				
Value of sales*	4	6	511,949	414,587
Inventory of layers 20 weeks and older	(D)	99	38,650,210	21,514,768
Broiler and meat-type chicken inventory	-	-	1,730,091	1,023,349
Broiler and meat-type chickens sold	(D)	(D)	9,558,127	6,919,963
Turkey inventory	(D)	(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	587	(NA)	23,366	(NA)
Inventory of sheep and lambs	4,243	1,601	249,908	272,913
Number of sheep and lambs sold	4,276	1,718	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 Dickinson 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	15,094	153,359	168,453	(NA)	(NA)	(NA)
1991	10,875	157,990	168,865	-4,219	4,631	412
1992	12,924	177,925	190,849	2,049	19,935	21,984
1993	-4,349	193,280	188,931	-17,273	15,355	-1,918
1994	18,130	202,788	220,918	22,479	9,508	31,987
1995	11,941	224,448	236,389	-6,189	21,660	15,471
1996	26,099	238,806	264,905	14,158	14,358	28,516
1997	16,733	251,319	268,052	-9,366	12,513	3,147
1998	16,266	265,380	281,646	-467	14,061	13,594
1999	6,668	287,914	294,582	-9,598	22,534	12,936
2000	7,242	305,437	312,679	574	17,523	18,097
2001	1,426	293,608	295,034	-5,816	-11,829	-17,645
2002	5,770	306,968	312,738	4,344	13,360	17,704
2003	2,275	344,965	347,240	-3,495	37,997	34,502

Data from the US Bureau of Economic Analysis