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**Measuring Farm and Farm-Related Jobs in Wisconsin - 1992**

By

William E. Saupe and T. Alexander Majchrowicz

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**AGRICULTURAL  
ECONOMICS**

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**STAFF PAPER SERIES**

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# MEASURING FARM AND FARM-RELATED JOBS IN WISCONSIN - 1992

William E. Saupe and T. Alexander Majchrowicz<sup>1</sup>

## Introduction

The primary users of this report are expected to be extension faculty in the Agriculture/Agribusiness and Community, Natural Resource and Economic Development program areas; faculty whose research supports those program areas; and persons involved in public policy. The objectives of this paper are as follows:

- a) to report estimates of the number of farm and farm-related jobs in Wisconsin and Wisconsin counties in 1992,
- b) to discuss the concepts, rationale, and definitions used in this study, and
- c) to explain the process and data sources used in making the estimates in sufficient detail so that users are comfortable using the empirical results in extension and other educational activities.
- d) to report additional references pertaining to measuring the size of the farm and farm-related sectors.

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The industries included in the farm and farm-related sectors and a summary of the 1992 statewide findings regarding the number of jobs in those sectors are as follows:

The **Farm Production** industry (farming) is the central industry in the sector. Also included in Farm Production are industries which provide agricultural services, as well as establishments in forestry and fishing. Industries that provide inputs to the farming sector (**Farm Input Industries**) and those that are the first to handle farm products after they leave the farm (**Agricultural Marketing and Processing**) are the most closely identified with farming. There were a total of 211,610 jobs in farming and these most closely related industries in Wisconsin in 1992, comprising about 7.5 percent of all jobs in the state at that time.

**Indirect Agri-Businesses** principally provide services, equipment and supplies to farm input industries and to industries processing milk, vegetables, and other farm products into food. **Wholesale and Retail Trade** industries sell products made from materials raised on farms, e.g. in grocery stores, restaurants, etc., and provide the final step as the farm-based product reaches the consumer. There were 319,476 additional Wisconsin jobs in these relevant, but less-directly related to farming, industries.

The above farm and farm-related sectors contained a combined **total** of 531,086 jobs in Wisconsin in 1992, about 18.8 percent of all jobs in the state.

### Why the Number of Jobs is Relevant

The number of jobs in the farm and farm-related sector is relevant to a variety of educational establishments and levels of government.

Size of the Sector The estimates are useful, first, because the number of jobs is an appropriate measure of the size of the sector relative to the remainder of the economy, often an important criterion in public decisions made at several levels of government.

Policy makers and program managers in the Congress and federal government, in state governments, and on county boards and other local units of government all make decisions that directly affect farm households, farm businesses, agribusinesses, and communities. Decisions on the organization and naming of program units, resource allocation, and funding can be based in part on the perceived size of the sector, e.g., on the number of jobs in the sector. The consideration given the issues or problems of a sector may reflect in part the government decision-makers' perception of the number of persons affected.

For example, the Congress must consider the importance of farming, agricultural, and food issues versus all the other demands for federal attention when they develop farm commodity or food safety programs or determine support levels for agricultural extension and research.

Likewise, state legislators and units in state government allocate funds for post-high school training and higher education in agriculture in competition with all the other demands for state funds.

County governments and local school districts must also decide how to allocate their limited budgets among farm and farm-related extension and other agricultural education programs, versus all other demands for local tax dollars.

Education and Training Programs Second, the distribution (by counties) of the jobs in the farm and farm-related sectors indicates the geographic location and potential magnitude of job training and adult education programs, by industry type.

The number and trends in the number of jobs in the farm and farm-related sectors may also influence career choices by young persons, and thus their education and training needs. Specifically, persons interested in careers related to their agricultural interests, or preferring employment offering the possibility of rural versus metropolitan location, may find the number and distribution of Wisconsin jobs in farm and farm-related industries useful.<sup>2</sup> County and state Extension faculty, high school agriculture instructors and guidance counselors, instructors in the Wisconsin Technical College System, and undergraduate advisors at Wisconsin's agricultural colleges may find the state and county farm and farm-related jobs data an additional useful reference in career counseling.

Informed Public Third, when government policy or budget issues are discussed it is useful to the public as well as to the elected decision-makers to have information about the expected impacts plus the assumptions and methods used in making the estimates. This report tries to serve that role in decisions pertaining to the farm and farm-related sectors by providing estimates of the portion of Wisconsin's labor force comprised of farm and farm-related jobs, and documentation of how those estimates were made.

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<sup>2</sup> Note, however, that "farm or farm-related industry" is not synonymous with "rural" location. While most farming in Wisconsin takes place in nonmetropolitan counties, many other jobs in farm-related industries are not. In 1992 there were more jobs in farm and farm-related industries in metropolitan counties (319,175) than in non-metro counties (211,868) in Wisconsin. County information on farm and farm-related industries is presented in Table 1 and Figures 2-5 later in this report.

## The Concept

Determining the number of jobs in a sector of the economy, measuring the size of a sector, or calculating the economic impact of a sector all depend substantially on the definitions, concepts, and data used. Appropriate use of the information presented in this report depends on first understanding the concept that went into the analyses.

A flow chart illustrating the concept of farm and farm-related industries is presented in Figure 1. The central role is that of farm production. There is a flow of inputs into the farming sector from farm input industries. Farm products leave the farm and move through the agricultural processing and marketing industries and then through wholesale and retail trade on their way toward the ultimate consumer (Figure 1).

The **Farm Production** industry, the central industry in the figure, includes the producers of crops, livestock, and animals. This sector also includes agricultural services, forestry, and fishing industries. Farming is a relatively easily identified part of the total process that ultimately satisfies the final consumer demand for products of farm origin.

Farm-related industries include industries that provide inputs to the farming sector (**Farm Input Industries**) and those that are the first to handle farm products after they leave the farm (**Agricultural Marketing and Processing**). **Indirect Agri-Businesses** principally provide services, equipment and supplies to farm input industries and to industries processing milk, vegetables, and other farm products into food (see Figure 1).

An inclusive definition also includes the **Wholesale and Retail Trade** of products made from materials raised on farms, e.g. in grocery stores, restaurants, etc., the segment at the bottom of the figure and final step to deliver the farm-based product to the consumer. While clearly a necessary step in moving farm production to the consumer, some may view the relationship to farm production as being peripheral (Saupe and Majchrowicz, October 1990).



**FIG 1. FARM AND FARM-RELATED INDUSTRIES**

## Definitions

This report pertains to the farm and farm-related industries displayed in Figure 1, and their identification and measurement will be described in later sections. First, we turn to some definitions and clarification of terms.

Farm The U.S. Department of Commerce revised the definition of "farm" for use in the 1974 Census of Agriculture. The Department of Commerce and the U.S. Department of Agriculture have both used that same definition since then. In addition, most published scientific and popular reports about farms also are based on that definition, and it is used in this report. It is an inclusive definition, as follows:

A farm is "a place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the year" (U.S. Dept. of Commerce).

Farm-Related In this report, criteria and data developed by the Economic Research Service, U.S. Department of Agriculture (ERS) in their research on farm and farm-related jobs are used extensively. The ERS job research is long-term and continuing. Criteria are reviewed, research concepts may be redefined, and industries may be reclassified as their nature and labor force change. (Saupe and Majchrowicz, August 1990). Compared to analyses in the late 1980s, current analyses are focused more narrowly on farm production and farm-related industries. They are based on more recent U.S. input-output analyses of the structure of the national economy (Salsgiver and Majchrowicz, 1993).

The definition of a farm used in the Census of Agriculture and by the U.S. Department of Agriculture is readily understood by most users, and provides a criterion that permits measurement. Long-term testing and development of a similarly straightforward definition of "farm-related" by the ERS has led to the following definition, which is used in this report:

"Farm and farm-related industries are identified as industries having generally 50 percent or more of their national work force employed in providing goods and services necessary to satisfy the final demand for agricultural products" (Majchrowicz and Salsgiver, 1995).

Agriculture In our national economy "farming" and "agriculture" are not the same component, although the terms are often interchanged and used as synonyms. To be specific, the "farming sector" includes only the producers of crops, livestock, livestock products, and animals. Farmers, their family members, and hired farm workers operate these farm production establishments. They produce crops ranging from alfalfa, apples, asparagus, oats, oranges, orchids, vegetables, watermelons, wheat, and zucchini. Their livestock and animal production includes a wide variety of enterprises including beef cattle, bees, broilers, catfish, dogs, mink, milk, rabbits, worms, wool, and many other animals and animal products.

The farming sector is a sub-part of a somewhat nebulous but more inclusive "agricultural sector". The industries to be included in "agriculture" may be viewed differently by different persons. For example, the agricultural sector might include agri-business industries that provide inputs to the farming sector and the processing and transportation industries that handle farm products after they leave the farm. A more inclusive definition of "agriculture" might also include the wholesale and retail trade of products made from materials raised on farms, e.g. grocery stores, restaurants, etc.

In this report the limits of the "agriculture" sector have been established by our using the criteria of the "farm and farm-related" industries developed by the Economic Research Service, U.S. Department of Agriculture. Those criteria for industry identification and data development are discussed in detail in a later section.

### Alternative Measures of the Size of the Farm and Farm-Related Sectors

The size of the farm and farm-related sectors of our economy is important because many decisions made in federal, state, and local units of government are based in part on the size of the affected sector. Decisions regarding the priorities and focus for education and training programs also may be based on the size of the potential audiences.

The appropriate unit to measure the size of the farm and farm-related industries depends in part on the purpose or use of the measure and on the availability of data that would permit realistic measurement.

The economic well-being of persons in an industry or sector may be an issue, and their aggregated "earnings" may be the appropriate unit of measure. In other cases, the income generated by the sector through linkages with the remainder of the economy may be a more appropriate gauge. Alternatively, the number of jobs in the sector may be most relevant. In this report the number of jobs is the criterion followed. Before turning to it, the earnings and income measures are first discussed.

Earnings When used as a measure of the size of a sector, "earnings" are calculated as the sum of wages, salaries, and proprietors' income earned by all persons employed in the sector. The ERS researchers have used earnings in various sectors, including the farming sector, in other research on the classification of nonmetropolitan counties by principal economic base (Bender and others). Most recently, farming-dependent counties were classified as nonmetropolitan counties in which farming contributed a weighted annual average of 20 percent or more of total labor and proprietor income during the 3-year period 1987-89 (Cook and Mizer). They used similar measures of earnings to determine manufacturing-, mining-, and government-dependent counties. Other classes of nonmetropolitan counties were determined by the presence of federally owned land or population characteristics.

In the most recent studies, six Wisconsin counties were classified as farming-dependent in 1989 as follows: Adams, Buffalo, Clark, La Fayette, Pepin, and Waushara. Additional ERS analyses

using the earnings criterion have examined levels of dependence on farming in Wisconsin (Salant and others), in the nation (Bentley, Hines and others), and changes in the dependence on farming over time (Ahearn and others).

Income It can be argued that the impact of the farming sector in the economy goes beyond the earnings generated from the production of crops and animals on the farmstead. In addition to being a segment of consumer demand in the community, farm households also represent a business demand. For example, farmers' business purchases support farm input industries such as fertilizer and farm machinery, and farm businesses help support the suppliers of lumber, tires, automobiles, utilities, and many others in their rural area. Many persons also earn their livelihood from the processing and transportation of farm products once they leave the farm, e.g., as milk haulers or in processing fruits and vegetables.

Farm households are often involved in local labor markets, as suppliers of labor to the local nonfarm economy or, on the other hand, as employers of labor for the farm business. All of these economic activities are linked with non-farm sectors of the economy, as earnings are spent for consumer goods and services.

For these reasons, while the farm earnings criterion reflects the economic well-being of farm households and their role as consumers in the rural community, it does not adequately measure the size or economic role of the broader "agricultural" sector and its impact throughout the remainder of the economy (Jesse and others 1993, Deller 1994, 1995).

Jobs Continuing research in the Economic Research Service, U.S. Department of Agriculture describes the farm and farm-related sectors as a part of our national economy, using the number of jobs (employment) as the unit of measure. Their analyses use secondary employment data from the most recent years available, currently 1992. This complements previous ERS studies (Hines and others). The work uses the number of jobs instead of earnings as the unit of measure, and it identifies and counts jobs both on the farm and in farm-related industries. We describe the ERS analyses in the following section.

### Industry Identification and Data Development

In concept, the ERS measurement of employment in farm and farm-related industries is straightforward, but in practice it is not. First, it is necessary to establish criteria and identify the industries that have sufficient connection with farming to appropriately be considered "farm or farm-related". Second, an adequate data source for counting the jobs in those industries must be identified so the data set can be developed.

Industry Identification The industry data were identified using the Standard Industrial Classification (SIC) system, which is the classification standard used in all Federal statistical reports pertaining to industry (U.S. Office of Management and Budget).

The system covers all facets of the U.S. economy, and defines industries as groups of establishments similar in the type of primary activities in which they are engaged. Industries are classified and assigned four digit code numbers, and grouped with related industries.<sup>3</sup>

This results in several thousand identifiable industries (U.S. Office of Management and Budget). For that list of industries, ERS researchers used a national input-output model to identify industries that, on a national basis, generally used at least 50 percent of their work force to manufacture products or provide services necessary to satisfy consumers' demand for food and fiber. If so, they were classified as farm or farm-related.<sup>4</sup>

The industries identified as farm or farm-related were then clustered into the five related groups used in this report, identified as follows: a) farm production and services, b) agricultural input industries, c) agricultural processing and marketing, d) wholesale and retail trade, and e) indirect agribusiness. While the industry group titles are reasonably descriptive, more detail is available in an ERS table reporting the SIC codes and identification of each industry included as farm or farm-related (see Table 1).

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<sup>3</sup> For example, all establishments manufacturing or processing foods and beverages are included in the Standard Industrial Classification (SIC) group identified by the two digit number 20. A sub-part of that group is food processors, and they are identified further by the three-digit SIC number 203. A sub-part of SIC group 203 is food processors primarily engaged in the canning of fruits and vegetables, and they are assigned the four digit SIC number 2033. Further examples of food processing industries and their SIC code numbers are meat packing plants (2011) and cheese manufacturing plants (2022).

<sup>4</sup> Users should note that when an industry is so classified as farm or farm-related, the nature of the data source dictates that all jobs in that industry are so classified. Conversely, if less than 50 percent of the work force in an industry is used to satisfy the domestic demand for food and fiber, then none of the jobs in that industry are counted as farm or farm-related. An exception to this criterion is the indirect agribusiness sector. Here some industries do not meet the 50 percent criterion threshold but are included in farm-related because of their linkages to agriculture. Most indirect agribusinesses employ between 32 and 48 percent of their labor force to satisfy consumers' demand for agricultural products.

Table 1. ERS Classification of Farm and Farm-Related Industries by SIC Codes

Source: Economic Research Service, U.S. Department of Agriculture (Majchrowicz and Salsgiver)

Data Development The ERS-enhanced estimates of jobs in each industry were based principally on County Business Patterns (CBP) data from the U.S. Bureau of the Census and on information from the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). The County Business Pattern employment data are obtained from administrative records of the Internal Revenue Service. They include all persons employed by an establishment covered, at least partially, by the Federal Insurance Contributions Act (FICA). Data for employees of establishments totally exempt from FICA are excluded, as are data from self-employed persons. To account for such jobs, employment estimates were made for those industries in which data were not otherwise available (Majchrowicz and Salsgiver 1995).

Because many workers in agricultural production, particularly farm proprietors, are not included in the above data, the ERS used data from the Bureau of Economic Analysis (BEA) to estimate the number of those agricultural jobs. The BEA employment data are based on information from various state administrative records, including state unemployment insurance files, IRS tax files, and USDA farm proprietor surveys.

Users should note that when more than 50 percent of the national work force in an industry is employed in providing goods and services necessary to satisfy the final demand for agricultural products, the industry is classified as farm or farm-related, and *all* jobs in that industry are counted. Likewise, if fewer than 50 percent are so employed, it is not classified as farm or farm-related and *none* of the jobs are counted, except for the indirect agribusiness which were previously noted (see footnote 4).

That should not be a problem in the dairy farming industry, for example, as all jobs on dairy farms are farm related. It may become a problem, however, when it is not so clear that all jobs in the industry are agriculturally relevant. For example, eating and drinking places are included as farm-related industries and all jobs in such establishments are counted, including not only food preparers but entertainers and custodians as well.<sup>5</sup> On the other hand, person with agriculturally related jobs in finance, education, or government make up less than 50 percent of the workers in their industries, and none of them are included as farm-related. That is, in concept the criterion is symmetrical. Farm-related jobs that are excluded by this criterion are described in the following section.

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<sup>5</sup> Another point that is more technical than substantive is that employment estimates based on the number of jobs may differ from the number of persons employed. That is, surveys that use payroll data to estimate jobs count both part-time and full-time positions. The number of jobs in the economy or a sector may deviate somewhat from the number of persons employed, as one person may hold more than one job.

## Excluded Farm and Farm-Related Jobs

Employment in some industries that appear to be farm and farm-related are not included in the estimates. Seasonal farm workers are not included because the data are collected in mid-March, when few are employed. Agriculturally relevant jobs in government, education, and finance are not included because they comprise fewer than 50 percent of the jobs in the industries in which they fall, and thus none are counted.

Seasonal Farm Workers Employment data in this report were collected in mid-March of each year and thus do not include seasonal agricultural workers. Horticultural food crops are an important segment of Wisconsin's farm production and on such farms seasonal workers may be employed from planting through harvest and processing.

Seasonal workers can include both migrant workers and resident workers that hold seasonal jobs in farming or farm-related industries. Separate data sources have been used to help estimate the magnitude of each component.

The Wisconsin Department of Industry, Labor, and Human Relations collects agricultural labor data for migrant workers in Wisconsin. For example, during the 1993 season the employment of migrant agricultural and food processing workers totalled about 4,500 persons. Including these workers as farm and farm-related jobs would be consistent with the other criteria used in the farm and farm-related jobs research.

The Wisconsin Agricultural Statistics Service, which is the Wisconsin unit of the National Agricultural Statistics Service of the U.S. Department of Agriculture, also collects some seasonal farm labor information through quarterly farm surveys. They can generalize to Wisconsin for some labor characteristics, but in other cases the Wisconsin sample data are combined with similar data from Michigan and Minnesota. The merged samples provide labor information about the Lakes States region. Extrapolating from the seasonal labor distribution from the Lakes States region, seasonal labor distribution in Wisconsin was estimated to be 13,000 in 1993.

The 4,500 migrant farm workers referred to earlier are classified as contract service workers and are not included in the Wisconsin Agricultural Statistics Service data. That is, the two data sets are mutually exclusive. Summing these two secondary data sources suggest that total migrant and resident seasonal agricultural workers numbered about 17,500 in 1993. The importance of their exclusion from the state and county data reported elsewhere in this report depends on the intended use of the information (Saupe and Majchrowicz, 1990).



Government, Education, and Finance The data developed by ERS did not separately identify jobs in agriculturally related government, education, and research functions. Estimates for Wisconsin were made by talking with administrators and other knowledgeable persons. Using these sources it was estimated that there were 4,435 such jobs, making up 0.2 percent of all jobs in Wisconsin in 1987.

While they are agriculturally related, it may or may not be appropriate to include them in the agricultural sector, depending on the purpose of the employment estimates. These jobs should not be included if reporting the magnitude of an agricultural "problem". They are instead an indication of the public response to the needs of the agricultural sector. That is, the government has responded to the concerns about the sector by creating the programs that involve these jobs. Thus they should not be considered as part of the sector if size of the sector is being used as an argument for allocation of public funds.

These agriculturally related government jobs were found in various agencies of the USDA, including the Soil Conservation Service, Agricultural Stabilization and Conservation Service, Wisconsin Agricultural Statistics Service, plus some regulatory and marketing services. Jobs in the Wisconsin Department of Agriculture, Trade and Consumer Protection were also counted. Jobs in agricultural education included high school agriculture departments, some programs in the Vocational, Technical, and Adult Education System, the three colleges of agriculture in Wisconsin, and the agriculture and agri-business portion of the Cooperative Extension Service. U.S. Department of Agriculture research farms and laboratories dealing with cereals, forages and forest products that were separate from the colleges of agriculture were also identified and included. Workers in displaced farmer programs were included as well.

In the most recent analyses, agricultural lenders numbering about 650 were not included as a farm-related industry. As they make up less than 50 percent of the total finance industry, the finance industry is not classified as farm-related; thus, they are not included.

### Wisconsin Jobs in Farm and Farm-Related Industries

The relationship between farm production and four groups of farm-related industries was illustrated in Figure 1. In Table 2 1992 data are shown for Wisconsin and each county, including the number of jobs in each of the groups, the total farm and farm-related jobs, and the percentage they are of all jobs in the county.<sup>6</sup> In the remainder of this section comments are presented on the Wisconsin data for each of the five groups. These special analyses of employment data were made by the Economic Research Service for use in this Wisconsin report.

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<sup>6</sup> An exception is that the data for Shawano and Menominee county are combined.

Farm Input Industries This group has a clear economic linkage with the farming sector, providing farmers with fuel, fertilizer, and many other nonfarm inputs needed in farming. Also, it is the sector most clearly dependent on the economic success of farmers. Low levels of farm production and depressed farm income reduce the demand for farm inputs. For example, during the difficult farm financial times of the mid-1980s, there were reduced farmers' purchases of new farm machinery and equipment and fertilizer. Federal farm policies that affect the amount of land taken out of, or returned to, crop production also affect this sector.

This group contained 19,924 jobs in 1992, 0.7 percent of total employment in the state. The largest segments were the manufacturing and wholesale trade of farm machinery and equipment and the wholesale agricultural supplies industries. Together they involved 19,457 jobs.

Farm Production (and Agricultural Services, Forestry, and Fishing) There were 119,650 jobs that fell into this group in 1992, 4.2 percent of the total jobs in Wisconsin. The majority were farm operators and hired farm workers, and the remainder were jobs in establishments providing farm services. These included jobs involved with veterinary services, dairy herd improvement associations, artificial insemination services, farm management services, the custom application of agricultural chemicals, and custom crop harvesting. This group is probably the most readily identified and understood, as farm production is central to the farm and farm-related sector.

Agricultural Processing and Marketing These industries deal with farm products, beginning as they leave the farmstead. They are affected differently than farm input industries by economic conditions on farms. That is, as long as farms continue to produce and sell farm products, the processing and marketing industries have the inputs they need. Marketing and processing industries do not depend on good economic conditions on farms. However, they are directly affected by government policies that affect the price, quality, or availability of the farm commodities that they purchase as inputs, e.g., raw milk purchased by processors.

There were 72,036 jobs in this group in Wisconsin in 1992, 2.6 percent of total state employment. In this group, the largest industries (and their number of jobs) were the manufacturing of dairy products (16,660), meat products (12,250), canned and preserved fruits and vegetables (7,945), leather manufacturing (7,044), apparel and textile manufacturing (5,552), and beverage manufacturing (4,542). Other industries included bakeries, packaging, grain mills, confectionery products, wholesale trade in raw farm products (such as grain, livestock, and livestock products), warehousing, fats and oils products, and miscellaneous food processing.

These first three groups (see Table 1 or Figure 1) -- Farm Production, Farm Input Industries, and Agricultural Processing and Marketing -- together accounted for 211,610 jobs, which was 7.5 percent of all jobs in the Wisconsin economy in 1992. They include the establishments about which there would likely be the most agreement that they are appropriately designated farm and farm-related industries.

Indirect Agribusiness This group in the ERS data set contained 21,804 jobs or 0.8 percent of all employment in Wisconsin in 1992. Included are a diverse group of establishments that were engaged in mining chemical and fertilizer minerals, producing paperboard and paper products related to food packaging, manufacturing other products related to food containers, and manufacturing food processing machinery.

Farm-Related Wholesale and Retail Trade The ERS analysis also identified industries that were involved in wholesale or retail trade of merchandise that helped meet the final domestic demand for food and fiber in the nation. Examples of jobs in the wholesale trade of agricultural products include wholesale trade in groceries, alcoholic beverages, clothing, and tobacco products. Retail trade examples include eating and drinking places and food, liquor, apparel, leather goods, and tobacco stores. There were 297,672 such jobs in Wisconsin in 1992. They comprised 10.5 percent of all jobs in the state in 1992.

Table 2. Farm and Farm-Related Jobs in Wisconsin Counties, March 1992.

Item	Indirect Agribusiness	Farm Input Industries	Farm Production and Services	Agricultural Marketing and Processing	Wholesale and Retail Trade
Wisconsin	21,804	19,924	119,650	72,036	297,672
Adams	187	0	555	72	552
Ashland	0	32	378	56	1,043
Barron	53	298	2,456	1,977	2,382
Bayfield	0	13	559	16	798
Brown	1,412	337	2,384	4,363	12,901
Buffalo	0	252	1,534	852	540
Burnett	1	0	617	118	582
Calumet	0	346	1,538	1,028	2,026
Chippewa	108	266	2,673	1,259	2,221
Clark	72	488	3,410	851	1,031
Columbia	234	297	2,253	860	2,712
Crawford	0	60	1,438	71	931
Dane	422	1,166	5,309	3,826	26,725
Dodge	252	986	3,471	2,709	3,478
Door	0	126	1,405	129	2,002
Douglas	2	11	449	433	3,159
Dunn	34	288	2,375	599	1,955
Eau Claire	36	76	1,550	489	6,761
Florence	0	0	108	0	200
Fond du Lac	759	356	2,871	1,755	5,239
Forest	27	0	168	12	293
Grant	2	452	3,874	429	2,558
Green	33	370	2,392	1,011	1,940
Green Lake	82	98	996	731	1,041
Iowa	4	257	2,208	169	714
Iron	0	3	70	89	565
Jackson	0	98	1,119	90	840
Jefferson	1,096	633	2,386	2,493	4,197
Juneau	47	108	1,094	207	899
Kenosha	67	59	919	1,263	8,604

Table 2. Farm and Farm-Related Jobs in Wisconsin Counties, March 1992. (cont.)

Item	Indirect Agribusiness	Farm Input Industries	Farm Production and Services	Agricultural Marketing and Processing	Wholesale and Retail Trade
Kewaunee	0	222	1,675	70	898
LaCrosse	0	164	1,292	1,971	9,941
Lafayette	0	190	2,193	296	452
Langlade	79	170	853	105	1,111
Lincoln	589	83	756	514	1,631
Manitowoc	381	353	2,562	1,387	4,381
Marathon	992	416	4,741	1,999	7,499
Marinette	25	403	1,074	237	2,363
Marquette	8	72	760	597	510
Milwaukee	2,165	507	684	10,573	54,233
Monroe	182	582	2,324	325	1,892
Oconto	52	131	1,610	488	1,330
Oneida	395	4	245	78	2,278
Outagamie	3,425	497	2,743	3,201	9,187
Ozaukee	344	48	808	962	4,223
Pepin	0	186	729	86	380
Pierce	0	400	1,782	156	2,102
Polk	36	266	2,076	565	1,622
Portage	89	213	1,749	1,672	4,455
Price	38	44	745	12	786
Racine	417	2,151	1,335	1,835	9,121
Richland	2	114	1,736	361	741
Rock	601	440	2,323	1,925	7,468
Rusk	0	81	965	136	545
St. Croix	311	196	2,391	411	2,585
Sauk	0	297	2,523	487	3,874
Sawyer	85	10	328	48	885
Shawano & Menominee	42	166	2,986	258	1,853
Sheboygan	637	379	1,997	3,146	6,433
Taylor	0	213	1,616	629	962
Trempealeau	0	412	2,203	730	1,124

Table 2. Farm and Farm-Related Jobs in Wisconsin Counties, March 1992. (cont.)

Item	Indirect Agribusiness	Farm Input Industries	Farm Production and Services	Agricultural Marketing and Processing	Wholesale and Retail Trade
Vernon	0	396	3,280	367	935
Vilas	26	1	106	12	1,403
Walworth	271	259	1,518	1,334	5,442
Washburn	0	18	524	188	789
Washington	741	1,192	1,503	1,485	5,375
Waukesha	634	273	1,649	2,621	21,141
Waupaca	446	291	2,132	722	2,658
Waushara	2	175	1,116	74	841
Winnebago	3,377	153	1,693	863	9,130
Wood	482	280	1,766	1,153	4,161

Source: Data from the Economic Research Service, U.S. Department of Agriculture

## Distribution of Farm and Farm-Related Jobs in Wisconsin Counties in 1992

Wisconsin counties vary greatly in geographic size, population, degree of urbanization, and total labor force. The number and percentage of farm and farm-related jobs within the borders of a county can be affected by any of those and other forces as well. Information about the distribution of farm and farm-related jobs among Wisconsin counties may be interesting and informative but observed differences among counties is an incomplete basis for policy or program decisions.

The total number of farm and farm-related jobs are reported by counties in Figures 2 and 4. (Note that data for Menominee County were combined and reported with data from Shawano County) Information in Figure 2 is repeated in Figure 4, with the addition of the counties being sorted by quartiles and shaded to emphasize regional differences in the State.<sup>7</sup>

The darkest shade (10,000 or more jobs per county) predominates in the southeastern triangle of the State, plus Marathon and LaCrosse counties. The next darkest quartile of counties, with from 4,500 up to 10,000 jobs, stretches east and west across the central part of the state, from Green Bay toward the Twin Cities area. The fewest farm and farm-related jobs per county are in the northernmost two or three tiers of counties, in central to west-central areas, and in four counties in the southwestern corner (see Figures 2 and 4).

Farm and farm-related jobs are reported as a percentage of all jobs in each county in Figures 3 and 5. The darkest shade in Figure 5 are counties in which 30.3 percent or more of all jobs are farm and farm-related, i.e. in which a relatively large proportion of the total jobs are in the industries discussed in this report.

There are two contrasting areas of the state with relatively low percentages (less than 21 percent) of jobs in farm and farm-related industries. One is in the urban southeastern corner of the state, and the other in the northern tiers of counties (see Figure 5). For example, note that Milwaukee county has by far the largest number of farm and farm-related jobs of any county in Wisconsin (68,162), but has the smallest percentage of its total jobs in that sector, 11.9 percent. While Forest county in the north also has a relatively low percentage (14.0 percent), it has only 500 farm and farm-related jobs.

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<sup>7</sup> Figures 2 and 3 are included because Figures 4 and 5 may not reproduce well on some office photo-copying machines.

**Figure 2. Number of Farm and Farm-Related Jobs in Wisconsin Counties, March 1992**



**Figure 3. Percentage of all Jobs that were Farm and Farm-Related in Wisconsin Counties, March, 1992**

**Figure 4. Distribution of Farm and Farm-Related Jobs Among Wisconsin Counties, March, 1992**

**Figure 5. Distribution of Wisconsin Counties by Percentage of all Jobs that were Farm and Farm-Related in March, 1992**

## Changes in the Numbers of Farm and Farm-Related Jobs

Changes in data, definitions, and concepts preclude valid comparisons of 1990 or more recent data with data from earlier periods. While the 1990 and 1992 Wisconsin data reported in Table 3 can be compared, they cannot validly be compared with an earlier Wisconsin study based on 1987 data (Saupe and Majchrowicz). At the national level, published reports permit comparison of 1990 with 1991 data (Majchrowicz and Salsgiver). In both the national and Wisconsin cases, the observations are from only two points in time, which is not an adequate basis for predicting future changes. The changes in the number of farm and farm-related jobs between the two time periods call attention to fluctuations between years but do not provide a basis for identifying trends.

The Nation Nationwide, there were 40,000 fewer farm and farm-related jobs counted in 1991 than in 1990. This was a relatively small difference as such jobs totalled 21.4 million in 1991, the most recent year for which published analyses are available. They comprised 15.7 percent of total U.S. jobs (Majchrowicz and Salsgiver 1995). Of those 21.4 million jobs, 3.1 million were farm proprietors and hired farm workers and 3.2 million were in the processing and marketing of agricultural products after they left the farm. About 834,000 jobs were in forestry, fishing, and agricultural input and services industries, nationwide. Industries less closely related to farming, particularly wholesale and retail trade in products of farm origin, with 13.7 million jobs, accounted for the largest part of farm and farm-related jobs.

Wisconsin In Wisconsin, the number of jobs in the farm and farm-related industries together increased 0.6 percent from 1990 to 1992. The positive rate of change was less than that experienced by the remainder of the economy, however. This accounts for their comprising a smaller percentage of all jobs in Wisconsin in 1992 than in 1990, 18.8 percent of all jobs in Wisconsin in 1992, compared to 19.1 percent two years earlier.

The increase in 1992 compared to 1990 resulted primarily from an increase of 8,466 jobs in farm-related wholesale and retail trade. There were also increases in agricultural processing and marketing (+509 jobs), farm supply and machinery wholesale trade (+162 jobs), and agricultural services (+35 jobs).

There were 5,894 fewer jobs as farm proprietors and wage and salary farm workers in 1992 compared with 1990, 406 fewer jobs in Indirect Agribusiness, and a net decrease of 162 jobs in Farm Input industries (see Table 3).

As with the national data, there are many economic, social, and political forces outside the farm business and rural community that affect the number of jobs in farm and farm-related industries. While job data from two points in time can provide an indication of the magnitude of the fluctuations that can take place, they provide little basis for untangling the effects of all the forces that cause trends in the number of jobs.

Table 3. Classification and Employment in Farm and Farm-Related Industries, Wisconsin, March 1990 and 1992.

Industry Groups and Components	<u>Jobs by Farm &amp; Farm-Related Industry</u>	
	March 1990	March 1992
<u>Farm Input Industries:</u>		
Agricultural chemicals manufacturing	435	408
Farm machinery and equipment manufacturing	6,625	6,155
Farm supply and machinery wholesale trade	13,140	13,302
Commercial contract brokers and dealers	<u>62</u>	<u>59</u>
Subtotal	20,262	19,924
<u>Farm Production:</u>		
Farm proprietors	84,597	83,204
Wage and salary farm workers	31,830	27,329
Agricultural services including fertilizer application; soil preparation; crop pest protection, custom planting, cultivating, harvesting; veterinary services; tree farms, forestry, commercial fishing, and game preserves	<u>9,082</u>	<u>9,117</u>
Subtotal	125,509	119,650
<u>Agricultural Processing and Marketing:</u>		
Meat products	12,008	12,250
Dairy products	17,895	16,660
Canned, frozen, and preserved fruits and vegetables	7,390	7,945
Grain mill products	2,545	2,961
Bakery products	3,652	4,053
Sugar and confectionery products	2,056	2,112
Fats and oils products	389	258
Beverages	4,802	4,542
Miscellaneous food preparations and kindred products	2,376	2,818
Apparel and textiles	6,706	5,552
Leather products and footwear	6,790	7,044
Packaging	2,619	2,563
Wholesale trade in farm-related raw materials	1,643	1,674
Farm product warehousing and storage	<u>656</u>	<u>1,604</u>
Subtotal	71,527	72,036
<u>Indirect Agribusiness:</u>		
Chemical and fertilizer mining, miscellaneous textile products, certain paper and pulpwood products, wood pallets, food products machinery, food packaging	22,210	21,804
<u>Farm-Related Wholesale &amp; Retail Trade:</u>		
Wholesale trade in groceries, alcoholic beverages, clothing, and footwear. Retail trade in food stores, eating and drinking places, liquor stores; clothing, apparel, and leather goods stores	<u>289,206</u>	<u>297,672</u>
Total Farm and Farm-Related Industries	528,714	531,086
All Nonfarm-Related Employment	<u>2,233,080</u>	<u>2,297,651</u>
Total Wisconsin Employment	2,761,794	2,828,737

## Using the Wisconsin County Data

A complete set of county data for Wisconsin have been created by the Economic Research Service, U.S. Department of Agriculture that permits replicating, for each county in the state, the same information that is contained in Table 1 and that is discussed in the text. The data are for 92, the most recent set currently available. In that data set the aggregated data for the state are presented first followed by two tables for each county, a total of 72 double-sided pages. It is expected that requests for selected county data will be filled by Cooperative Extension.<sup>8</sup>

The data include the number of jobs in all sectors of the economy, not just the farm and farm-related jobs. Extension faculty have used the 1990 data in an earlier version of this report to create tables and graphics with data for their county, for use with a variety of audiences. It has been effective to first demonstrate the concept using Figure 1, and next present the job data for each group of farm and farm-related industries. Providing a county tables containing the detail of Table 1 in this report may help answer questions.

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<sup>8</sup> If not available through Cooperative Extension contact William Saupe for assistance, at the Department of Agricultural Economics, 427 Lorch Street, University of Wisconsin, Madison, Wisconsin, 53706; or (608) 262-9480; or SAUPE@AE.AGECON.WISC.EDU

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