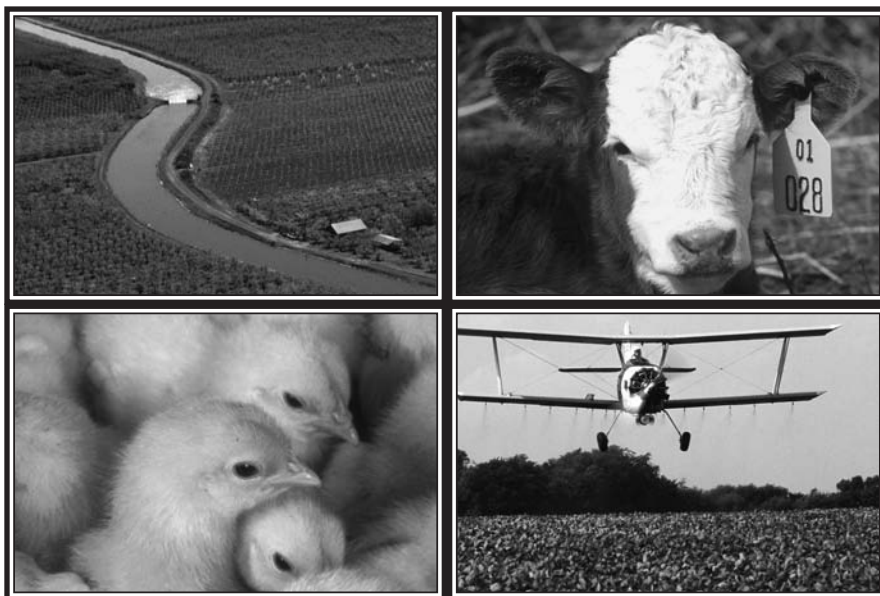


Impact of the Agricultural Sector on the Arkansas Economy in 2001



Jennie Popp, Gina Vickery,
H.L. Goodwin Jr., and Wayne Miller

This publication is available on the web at: <http://www.uark.edu/depts/agripub/Publications/bulletins/>

Technical editing and cover design by Amalie Holland

Arkansas Agricultural Experiment Station, University of Arkansas Division of Agriculture, Fayetteville. Milo J. Shult, Vice President for Agriculture; Gregory J. Weidemann, Dean, Dale Bumpers College of Agricultural, Food and Life Sciences and Associate Vice President for Agriculture–Research, University of Arkansas Division of Agriculture. SG550QX6. The University of Arkansas Division of Agriculture follows a nondiscriminatory policy in programs and employment. ISSN:1539-5944 CODEN:AKABA7

Impact of the Agricultural Sector on the Arkansas Economy in 2001

**Jennie Popp
Gina Vickery
H.L. Goodwin Jr.
University of Arkansas**

**Wayne Miller
University of Arkansas Cooperative Extension Service**

**Arkansas Agricultural Experiment Station
Fayetteville, Arkansas 72701**
(a unit of the University of Arkansas System's statewide Division of Agriculture)

CONTENTS

List of Tables and Figures	5
Executive Summary	6
The Impact of Agriculture in Arkansas	7
Introduction	7
Agriculture – The Regional Context.....	8
Agriculture and the Arkansas Economy	9
Agricultural Production.....	11
Crop Production.....	11
Livestock Production	11
Forestry Production.....	11
Other Production	12
Agricultural Processing	12
Food and Kindred Products	12
Paper and Allied Products	12
Lumber and Wood Products.....	12
Furniture and Fixtures.....	13
Textile Mill Products	13
Summary in Trends for GSP of Agricultural Products	13
Direct, Indirect, and Induced Impacts of Agriculture	14
Methods	14
The Aggregate Agricultural Sector	15
The Crop Sector	16
The Livestock Sector.....	18
The Forestry Sector.....	19
Summary.....	20
End Notes	20
References	21
Appendix A: Description of IMPLAN Sectors and Aggregation Schemes	22
Appendix B: Agriculture-Generated Activity by Sector	39

TABLES

1. The Agriculture Sector as a Percentage of Gross State Product, 2001	8
2. The Aggregate Agriculture Sector's Impact on Arkansas' Economy, 2001	16
3. Contribution of Major Agricultural Sectors to Agricultural Production, 2001	16
4. Contribution of Major Agricultural Sectors to Agricultural Processing, 2001	16
5. The Crop Sector's Impact on Arkansas' Economy, 2001	17
6. The Livestock Sector's Impact on Arkansas' Economy, 2001	18
7. The Forestry Sector's Impact on Arkansas' Economy, 2001	19
A1. Major Components of the Agriculture Sector as defined by BEA Industries	22
A2. Major Components of Agricultural Production as defined by IMPLAN Sectors	22
A3. Major Components of Agricultural Processing as defined by IMPLAN Sectors	23
A4. Major Components of the Agriculture Sector ad defined by IMPLAN Sectors, 1999	24
A5. Aggregation Scheme for an IMPLAN Input-Output Analysis of the Agriculture Sector's Impact on the Arkansas Economy, 2001	28
A6. Major Components of the Crop Sector as defined by IMPLAN Sectors, 2001	36
A7. Major Components of the Livestock Sector as defined by IMPLAN Sectors, 2001	37
A8. Major Components of the Forestry Sector as defined by IMPLAN Sectors, 2001	37
B1. Agriculture-generated Activity by Sector, 2001	39
B2. Crop-generated Activity by Sector, 2001	41
B3. Livestock-generated Activity by Sector, 2001	42
B4. Forestry-generated Activity by Sector, 2001	43

FIGURES

1. Production and Processing as a Percentage of Gross State Product, 2001	8
2. Sector Percentages of Arkansas' Gross State Product, 2001	9
3. Agricultural Processing's Share of Manufacturing GSP, 1986-2001	9
4. The Agriculture Sector's Share of Arkansas Gross State Product, 1986-2001	10
5. Arkansas' Agriculture Sector Gross State Product, 1986-2001	10
6. Gross State Product for Arkansas' Agricultural Production and Processing, 1986-2001	10
7. Arkansas' Crop Production Sales, 1991-2003	11
8. The Value of Arkansas' Livestock Production, 1991-2003	11
9. Components of Arkansas' Agricultural Processing Sector, GSP, 2001	12
10. The Gross State Product of Food and Kindred Products, 1986-2001	12
11. The Gross State Product of Paper and Allied Products, 1986-2001	12
12. The Gross State Product of Lumber and Wood Products, 1986-2001	13
13. The Gross State Product of Furniture and Fixtures, 1986-2001	13
14. The Gross State Product of Textile Goods, 1986-2001	13

Executive Summary

Agriculture has historically been one of Arkansas' primary economic sectors. Agriculture is defined as the sum of agricultural production and processing activities unless otherwise specified. Agriculture contributes to the economy through direct agricultural production and value-added processing which generates economic activity in other parts of the economy.

This report represents the second in a series of biennial reports, examining the impact of agriculture on the Arkansas economy. Utilizing data from the United States Bureau of Economic Analysis and the State of Arkansas, the economic impact of agriculture on the Arkansas economy was estimated for the most recent year available, 2001. Gross State Product (GSP) information for Arkansas was compared to those of other states in the southeast U.S. to compare the relative importance of agriculture in Arkansas to that of other states. The total impact of agriculture (direct, indirect, and induced effects) as measured by value added, employment, and labor income was estimated using the Impact Analysis for Planning System (IMPLAN). Economic impacts of agricultural production and processing were estimated for agriculture as a whole and also separately for the crop, livestock, and forestry sectors. Key findings of the IMPLAN analysis are:

- Agriculture adds \$13.1B total value to the state's economy; roughly \$.20 of every \$1 in value generated in the state. Agriculture is a larger share of Arkansas' economy than it is in any other state in the Southeastern US – 10.7 percent of the total GSP (or value added) of \$67.9B
- Agriculture accounted for 291,290 jobs, nearly one of every five jobs in the state. Direct employment in agriculture production and processing is 173,856, 11.4 percent of all jobs in the state.
- Poultry production and processing alone provides over 17 percent of the state's agricultural jobs.
- Agriculture is accredited with adding \$7.8B in wages, nearly 13 percent of the state's total payroll. Directly, agriculture payrolls total \$4.45B, 7.2 percent of the state total.
- Agriculture generates value added, employment, and wages in all 45 sectors used in the study. The wholesale and retail trade, financial/real estate, miscellaneous services, transportation and communication services, and health services sectors capture significant benefits from agricultural activities in the state.
- The crop sector creates \$4.14B in value, 86,176 jobs and \$2.06B in wages. The food grain, miscellaneous food processing, and miscellaneous services industries have the greatest direct impact on the state economy. The financial/real estate, health services, miscellaneous services, transportation and communication services, and wholesale and retail trade sectors receive the greatest indirect and induced benefits from crop production and processing activities in the state.
- The livestock sector generates \$4.07B in value added, 111,548 in jobs, and \$2.78B in wages. Poultry production and processing alone accounts for \$1.21B in value added, 50,705 jobs, and \$1.68B in wages, or 82 percent of direct value added, 74 percent of direct employment, and 78 percent of direct wages. Primary sectors impacted by livestock production and processing are health service, miscellaneous service, and wholesale and retail trade. Agricultural, forest and fishery service, and farm inputs and machinery sectors receive large employment and wage impacts, and the financial/real estate sector receives large value added effects.
- Forestry generates \$4.63B in value added, 88,294 in jobs, and \$2.83B in wages. From these total impacts, wood processing and paper processing account for 39 percent of value added, 33 percent of jobs, and 42 percent of wages. Sectors receiving the largest benefits from Arkansas' forest industry as measured by value added, employment and wages are the wholesale and retail trade, transportation and communication services, miscellaneous services, health services, and financial/real estate sectors.

The total impact of agriculture on the Arkansas economy has remained relatively constant in the past several years despite depressed agricultural commodity prices and market imbalances in supply and demand. Indications from 2002 and 2003 farm-level sales data are that the declines in agricultural prices have reversed and that the impact of agriculture may well be re-established in Arkansas' economy to levels more typical historically. Regarding the share of GSP in Arkansas, the decline in its relative share of the economy is larger in magnitude than either the regional or national averages. Nonetheless, Arkansas remains more dependent upon agriculture for its GSP than do its neighbors in the Southeast. There have been some shifts within agriculture as a whole between production and processing and among the crop, livestock, and forestry sectors. The vital importance of agriculture to Arkansas' economy, particularly rural areas of the state with limited alternatives for economic activity and growth is highlighted by the significant economic activity generated in associated industrial and human service sectors as a result of the indirect and induced impacts of agriculture.

The Impact of Agriculture in Arkansas

I n t r o d u c t i o n

Agriculture continues to be a primary stimulus of economic growth in Arkansas. While agriculture contributes to the economy through direct agricultural production and value-added processing, it also plays an important role by creating economic activity in other sectors of Arkansas' economy. The use of non-agricultural goods and services as inputs into the agriculture sector promotes diversified growth in Arkansas' economy, thereby allowing agriculture to remain a vital part of the Arkansas state economy.

This report:

- compares the relative size of the agriculture sector in Arkansas and neighboring states, the Southeastern region of the United States, and the nation;
- provides an overview of Arkansas' economy and discusses agriculture's importance to the state economy;
- examines components of agricultural production and processing, including a review of historical sales trends for raw and processed agricultural products;
- compares impacts of agriculture on the Arkansas economy in 1999 and 2001 and discusses possible reasons for these changes over time; and
- discusses the overall impact of agriculture on Arkansas' economy, including the direct, indirect, and induced effects of the agriculture sector.

This report builds upon similar reports by Miller and Sato (1999) and Goodwin et al. (2002). This report utilizes data for 2001, the most recent year for which all relevant data are available. All dollar values are expressed in 2001 constant dollars, unless otherwise noted.¹

Agriculture - The Regional Context

In the following regional analysis of the Southern U.S., the agriculture sector is defined as the sum of agricultural production and processing, unless otherwise mentioned. Gross State Product (GSP) data,² published by the Bureau of Economic Analysis (BEA), are used to measure agricultural production and processing.³

Arkansas' agriculture sector, expressed as a percentage of total GSP, has exceeded those of contiguous states since at least 1969 when the BEA began publishing regional GSP

Table 1. The Agriculture Sector as a Percentage of Gross State Product, 2001^a

State / Region	Percent of GSP
Arkansas	10.74
Mississippi	9.12
Tennessee	5.45
Missouri	5.44
Oklahoma	4.19
Louisiana	3.41
Texas	2.99
Southeast ^b	6.31
U.S.	4.22 ^c

Source: USDC, BEA, Regional Accounts Data (2003).

^a Current 2001 dollars

^b In 2001, the BEA data for the Southeast region includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia

^c Agriculture is measured as a percent of GDP for the U.S. GDP is the equivalent measure of GSP used for the nation

information (Miller, 2002). The agriculture sector also accounts for a larger percentage of GSP in Arkansas' economy than do the agriculture sectors of the Southeast region⁴ and the nation in their respective economies. In 2001 the agriculture sector accounted for nearly 11 percent of Arkansas' GSP (Table 1). In addition, Arkansas' agriculture sector as a percentage of its GSP was more than double that of the United States' (US) agriculture sector as a percentage of its Gross Domestic Product (GDP)⁵ in 2001.

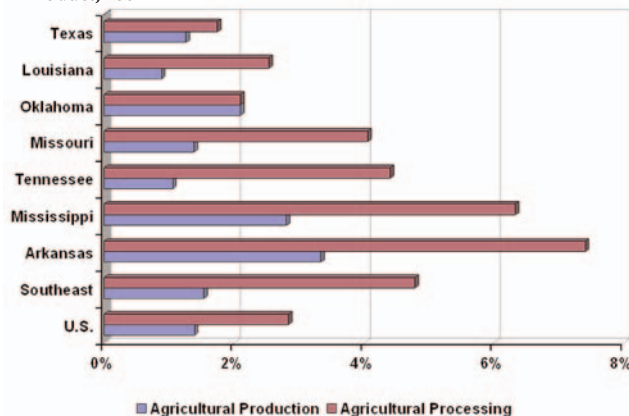
The individual contributions of agricultural production and processing also comprise a greater percent of GSP to Arkansas' economy than agricultural production and processing sectors in neighboring states and the nation contribute to their own economies (Figure 1). In 2001, agricultural production contributed 3.3 percent to Arkansas' GSP, compared to only 2.8 percent in Mississippi which had the next highest contribution in the region.

Similarly, agricultural processing, the largest component of Arkansas' agriculture sector, contributed 7.4 percent to total GSP, while agricultural processing in Mississippi contributed only 6.3 percent total GSP in Mississippi.

Overall agriculture's share of total GSP in the southeast has fallen 0.8 percent from 1999 to 2001. Nationwide, agriculture's share of GSP fell by 0.4 percent in the same period. Even in Arkansas, from 1999 to 2001 agriculture's share of GSP fell 1.7 percent (0.4 percent for agricultural production and 1.3 percent for agricultural processing) from 1999 to 2001. However, Arkansas remains first of six contiguous states in the percentage of GSP contributed by agricultural production and processing.

The diversity of Arkansas' agriculture sector fosters its strength. Arkansas' varied climate and terrain allows for row crops in the east, livestock in the west, and forestry in the south. Arkansas is one of the top fifteen states in the production of fifteen different agricultural products (Justice, 2002). In the nation, Arkansas is the leading producer of rice, the second largest producer of broilers, and the third largest producer of both catfish and turkey (Farm Bureau, 2002). Arkansas also has a large share of land in forests, equal to 56 percent of its total land base. In the forestry sector, relatively low valued timber is processed to produce higher valued products (e.g., lumber, paper, and furniture). States that are more than 50 percent forested, including Arkansas, Mississippi, and Tennessee, tend to have high values of agricultural processing. Oklahoma, the only state contiguous to Arkansas with a lower value of agricultural processing than production, is only 17 percent forested (American Forest and Paper Association, 2001).

Figure 1. Production and Processing as a Percentage of Gross State Product, 2001^a



Source: USDC, BEA, Regional Accounts Data (2003).

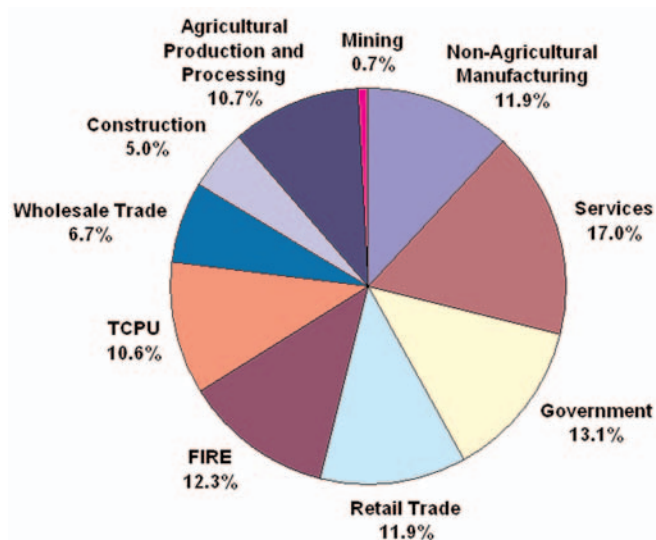
^a Current 2001 dollars

^b The BEA includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia in the Southeast region.

Agriculture and the Arkansas Economy

In 2001, Arkansas' total GSP was equal to \$67.9B (current dollars) (USDC, BEA, 2003). The agriculture sector contributed 10.7 percent to Arkansas' GSP. Agricultural production contributed \$2.24B (current dollars) or 3.3 percent to Arkansas' GSP (Figure 2). Agricultural processing, contributed \$5.03B (current dollars) or 7.4 percent of GSP. Food and kindred products, paper products, and lumber and wood account for most of Arkansas' agricultural processed goods. These industries are discussed further in the "Processed Agricultural Products" section.

Figure 2. Sector Percentages of Arkansas' Gross State Product, 2001^a

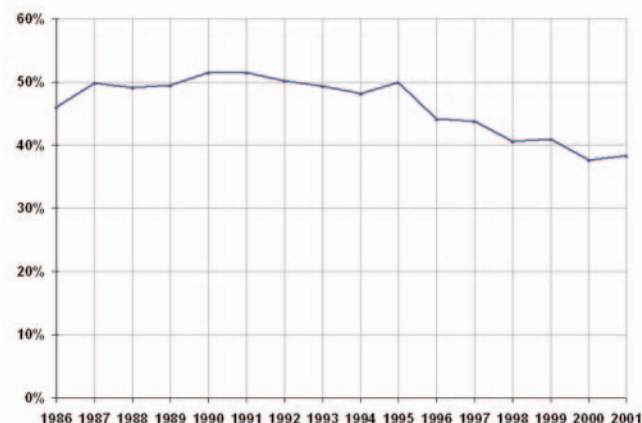


Source: USDC, BEA, Regional Accounts Data (2003).
a Current dollars

Historically agricultural processing has been a major component of Arkansas' manufacturing sector. However, by 1999 agricultural processing as a percentage of total manufacturing had declined 8.5 percent since 1995 (Figure 3). The decline in its share of manufacturing is primarily due to the falling prices of agricultural processed goods and is further discussed in the "Processed Agricultural Products" section of this report. From 1999 to 2000 agricultural processing's share of manufacturing fell 6.0 percent. However from 2000 to 2001, processing recaptured some of its strength and only declined by 3.2 percent from 1999 to 2001.

In Arkansas, the expanding electronic equipment and primary metal sectors have propelled the growth in overall manufacturing, contributing to the recent decline of agricultural processing as a percentage of the manufacturing sector.

Figure 3. Agricultural Processing's Share of Manufacturing GSP, 1986-2001^a



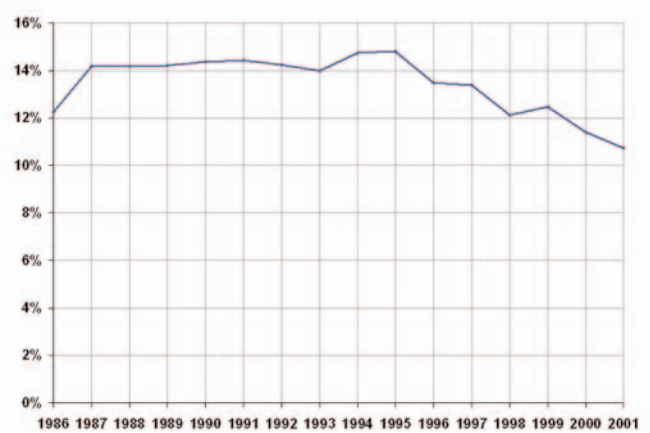
Source: Computed using USDC, BEA, Regional Accounts Data (2003).
a Constant dollars (2001 base year)

As was reported in Goodwin et al. (2002), the manufacturing sector's GSP increased about 73 percent between 1986 and 1999. During the same time period, the GSP of electronic equipment, which includes household appliances, electric lighting equipment, and communication equipment, grew 217 percent, and the GSP of primary metals, which includes iron, steel, aluminum, and copper, grew 243 percent. However, between 1999 and 2001 the total GSP of manufacturing (constant, base year of 2001) fell from 14.491B to 13.136B or 9.4 percent, due primarily to a slow down in the electronic equipment sector.

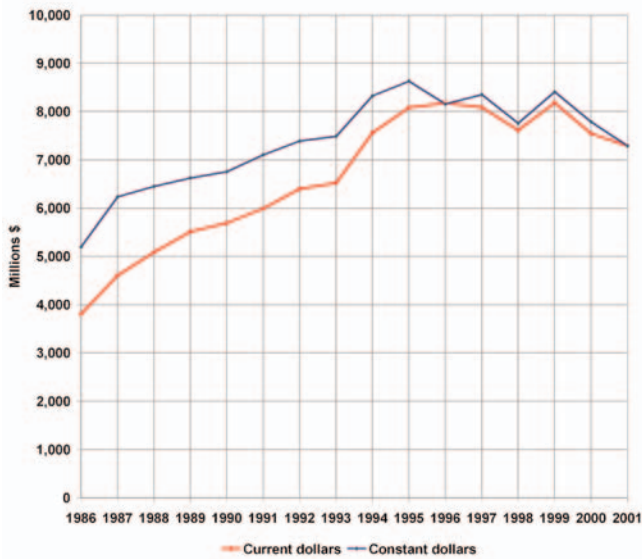
The contribution of the agriculture sector to Arkansas' GSP has remained relatively stable from 1987 through 1993. Agriculture's share of GSP rose from 1993 to 1995 then began falling, reaching a low of 11 percent in 2001 (Figure 4). Most of this loss is explained by falling prices for agricultural products.

In 1995, Arkansas' agriculture sector's GSP peaked at \$8.4B and then remained steady near \$8B through 1999 (Figure 5). From 1999 to 2001, the agriculture sector's share of GSP fell 13.3 percent to 7.291. From 1999 to 2001, agricultural production's share of GSP declined from 2.469 B to 2.263B or 8.3 percent while agricultural processing's share fell from 5.939B to 5.028B or 15.3 percent (Figure 6). As will be discussed, the decline in agricultural processing's GSP can be attributed to falling prices for agricultural processed goods. Typically, in a period of normal inflation, the constant dollars series in Figure 5 should not fall below the current dollars series. The fact that constant dollars fell below current dollars between 2000 and 2001, during a time period of normal inflation, reveals an environment of depressed prices specific to the agriculture sector.

Figure 4. The Agriculture Sector's Share of Arkansas Gross State Product, 1986-2001^a

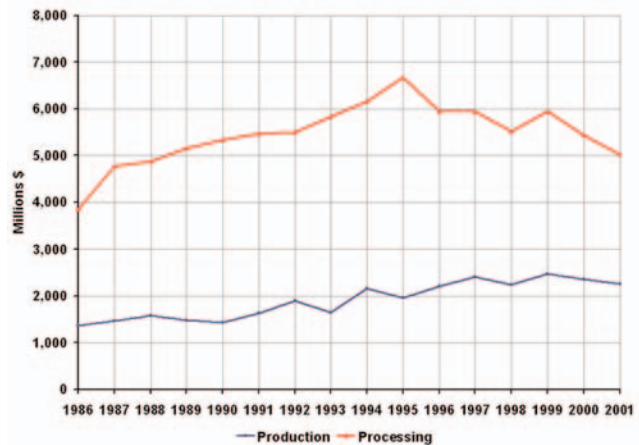


Source: Computed using USDC, BEA, Regional Accounts Data (2003).
^a Constant dollars (2001 base year)



Source: Computed using USDC, BEA, Regional Accounts Data (2003).
^a Constant dollars (2001 base year)

Figure 5. Arkansas' Agriculture Sector Gross State Product, 1986-2001^a



Source: Computed using USDC, BEA, Regional Accounts Data (2003).
^a Constant dollars (2001 base year)

Figure 6. Gross State Product for Arkansas' Agricultural Production and Processing, 1986-2001^a

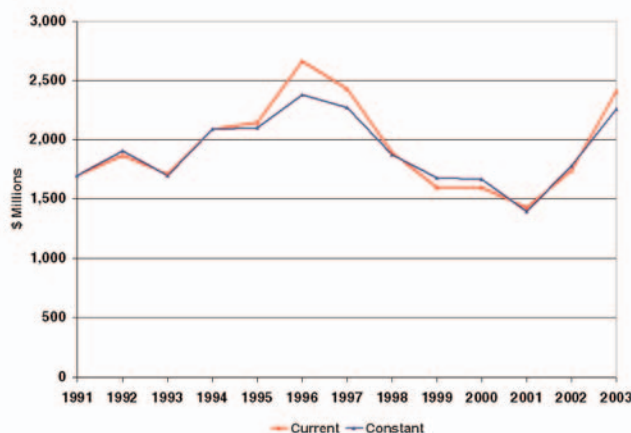
Agricultural Production

Crop and livestock production, forestry, aquaculture, and horticulture are the primary agricultural production industries found in Arkansas. The GSP of agricultural production trended upward from 1986 to 1999 and then fell slightly from 1999 to 2001. The growth of agricultural production's GSP stalled in recent years due to low agricultural prices in the world market, especially in the crop sector.

Crop Production

While crop production continues to be an important part of Arkansas' economy, the sales value of crop production has experienced periods of both increases and declines since 1986. Crop production sales peaked in 1996 and then declined sharply through 1999. These declines and reasons for these declines (falling prices coupled with decreases in US share of the global rice, soybean, and cotton markets) were explained in detail in Goodwin et al. (2002). The downward trend continued through 2001 as shown in Figure 7. The value of crop production fell to \$1.395B (in constant 1990-1992 dollars) in 2001, the lowest in over a decade. This low value will be reflected in the economic impacts presented in the second half of this document. Since 2001, however both prices and US exports of agricultural products have improved. As a result, the value of Arkansas's crop production sales in the most current period has increased a dramatic 61.7 percent to \$2.256B.

Figure 7. Arkansas' Crop Production Sales, 1991-2003^a



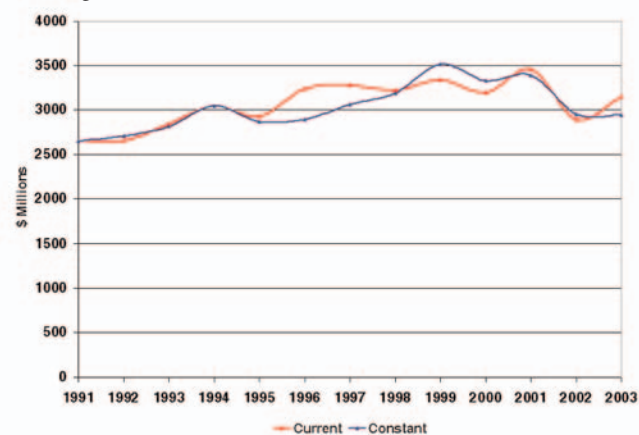
Source: Computed using data from the USDA, NASS (2004).
For selected crops: Rice, Soybeans, Cotton, Hay, Wheat, Corn, Sorghum, and Oats.
aNote new base year of 1990-1992

Livestock Production

Livestock production is also a major component of Arkansas' agricultural production. The value of livestock production from 1991 to 2003 is tracked in Figure 8. The value of livestock production was computed using cash receipts data (USDA, ERS, 2004). Cash receipts data measures income from sales and marketings. The values of broilers, cattle and calves, eggs, turkeys, hogs and pigs, milk, catfish, farm chickens, and honey production are found in Figure 8.

As shown in Figure 8, livestock production remained stable during the late 1990s, the same time period in which the value of crop production declined. As a result, livestock production replaced a portion of crop production's agricultural share of the Arkansas economy through 2001. From 1986 to 1999, cash receipts for livestock production increased 31.8 percent, and in 1999, the current value of livestock production was nearly \$2B greater than that of crop production.

Figure 8. The Value of Arkansas' Livestock Production, 1991-2003^a



Source: Computed using data from the USDA, ERS (2004).
For selected livestock: Broilers, Cattle and Calves, Eggs, Turkeys, Hogs and Pigs, Milk, Catfish, Farm Chickens, and Honey.
a Constant dollars (1990-1992 base year)

Arkansas' livestock sector is also susceptible to changes in global agricultural policies. The dominant industry within the sector, poultry, has exported roughly 20 percent of production nationally since the mid 1990s. The top export market, Russia, has exhibited instability in recent years, most notably in 1998 and 2002, when trade and food safety disputes have negatively impacted exports through import bans. Additionally, unstable economic conditions in Asia (Hong Kong and Japan are also major export markets for the U.S.) and Russia have also negatively impacted trade. As a consequence, surplus numbers of birds were present in the market for the next period, further contributing to existing depressed prices in the poultry sector. Thus, careful attention to the global markets and international agricultural policies is also necessary in the livestock sector.

Forestry Production

The state of Arkansas does not require sawmills to disclose the price paid for timber (Levins, 2002); therefore, it is not possible to produce an accurate representation of the value of the forestry industry. Forestry production, however, is essential to Arkansas' economy. Foresters supply wood product manufacturers with raw materials. Arkansas' timber is fundamental to such industries as paper, lumber and wood, and furniture and fixtures. As will be discussed later, processed goods derived from forestry production are the largest component of direct processed agricultural goods, in terms of employment, labor income, and value-added.

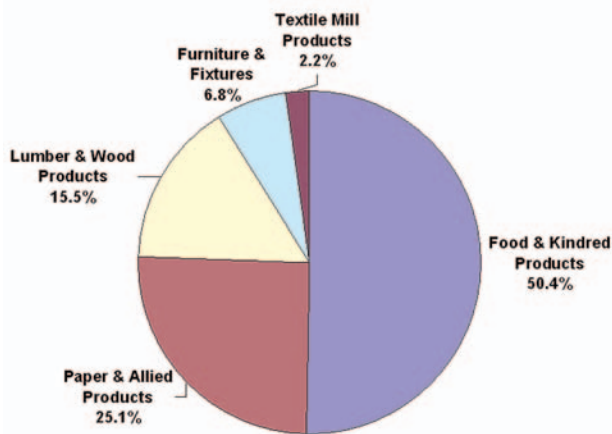
Other Production

Other production consists of agricultural, forestry, and fishery services (e.g., crop dusting), landscape and horticultural services (e.g., lawn and garden services), aquaculture, and commercial fishing. The largest component is agricultural, forestry, and fishery services. Reliable historical estimates of employment and value added are not available for each of the Other Production components and therefore have not been included in this report.⁶

Agricultural Processing

Processed crop, livestock, forestry, and other agricultural products are an integral part of agriculture in Arkansas. Arkansas' manufacturing sector depends upon raw materials from the crop, livestock, and forestry sectors for use in many of its largest industries. Broiler production and processing, for example, may lead to such processed goods as frozen chicken, eggs, animal feed, and animal oils.

Figure 9. Components of Arkansas' Agricultural Processing Sector, GSP, 2001^a



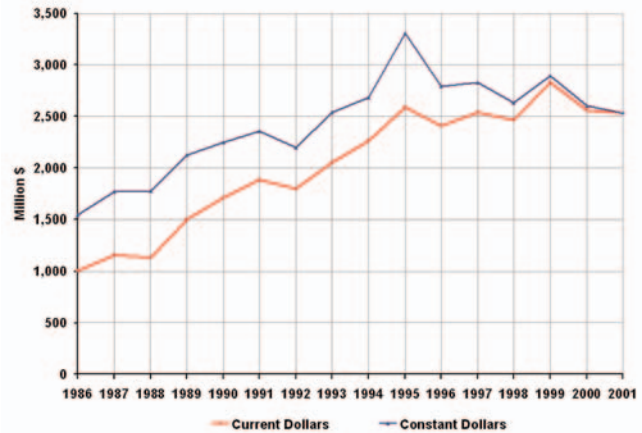
Source: USDC, BEA, Regional Accounts Data (2003).
a Current dollars

The contribution of individual agricultural processing industries to agricultural processing is shown in Figure 9. Although prices for agricultural processed goods fell overall, each processing industry faced a different price environment, and certain processing industries managed to increase in value during the late 1990s. A discussion of each industry's value over time, as a percentage of GSP, follows.

Food and Kindred Products

The food and kindred products sector is the largest processing sector in Arkansas, accounting for 50.4 percent of agricultural processing's GSP. The GSP of the food processing sector increased 87.2 percent from 1986 to 1999 (Figure 10) but declined 12.4 percent from 1999 to 2001.

Figure 10. The Gross State Product of Food and Kindred Products, 1986-2001^a

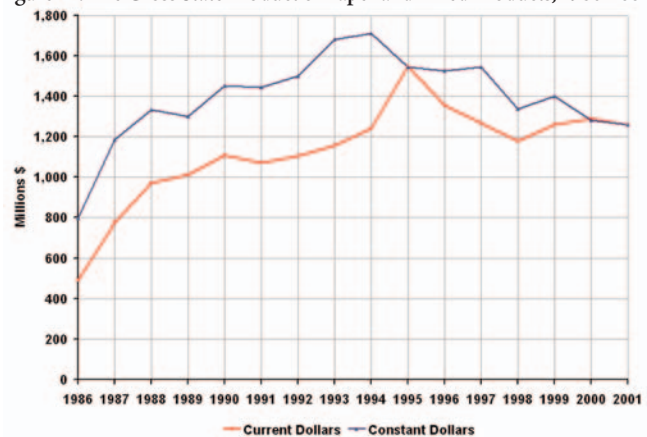


Source: Computed using USDC, BEA, Regional Accounts Data (2003).
a Current and constant 2001 dollars

Paper and Allied Products

The paper and allied products sector is consistently one of the three largest processing industries in Arkansas. In 1999, its GSP was \$1.3B, almost twice that of its 1986 GSP (Figure 11). Despite the industry's growth, pulp and paper manufacturers in North America were strongly affected by the Asian financial crisis during the mid to late 1990s (Simard, 1999) that continued to impact manufacturers through 2001. Figure 11 shows a substantial decline in the industry's value from 1995 to 1999, with the sharpest price decline from 1997 to 1998. From 1999 to 2001 the constant value of paper and allied products fell an additional 10 percent.

Figure 11. The Gross State Product of Paper and Allied Products, 1986-2001^a

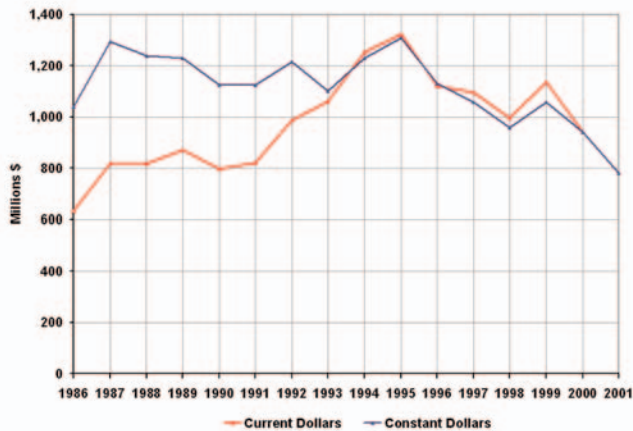


Source: Computed using USDC, BEA, Regional Accounts Data (2003).
a Current dollars

Lumber and Wood Products

The lumber and wood sector remained relatively stable throughout the late 1980s and early 1990s (Figure 12). In 1996, lumber and wood's GSP began to decline, similar to food processing. However, unlike food processing, the GSP of lumber and wood did not stabilize and except for a slight rebound in 1999, continued to decline reaching a 25-year low in 2001. The lumber and wood sector's GSP fell sharply from 1995 to 2001. Much of this loss is attributable to a slow

Figure 12. The Gross State Product of Lumber and Wood Products, 1986-2001^a



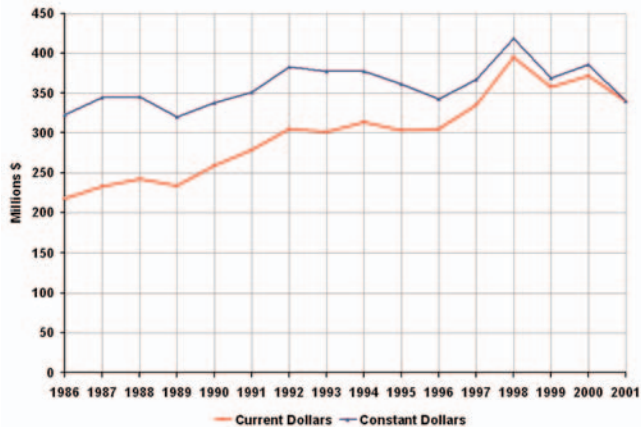
Source: Computed using USDC, BEA, Regional Accounts Data (2003).
a Constant dollars (2001 base year)

down in the international market for US wood chips and a drop in soft wood prices that followed an influx of Canadian wood in the market. The only variation from this downward trend was a slight increase in GSP in 1999. However, this rise in GSP was followed by a sharp decline of 26 percent from \$1.059B to \$0.781B in constant dollars.

Furniture and Fixtures

During the period in which most agricultural processing sectors experienced a decline in GSP the furniture and fixtures sector managed to increase its GSP from \$0.3B in 1996 to \$0.4B in 1998 (Figure 13). Furniture and fixtures benefited from a strong resale housing market throughout the 1990s. The resale housing market is a leading indicator of demand for the furniture industry (Schuler, Taylor and Araman, 2001). However, as housing activity slowed in the late 1990s, lumber and furniture GSP also fell, as witnessed in a 7.9 percent decline from 1999 to 2001. Increased housing starts and other real estate activity in 2002 suggest that forthcoming data for lumber and furniture GSP will improve.

Figure 13. The Gross State Product of Furniture and Fixtures, 1986-2001^a

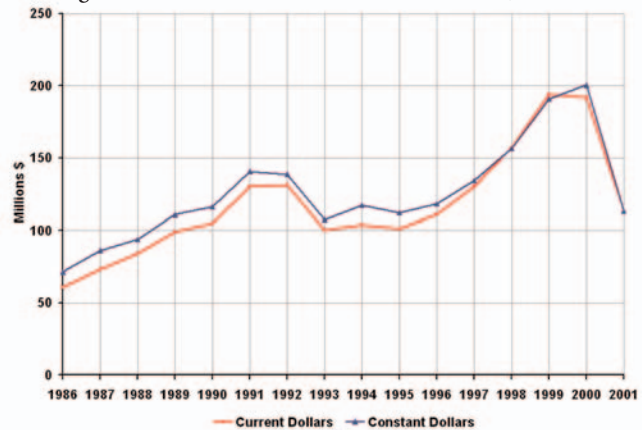


Source: Computed using USDC, BEA, Regional Accounts Data (2003).
a Constant dollars (2001 base year)

Textile Mill Products

The textile sector was the fastest growing agricultural processing sector in Arkansas from 1986 to 2000. The high growth did not have a significant impact on agriculture since its GSP was less than one percent of agricultural processing's GSP in 2000. Textile's GSP was nearly 170 percent greater in 1999 than it was in 1986 (Figure 14). Several economic studies (USCC, 2002; USDA, FAS 2001; Wall, 2000) attribute the rise in value to the North American Free Trade Agreement (NAFTA). Although the overall effect of NAFTA on the US economy is controversial, many studies find that NAFTA has spurred demand for U.S. textiles in Mexico and Canada. Figure 14 suggests that the post-1994 increase in the textile sector's GSP may be a result of NAFTA's implementation in the same year. However, textile manufacturers in the U.S. continue to have difficulty competing with foreign manufacturers with lower labor costs. A major textile manufacturer closed its last Arkansas plant in 2000, resulting in a steep decline in textile GSP in 2001.

Figure 14. The Gross State Product of Textile Goods, 1986-2001^a



Source: Computed using USDC, BEA, Regional Accounts Data (2003).
a Constant dollars (2001 base year)

Summary of the Trends in Gross State Product for Agriculture

In Goodwin et al (2002) the agricultural sector was found to be a very strong part of the Arkansas economy. However, between 1999 and 2001, agriculture lost share and value in nearly all of its production and processing areas. Much of this loss is attributed to depressed prices and lost market share that existed at that time. Available data indicate that since 2001, much of the agricultural sector has rebounded. The crop production areas are benefiting from improved prices. Much of the forestry sector is benefiting from improved housing starts and an active real estate market. Surplus numbers in the poultry sector and in corresponding inventories have been reduced and outbreaks of disease in major poultry producing and exporting countries, primarily in Southeast Asia, have further aided in the recovery of poultry prices. Decreases in imports of Canadian feeder cattle due to BSE restrictions and increasing meat demand due to dietary changes in the U.S. have resulted in increased beef and pork prices as well. This suggests that agriculture will remain a strong a vital part of the Arkansas economy into the future.

Direct, Indirect, and Induced Impacts of Agriculture

The economic impact of the agriculture sector in Arkansas is much more than the direct impact of agricultural production and processing. To measure agriculture's total economic impact, the indirect and induced impacts of agriculture must also be taken into consideration. Indirect impacts occur when the agriculture sector purchases goods and services from local businesses. The production of certain farm machinery and equipment, for example, is an indirect impact of agricultural production. Agriculture's induced impacts are measured by increases in economic activity to satisfy the personal consumption by employees of the agriculture sector or by employees of firms that provide inputs to the agriculture sector. The sum of direct, indirect, and induced agricultural effects provides a measure for the total economic impact of agriculture.

Methods

As in Goodwin et al. (2002), the economic impacts of Arkansas' agricultural sector were modeled using the Impact Analysis for Planning (or IMPLAN) System (MIG, 2000). However, due to an overhaul in the development of IMPLAN data, results from Goodwin et al. (2002) cannot be directly compared to results from this study (MIG., Inc. 2004). Only general trends in the overall impact of agriculture will be compared.

Goodwin et al. (2002) employed IMPLAN data that consisted of a 528 sector input-output transactions table that was based on the Standard Industrial Classification (SIC) system. Goodwin et al. (2002) then followed methods similar to Barnett and Reinschmiedt (1996) to combine the 528 sectors into 51 aggregated sectors – 29 agricultural sectors and 22 non agricultural sectors (see Goodwin et al. (2002) for details. However, beginning with the 2001 year data, IMPLAN models are based a new government classification system call the North American Industry Classification System (NAICS). This conversion went all the way down to the local business level. All industries are affected by this conversion. NAICS groupings are not comparable to SIC groupings.⁷

The IMPLAN model now uses a 509 sector input-output transactions table.⁸ The 509 sectors are combined in this study to form 45 aggregated sectors (noted in italics throughout this text) – 24 agricultural sectors and 21 non-agricultural sectors (see Appendix A, Table 1).

As before, but using this new scheme, the impacts of agriculture were evaluated four ways: crop agriculture, live-stock agriculture, forestry agriculture and aggregate agriculture. The agriculture sectors used to calculate the impacts in each scenario are documented in Appendix A, Table 2. Note that the impacts of the crop, livestock, and forestry scenarios do not sum up to the impacts of aggregate agriculture as certain agricultural enterprises were added to the aggregate agriculture scenario that were not included in the crop, live-stock, or forestry scenarios. In some cases, results are presented as production and processing impacts. The sectors that contributed to these impacts are listed in Appendix A, Table 3. IMPLAN Arkansas data for 2001, the most recent data available, were used to calculate all impacts. Total employment, wages, and value added impacts for each aggregated sector for each scenario are detailed in Appendix B and are summarized below. All wages and value added figures are reported in 2001 dollars, unless otherwise noted.

The Aggregate Agricultural Sector

In 2001, the agricultural sector made large contributions to the economy in terms of employment, wages, and value added. The agriculture sector provided 291,290 jobs, or 19.2 percent, of state employment. That is, nearly one in five Arkansas jobs can be attributed to agriculture. In that same year, agriculture paid \$7.8B in wages or 12.7 percent of total state labor income. Additionally, the agriculture sector added \$13.1B of value to the state economy, or 19.6 percent of state value-added. That is, about \$1 out of every \$5 in value added can be attributed to agriculture. Details of these impacts are presented in Appendix B, Table 1 and are summarized in Tables 2 through 4 on the following page.

Agriculture generates employment in all of the 45 aggregated sectors. Almost half, or 48 percent, of all agriculture-generated jobs are in five sectors (see highlight box). The poultry sector (Comprised of Poultry Processing and Poultry and Eggs) alone provides 50,705 jobs or 17.4 percent of all agriculture-generated jobs in Arkansas. Poultry Processing, part of Processed Meat/Eggs employed 35,317 of these workers. The remaining 15,388 workers are employed in Poultry and Eggs.

The far-reaching impacts of agriculture are seen in the distribution of agriculture-generated value added throughout the economy. The highlight box at right shows which five sectors benefit the most from value added generated by

Total Impact of Arkansas Agriculture, 2001 ^a	
Employment	291,290 (nearly 1 out of 5 Arkansas jobs)
Wages	\$7.8 B (13 percent of Arkansas wages)
Value-Added	\$13.1 B (nearly \$1 of every \$5 of added value)

^a Current dollars

Jobs Generated by Agriculture, 2001 ^a	
Top Five Sectors	
Processed Meat/Eggs	39,889 jobs (Poultry processing alone employs 35,317 people)
Miscellaneous Services	39,575 jobs
Wholesale and Retail Trade	29,085 jobs
Wood Processing	15,850 jobs
Poultry and Eggs	15,388 jobs

Source: Computed using the 2001 Arkansas database from MIG (2004)

^a Current dollars

Value Added Generated by Agriculture, 2001 ^a	
Top Five Sectors	
Wholesale and Retail Trade	\$1.31 Billion
Paper Processing	\$1.21 Billion
Miscellaneous Services	\$1.20 Billion
Financial Real Estate	\$1.16 Billion
Processed Meat and Eggs	\$1.0 Billion

Source: Computed using the 2001 Arkansas database from MIG (2004)

^a Current dollars

agriculture. Note that three of those sectors (Wholesale and Retail Trade, Miscellaneous Services, and Financial Real Estate) are outside of agriculture. In fact, nearly half (\$5.55B or 42.5 percent) of all agriculture-generated value added accrues outside agricultural sectors. Within the agricultural sectors, Paper Processing, Processed Meats/Eggs, and Miscellaneous Food Processing add the largest amount of value in the economy. Over 35 percent (or \$2.626B) of the value added within agriculture is generated from forestry production and processing. Livestock production and processing contribute \$2.050B (or 27 percent) in value, and crop production and processing contribute \$2.46B (or 32.3 percent) of all agriculture-generated value added in the economy.

As with value added, much of the income generated attributable to agricultural activity is generated outside of agriculture sectors. In 2001,

\$3.27B, or nearly 42 percent of all wages, went to workers in non-agricultural sectors. Within the agricultural sectors, Processed Meats and Eggs, Paper Processing, Wood Processing, and Miscellaneous Food Processing, Poultry and Eggs, and Furniture employees received \$3.23B or 41 percent of all wages generated.

Wages Generated by Agriculture, 2001 ^a	
Top Five Sectors	
Processed Meat/Eggs	\$1.04 Billion
Miscellaneous Services	\$887 Million
Wholesale and Retail Trade	\$823 Million
Paper Processing	\$711 Million
Wood Processing	\$483 Million

Source: Computed using the 2001 Arkansas database from MIG (2004)

^a Current dollars

The agricultural sector's direct impact on the state economy is measured by the sum of the impacts of farm production and processing of farm products. There were 173,856 workers employed by the agricultural production and processing sectors. The livestock industry employed more than one out of every three (or 39 percent) of these workers (Tables 3 and 4). Crop industries employed 29 percent and forestry nearly 26 percent. These workers, and owners of these farms and businesses, received over \$4.4B in wages. Seventy percent of these wages went to workers in processing industries. Crop, livestock, and forestry industries directly added value of \$7.3B⁹ to the Arkansas economy, nearly two thirds of which came from processing industries.

Indirect impacts result when agricultural firms purchase raw materials and services from other Arkansas businesses to produce their products. In 2001, there were 53,931 workers employed by industries supplying goods and services to the farm production and processing industries. These workers and the owners of those establishments received \$1.8B in wages and salaries, and these industries added value of over \$3B to the state economy.

Induced impacts result when employees of agricultural firms and employees of the raw material and service firms make local purchases. There were 63,503 workers employed by businesses providing goods and services to the employees in agriculture and its supplying industries. These employees and the proprietors of these businesses received over \$1.5B in wages and salaries and added value of roughly \$2.7B to the Arkansas economy.

Table 2. The Aggregate Agriculture Sector's Impact on Arkansas' Economy, 2001

	Employment ^a			Labor Income ^b			Value-Added ^c		
	Number of Jobs	% Total Impact	% Total Arkansas Jobs	Million \$ ^d	% Total Impact	% Total Arkansas Labor Income	Million \$	% Total Impact	% Total Arkansas Value Added
Production ^e	75,434	25.9	5.0	1,280	16.4	2.1	2,624	20.1	3.9
Processing ^f	98,421	33.8	6.5	3,169	40.6	5.1	4,694	36.0	7.1
Direct Impact	173,856	59.7	11.4	4,449	57.0	7.2	7,317	56.1	11.0
Indirect Effects ^g	53,931	18.5	3.6	1,847	23.6	3.0	3,051	23.4	4.6
Direct + Indirect Impact	227,787	78.2	15.0	6,296	80.6	10.2	10,368	79.4	15.6
Induced Effects	63,503	21.8	4.2	1,515	19.4	2.5	2,686	20.6	4.0
Total Impact	291,290	100.0	19.2	7,810	100.0	12.7	13,053	100.0	19.6

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Equivalent to full- and part-time jobs (MIG, 2000).

^b Labor income represents all forms of employment income; it is the sum of employee compensation and proprietor income (MIG, 2000).

^c Value-added is the sum of employee compensation, proprietary income, and indirect business taxes.

^d Current dollars.

^e Appendix A, Table 3 lists sectors of direct agricultural production, in terms of IMPLAN sectors.

^f Appendix A, Table 3 lists sectors of direct agricultural processing, in terms of IMPLAN sectors.

^g Apart from the trickle down indirect agricultural activity that is a portion of the indirect impact of agriculture, 100 percent of the following IMPLAN sectors is considered indirect agricultural activity: P Soda, and Borate Minerals; Phosphate Rock; Chemical, Fertilizer Mineral Mining, N.E.C.; New Farm Structures; Nitrogenous and Phosphatic Fertilizers; Fertilizers, Mixing Only; Agricultural Chemicals, N.E.C.; Farm Machinery and Equipment; Farm Machinery and Equipment; and Food Products Machinery.

Table 3. The Contribution of Major Agricultural Sectors to Agricultural Production, 2001

	Employment ^a		Labor Income ^b		Value-Added ^c	
	(Number of Jobs)	(% Ag. Prod.)	(Million \$) ^d	(% Ag. Prod.)	(Million \$)	(% Ag. Prod.)
Crop	31,781	42.1	406	31.7	1,111	42.4
Livestock	27,986	37.1	500	39.1	902	34.4
Forestry	5,862	7.8	170	13.3	429	16.3
Other	9,805	13.0	204	15.9	182	6.9
Total	75,434	100.0	1,280	100.0	2,624	100.0

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Equivalent to full- and part-time jobs (MIG, 2000).

^b Labor income represents all forms of employment income; it is the sum of employee compensation and proprietor income (MIG, 2000).

^c Value-added is the sum of employee compensation, proprietary income, and indirect business taxes.

^d Current dollars.

Table 4. The Contribution of Major Agricultural Sectors to Agricultural Processing, 2001

	Employment ^a		Labor Income ^b		Value-Added ^c	
	(Number of Jobs)	(% Ag. Proc.)	(Million \$) ^d	(% Ag. Proc.)	(Million \$)	(% Ag. Proc.)
Crop	19,043	19.3	649	20.5	1,348	28.7
Livestock	40,552	41.2	1,059	33.4	1,148	24.5
Forestry	38,827	39.4	1,460	46.1	2,198	46.8
Other	0	0.0	0	0.0	0	0.0
Total	98,421	100.0	3,169	100.0	4,694	100.0

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Equivalent to full- and part-time jobs (MIG, 2000).

^b Labor income represents all forms of employment income; it is the sum of employee compensation and proprietor income (MIG, 2000).

^c Value-added is the sum of employee compensation, proprietary income, and indirect business taxes.

^d Current dollars.

The Crop Sector

The crop sector includes all enterprises engaged in the production and processing of cotton, food and feed grains, oil bearing crops, fruits, nuts and vegetables, and hay and pasture (Appendix A, Table 3).

These enterprises were responsible for 86,176 jobs, or 5.7 percent of state employment. Those workers received \$2B in wages, or 3.3 percent of

Impact of the Crop Sector, 1999 ^a	
Employment	86,176 jobs
Labor Income	\$2.0 Billion
Value-Added	\$4.14 Billion

^a 2001 current dollars

Over 40 Percent of All Jobs, Wages and Value Created by the Crop Sector Went to these Sectors:

- ▶ Food Grains
- ▶ Miscellaneous Food Processing
- ▶ Wholesale and Retail Trade

state labor income as presented in the high-light box. The crop sector added \$4.14B, or 6.2 percent of state value-added. At least 40 percent of all jobs, wages and value created by the crop sector went to the

Food Grains, Miscellaneous Food Processing, and Wholesale and Retail Trade sectors. Details of these impacts are presented in Appendix B, Table 2 and are summarized below in Table 5.

The crop sector's direct impact on the economy is the sum of the impacts of production and processing of crop products. Crop production provided more than half of the direct jobs and wages; however, processing accounted for a larger share of direct value added. There were 50,824 workers. These workers and owners of these farms and businesses received over \$1B in wages, and these industries added value of nearly \$2.5B to the Arkansas economy.

Additional jobs, wages and value were created in supporting industries (such as Wholesale and Retail Trade, Transportation and Communication Services, Miscellaneous Services, Financial/Real Estate and Health Services) by the crop sector. There were 35,352 additional jobs created in supporting industries. These workers and the owners of those establishments received \$1B in wages and salaries and these industries added value of nearly \$1.7 B to the state economy.

Table 5. The Crop Sector's Impact on Arkansas' Economy, 2001

	Employment ^a			Labor Income ^b			Value-Added ^c		
	Number of Jobs	% Total Impact	% Total Arkansas Jobs	Million \$ ^d	% Total Impact	% Total Arkansas Labor Income	Million \$	% Total Impact	% Total Arkansas Value Added
Production ^e	31,781	36.9	2.1	406	19.8	0.7	1,111	26.8	1.7
Processing ^f	19,043	22.1	1.3	649	31.6	1.1	1,348	32.5	2.0
Direct Impact	50,824	59.0	3.3	1,055	51.3	1.7	2,459	59.3	3.7
Indirect Effects ^g	18,608	21.6	1.2	601	29.2	1.0	977	23.6	1.5
Direct + Indirect Impact	69,432	80.6	4.6	1,656	80.6	2.7	3,436	82.9	5.2
Induced Effects	16,744	19.4	1.1	399	19.4	0.6	708	17.1	1.1
Total Impact	86,176	100.0	5.7	2,056	100.0	3.3	4,144	100.0	6.2

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Equivalent to full- and part-time jobs (MIG, 2000).

^b Labor income represents all forms of employment income; it is the sum of employee compensation and proprietor income (MIG, 2000).

^c Value-added is the sum of employee compensation, proprietary income, and indirect business taxes.

^d Current dollars.

^e Appendix A, Table 3 lists sectors of direct agricultural production, in terms of IMPLAN sectors.

^f Appendix A, Table 3 lists sectors of direct agricultural processing, in terms of IMPLAN sectors.

^g Apart from the trickle down indirect agricultural activity that is a portion of the indirect impact of agriculture, 100 percent of the following IMPLAN sectors is considered indirect agricultural activity: Potash, Soda, and Borate Minerals; Phosphate Rock; Chemical, Fertilizer Mineral Mining, N.E.C.; New Farm Structures; Nitrogenous and Phosphatic Fertilizers; Fertilizers, Mixing Only; Agricultural Chemicals, N.E.C.; Farm Machinery and Equipment; and Food Products Machinery.

The Livestock Sector

The livestock sector, includes all enterprises engaged in the production and processing of livestock including the poultry and egg, cattle, dairy farm, hogs and pigs, other livestock, processed meat, and dairy processing industries (Appendix A, Table 3).

The livestock sector accounted for 111,548 jobs in 2001, or 7.3 percent of state employ-

ment. These workers received \$2.7B in wages, or 4.5 percent of state labor income. In 2001, the livestock sector added \$4.07B of value to the state economy, or 6.1 percent of state value-added. Table 6 below provides a summary of the livestock sector's total impact on Arkansas' economy. Details can be found in Appendix B, Table 3.

The livestock's sector's direct impact on the state economy is measured by the sum of the impacts of animal production and processing of crop products. There were 68,538 workers employed by the livestock production and processing sectors. Workers and owners of these farms and businesses received over \$1.6B in wages and these industries added value of nearly \$2.1B to the Arkansas economy. The poultry industry (comprised of Poultry and Egg and Poultry Processing industries) alone created 50,705 jobs, paid \$1.21B in wages and added \$1.68B in value to the economy (see highlight box). These represent 74 percent of direct livestock employment, 78 percent of direct wages, and 82

percent of direct value added. Many rural communities have poultry production and processing as their primary economic engine, supporting either directly or indirectly their local infrastructures and businesses. In addition, much of the economic activity associated with cattle production is directly tied to poultry production, as the majority of poultry producers also have cow/calf operations in conjunction with broiler and turkey operations. An additional 43,010 jobs, workers employed by industries supplying goods and services to the livestock production and processing industries. These workers and the owners of those establishments received \$1.22B in wages and salaries, and these industries added value of over \$2.02 B to the state economy. Most of these people are employed in Miscellaneous Service,

Agricultural, Forestry and Fisheries Services, Wholesale and Retail Trade, Health Services, and Farm Inputs and Machinery sectors. Value added is generated in Financial/Real Estate, Wholesale and Retail Trade, Transportation and Communication, Health Services, and Miscellaneous Services sectors.

Impact of the Livestock Sector, 2001 ^a	
Employment	111,548 jobs
Labor Income	\$2.7B
Value-Added	Nearly \$4.1 B

^a 2001 current dollars

The Poultry Industry (Poultry and Egg and Poultry Processing) Contributed:

- ▶ 50,705 Jobs
(1 in 6 Ag-Generated Jobs)
- ▶ \$1.68Billion in Value Added
(More than \$1 in \$8 of Ag-Generated V.A.)
- ▶ \$1.21 Billion in Wages
(More than \$1 in \$7 of Ag-Generated Income)

Table 6. The Livestock Sector's Impact on Arkansas' Economy, 2001

	Employment ^a			Labor Income ^b			Value-Added ^c		
	Number of Jobs	% Total Impact	% Total Arkansas Jobs	Million \$ ^d	% Total Impact	% Total Arkansas Labor Income	Million \$	% Total Impact	% Total Arkansas Value Added
Production ^e	27,986	25.1	1.8	500	18.0	0.8	902	22.1	1.4
Processing ^f	40,552	36.4	2.7	1,059	38.1	1.7	1,148	28.2	1.7
Direct Impact	68,538	61.4	4.5	1,559	56.0	2.5	2,050	50.3	3.1
Indirect Effects ^g	20,352	18.2	1.3	683	24.5	1.1	1,067	26.2	1.6
Direct + Indirect Impact	88,889	79.7	5.9	2,242	80.6	3.6	3,117	76.5	4.7
Induced Effects	22,658	20.3	1.5	540	19.4	0.9	958	23.5	1.4
Total Impact	111,548	100.0	7.3	2,782	100.0	4.5	4,074	100.0	6.1

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Equivalent to full- and part-time jobs (MIG, 2000).

^b Labor income represents all forms of employment income; it is the sum of employee compensation and proprietor income (MIG, 2000).

^c Value-added is the sum of employee compensation, proprietary income, and indirect business taxes.

^d Current dollars.

^e Appendix A, Table 3 lists sectors of direct agricultural production, in terms of IMPLAN sectors.

^f Appendix A, Table 3 lists sectors of direct agricultural processing, in terms of IMPLAN sectors.

^g Apart from the trickle down indirect agricultural activity that is a portion of the indirect impact of agriculture, 100 percent of the following IMPLAN sectors is considered indirect agricultural activity: Potash, Soda, and Borate Minerals; Phosphate Rock; Chemical, Fertilizer Mineral Mining, N.E.C.; New Farm Structures; Nitrogenous and Phosphatic Fertilizers; Fertilizers, Mixing Only; Agricultural Chemicals, N.E.C.; Farm Machinery and Equipment; and Food Products Machinery.

The Forestry Sector

The forestry sector is primarily comprised of forest products, furniture and wood, and paper processing enterprises (Appendix A, Table 2). The forestry sector was responsible for 88,294 jobs in 2001, or 5.8 percent of state employment, and \$2.83B in labor income, or 4.6 percent of state labor income. In 1999, the forestry sector added \$4.63B of

Employment	88,294 jobs
Labor Income	\$2.83 Billion
Value-Added	\$4.63 Billion

^a 2001 current dollars

value to the state economy, or 7.0 percent of state value-added. Within the forestry sector, Wood Processing and Paper Processing contributed at least half of all jobs, wages and value added. Details can be found in Appendix B

Table 4. These impacts are summarized in Table 7 below.

The forestry sector's direct impact on the state economy is measured by the sum of the impacts of timber production and processing. There were 44,688 workers employed by the forestry production and processing sectors. Workers on and owners of these farms and businesses received \$1.63B in wages, and these industries added value of over \$2.6B to the Arkansas economy. The Wood Processing and Paper Processing sectors provide 29,328 jobs, paid \$1.19B in wages and added \$1.83B in value. This represents nearly 66 percent

of direct employment, 73 percent of direct wages, and 69 percent of direct value added.

Remaining jobs, income and value added were attributable to the Furniture and Forest Products areas.

In 2001, there were 43,606 workers employed by industries supplying goods and services to the forestry production and processing industries. These workers and the owners of those establishments received \$1.20B in wages and salaries, and these industries added value of nearly \$2.0B to the state economy. Of the indirect and induced impacts generated by the forestry sector, over 85 percent of the jobs, 87 percent of wages, and 87 percent of value added went to the Wholesale and Retail Trade, Transportation and Communication Services, Miscellaneous Services, Health Services, and Financial/Real Estate sectors.

▶ 29,328 Jobs (66 % of all forestry generated jobs)
▶ \$1.19B Wages (73% of all forestry generated wages)
▶ \$1.83 Billion in Value Added (69 % of all forestry generated value)

Table 7. The Forestry Sector's Impact on Arkansas' Economy, 2001

	Employment ^a			Labor Income ^b			Value-Added ^c		
	Number of Jobs	% Total Impact	% Total Arkansas Jobs	Million \$ ^d	% Total Impact	% Total Arkansas Labor Income	Million \$	% Total Impact	% Total Arkansas Value Added
Production ^e	5,862	6.6	0.4	170	6.0	0.3	429	9.3	0.6
Processing ^f	38,827	44.0	2.6	1,460	51.6	2.4	2,198	47.5	3.3
Direct Impact	44,688	50.6	2.9	1,630	57.6	2.6	2,626	56.8	4.0
Indirect Effects ^g	20,550	23.3	1.4	650	23.0	1.1	1,025	22.2	1.5
Direct + Indirect Impact	65,238	73.9	4.3	2,280	80.6	3.7	3,652	78.9	5.5
Induced Effects	23,055	26.1	1.5	550	19.4	0.9	974	21.1	1.5
Total Impact	88,294	100.0	5.8	2,830	100.0	4.6	4,626	100.0	7.0

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Equivalent to full- and part-time jobs (MIG, 2000).

^b Labor income represents all forms of employment income; it is the sum of employee compensation and proprietor income (MIG, 2000).

^c Value-added is the sum of employee compensation, proprietary income, and indirect business taxes.

^d Current dollars.

^e Appendix A, Table 3 lists sectors of direct agricultural production, in terms of IMPLAN sectors.

^f Appendix A, Table 3 lists sectors of direct agricultural processing, in terms of IMPLAN sectors.

^g Apart from the trickle down indirect agricultural activity that is a portion of the indirect impact of agriculture, 100 percent of the following IMPLAN sectors is considered indirect agricultural activity: Potash, Soda, and Borate Minerals; Phosphate Rock; Chemical, Fertilizer Mineral Mining, N.E.C.; New Farm Structures; Nitrogenous and Phosphatic Fertilizers; Fertilizers, Mixing Only; Agricultural Chemicals, N.E.C.; Farm Machinery and Equipment; and Food Products Machinery.

Summary

Data from the Bureau of Economic Affairs indicates that Arkansas' agriculture sector is more important to the state's economy than it is to other states' economies in the southeastern U.S. According to 2001 IMPLAN data and subsequent analyses, about one dollar in five of the total state value added and employment can be attributed to agriculture and its indirect and induced impacts. One in seven dollars of wage income can be attributed to agriculture as well.

After a period of rapid growth in the 1980s, the GSP attributable to agriculture in Arkansas stabilized at around \$8B in the mid 1990s. This phenomenon is primarily due to price pressures for agricultural commodities and an oversupply of processed agricultural goods relative to demand. Indications from 2002 and 2003 farm-level sales data are that the declines in agricultural prices have reversed and that the impact of agriculture may well be re-established in Arkansas' economy to levels more typical historically. Regarding the share of GSP in Arkansas, the decline in its relative share of the economy is larger in magnitude than either the regional or national averages. Nonetheless, Arkansas remains more dependent upon agriculture for its GSP than do its neigh-

bors in the Southeast. In addition, growth in other economic sectors has occurred such that the overall importance of agriculture has leveled off relative to the total economy. Contrariwise, the size of Arkansas' agriculture processing industry results in a relative vulnerability to the price swings of processed agricultural goods. These swings are precipitated not only by world market supply and demand, but also by world political dynamics and subsequent food and agricultural policies that impact trade.

World and domestic price stability and associated agricultural and food policies will continue to have a significant impact on Arkansas agriculture and its contribution to the Arkansas economy. Careful attention must be paid to price trends and policies to allow Arkansas to maintain a vibrant and stable agricultural industry. Continued strength of agriculture is of paramount importance if the social and economic fabric of rural Arkansas communities is to be retained and if the essential infrastructure and services that translate into an acceptable quality of life for its residents are to be maintained.

End Notes

- ¹ Throughout this report, all numerical references to agricultural trends are calculated using constant dollars. The use of constant dollars factors in the effects of inflation and other economic fluctuations on price and allows for a value comparison over time. Constant dollars are derived from the Bureau of Economic Analysis' (BEA's) 1996 chained-dollar series, adjusted to a base year of 1999. The BEA uses industry-specific deflators to adjust current dollars to constant dollars.
- ² GSP is a measurement of economic activity in the state economy. GSP is equivalent to value-added, or the sum of employee compensation, proprietary income (e.g., rent payments), and indirect business taxes (e.g., sales taxes paid by individuals to firms). GSP is also equivalent to gross output minus the cost of intermediate output.
- ³ The BEA defines agricultural production as Agriculture Forestry and Fisheries. They define agricultural processing as Lumber and Wood; Furniture and Fixtures; Food and Kindred Products; Tobacco Products; Textile Mill Products; Paper Products in the processing.
- ⁴ The BEA includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia in the Southeast region.
- ⁵ GDP is the national equivalent to GSP.
- ⁶ Spotty information (selected years) is available for most of the Other Production components. But this information is insufficient to accurately gauge the level of these activities in Arkansas or to compare the value of these activities over time.
- ⁷ Go to the Minnesota Working Group, Inc. website www.implan.com for more information.
- ⁸ Agricultural sectors in IMPLAN may represent one or more production/processing enterprises. For example, cotton production in IMPLAN is the sole enterprise captured in a IMPLAN sector called "Cotton." Rice, however, is captured with wheat in an IMPLAN sector called "Food Grains." The structure of the IMPLAN model makes it very difficult to separate the contributions of grouped enterprises, such as wheat and cotton. Therefore their contributions are reported together in various tables in Appendix B.
- ⁹ This figure, \$7.5B, differs from that reported by BEA on page X. This is to be expected as "agriculture" is defined differently by BEA and IMPLAN.

Literature Cited

- American Forest and Paper Association. 2001. Forest and Paper Industry at a Glance: Arkansas, Mississippi, Oklahoma, Tennessee. Downloaded from the world wide web at <http://www.afandpa.org/legislation/state/eis/> on April 19, 2002.
- Barnett, B. and L. Reinschmiedt. 1996. Agriculture and Forestry in Mississippi – An Analysis of the Impacts of Food and Fiber Related Sectors on the Mississippi Economy. Agricultural Economics Technical Bulletin No. 95. Mississippi State University, Mississippi State, Mississippi.
- Farm Bureau of Arkansas, Inc. 2002. Farm Production Profile: Commodity and Marketing. Downloaded from the world wide web at http://www.arfb.com/commodity/ark_ag/profile.asp on April 18, 2002.
- Goodwin, H.L., J. Popp, W. Miller, G. Vickery and Z. Clayton-Niederman. 2002. Impact of the Agricultural Sector on the Arkansas Economy. Research Report 969. Arkansas Agricultural Experiment Station Division of Agriculture, Fayetteville, Arkansas.
- Justice, T. 2002. Ag to Arkansas – Important as the sun is to seed. Downloaded from the world wide web at http://www.arfb.com/publications/front_porch/articles/arkag.asp on April 18, 2002.
- Levins, R. R. – Arkansas Forestry Commission. Personal Communication. May 1, 2002.
- Miller, W. P. 2002. Arkansas Cooperative Extension Service. Personal communication. April 17.
- Miller, W. P. and Y. Sato. 1999. Contribution of Agriculture to the Arkansas Economy. Arkansas Agricultural Experiment Station Special Report 196. University of Arkansas, Fayetteville, Arkansas.
- Minnesota IMPLAN Group, Inc (MIG). 2004. 2001 Arkansas State and County Level Data. Stillwater, Minnesota.
- Minnesota IMPLAN Group, Inc (MIG). 2002. IMPLAN Professional for Windows 95/98/NT Version 2.0.1018.
- Minnesota IMPLAN Group, Inc (MIG). 2000. IMPLAN Professional® Version 2.0 User Guide, Analysis Guide, Data Guide. Stillwater, Minnesota.
- Schuler, A., R. Taylor, and P. Araman. 2001. Competitiveness of U.S. Wood Furniture Manufacturers: Lessons Learned from the Softwood Moulding Industry. Forest Products Journal, 55(7/8): 14-20.
- Simard, G. December 1999. An Update on the Paper and Allied Products Industry. Downloaded from the world wide web at http://collection.nlc-bnc.ca/100/201/301/statcan/paper_allied_products/1999/36-250.htm on May 1, 2002.
- U.S. Chamber of Commerce. (USCC). 2002. Trade Promotion Authority and Arkansas. Downloaded from the world wide web at <http://www.uschamber.org/International/Trade+Promotion+Authority/State+by+State/Arkansas.htm> on May 1, 2002.
- U.S. Department of Agriculture Economic Research Service (USDA, ERS). 2004. U.S. and State farm income data. Downloaded from the world wide web at <http://www.ers.usda.gov/data/farmincome/finfidmu.htm> on May 9, 2004.
- U.S. Department of Agriculture, Foreign Agricultural Service (USDA, FAS). 2001. Trade and Agriculture: What's at Stake for Arkansas? Downloaded from the world wide web at <http://www.fas.usda.gov/info/factsheets/TPA/ar.pdf> on May 9, 2002.
- U.S. Department of Agriculture, National Agricultural Statistics Service (USDA, NASS). 2004. Arkansas Historic Crops. Downloaded from the world wide web at <http://www.nass.usda.gov/ar/histcrop.htm> on May 9, 2004.
- U.S. Department of Commerce (USDC), Bureau of Economic Analysis (BEA). 2003. Regional Accounts Data: Gross State Product Data. Downloaded from the world wide web at <http://www.bea.gov/bea/regional/gsp/> on March 19, 2004.
- Wall, H. J. 2000. Now and Forever NAFTA. Downloaded from the world wide web at <http://www.stls.frb.org/publications/re/2000/b/pages/economic-briefing.html> on April 22, 2002.

Appendix A

Description of IMPLAN Sectors and Aggregation Schemes

Table 1. Major Components of the Agriculture Sector as defined by BEA Industries.

Aggregated Sector	BEA Industry
AGRICULTURAL PRODUCTION	Agriculture, Forestry, and Fisheries
AGRICULTURAL PROCESSING	Lumber and Wood; Furniture and Fixtures; Food and Kindred Products; Tobacco Products; Textile Mill Products; Paper Products

Table 2. Major Components of Agricultural Production as defined by IMPLAN Sectors.

Aggregated Sector	IMPLAN Sector
CROP PRODUCTION	All other crop farming; Cotton farming; Fruit farming; Grain farming; Greenhouse and nursery production; Oilseed farming ;Sugarcane and sugar beet farming; Tobacco farming; Tree nut farming; Vegetable and melon farming
LIVESTOCK PRODUCTION	Animal production- except cattle and poultry and eggs; Cattle ranching and farming; Poultry and egg production
FORESTRY PRODUCTION	Forest nurseries- forest products- and timber track; Logging
OTHER PRODUCTION	Agriculture and forestry support activities

Table 3. Major Components of Agricultural Processing as defined by IMPLAN Sectors.

Aggregated Sector	IMPLAN Sector
CROP PROCESSING	All other food manufacturing; Bread and bakery product- except frozen-manufacturing; Breakfast cereal manufacturing; Breweries; Broadwoven fabric mills; Carpet and rug mills; Cigarette manufacturing; Coffee and tea manufacturing; Confectionery manufacturing from cacao beans;, Confectionery manufacturing from purchased chocolate; Cookie and cracker manufacturing; Distilleries; Dry pasta manufacturing; Fabric coating mills; Fats and oils refining and blending; Fiber- yarn- and thread mills; Flavoring syrup and concentrate manufacturing; Flour milling; Frozen cakes and other pastries manufacturing; Frozen food manufacturing; Fruit and vegetable canning and drying; Knit fabric mills;Malt manufacturing; Mayonnaise- dressing- and sauce manufacturing; Mixes and dough made from purchased flour; Narrow fabric mills and schiffli embroidery; Nonchocolate confectionery manufacturing; Nonwoven fabric mills; Other apparel knitting mills; Other hosiery and sock mills; Other miscellaneous textile product mills; Other oilseed processing; Other snack food manufacturing; Other tobacco product manufacturing; Rice milling; Roasted nuts and peanut butter manufacturing; Sheer hosiery mills; Soft drink and ice manufacturing; Soybean processing; Spice and extract manufacturing; Sugar manufacturing; Textile and fabric finishing mills; Tire cord and tire fabric mills; Tobacco stemming and redrying; Tortilla manufacturing; Wet corn milling
LIVESTOCK PROCESSING	Animal- except poultry- slaughtering; Cheese manufacturing; Creamery butter manufacturing; Dog and cat food manufacturing; Dry- condensed- and evaporated dairy products; Fluid milk manufacturing; Ice cream and frozen dessert manufacturing; Meat processed from carcasses; Other animal food manufacturing;Poultry processing; Rendering and meat byproduct processing; Seafood product preparation and packaging
FORESTRY PROCESSING	All other converted paper product manufacturing; Blind and shade manufacturing; Coated and laminated paper and packaging materials; Coated and uncoated paper bag manufacturing; Custom architectural woodwork and millwork; Cut stock- resawing lumber- and planing; Die-cut paper office supplies manufacturing; Engineered wood member and truss manufacturing; Envelope manufacturing; Institutional furniture manufacturing ; Manufactured home- mobile home- manufacturing; Miscellaneous wood product manufacturing; Nonupholstered wood household furniture manufacturing; Other household and institutional furniture; Other millwork- including flooring; Paper and paperboard mills; Paperboard container manufacturing; Prefabricated wood building manufacturing; Pulp mills; Reconstituted wood product manufacturing; Sanitary paper product manufacturing; Sawmills; Showcases- partitions- shelving- and lockers ; Stationery and related product manufacturing; Surface-coated paperboard manufacturing Upholstered household furniture manufacturing; Veneer and plywood manufacturing; Wood container and pallet manufacturing; Wood kitchen cabinet and countertop manufacturing; Wood office furniture manufacturing; Wood preservation; Wood windows and door manufacturing
OTHER PROCESSING	Farm machinery and equipment manufacturing; Fertilizer- mixing only- manufacturing; Food product machinery manufacturing; New farm housing units and additions and alterations; Nitrogenous fertilizer manufacturing; Other nonmetallic mineral mining; Pesticide and other agricultural chemical manufacturing; Phosphatic fertilizer manufacturing; Sawmill and woodworking machinery

Table 4. Major Components of the Agriculture Sector as defined by IMPLAN Sectors, 1999¹.

Aggregated Sector	IMPLAN Sector
AGRICULTURAL/FORESTRY/ FISHERY SERVICES (Other)	Agricultural, Forestry, Fishery Services; Commercial Fishing; Canned and Cured Sea Foods; Prepared Fresh or Frozen Fish or Seafood
FARM INPUTS AND MACHINERY (Other)	Potash, Soda, and Borate Minerals; Phosphate Rock; Chemical, Fertilizer Mineral Mining, Not Elsewhere Classified ("N.E.C."); New Farm Structures; Manufactured Ice; Nitrogenous and Phosphatic Fertilizers; Fertilizers, Mixing Only; Agricultural Chemicals, N.E.C.; Farm Machinery and Equipment; Food Products Machinery
DAIRY FARM PRODUCTS (Livestock)	Dairy Farm Products
POULTRY AND EGGS (Livestock)	Poultry and Eggs
CATTLE (Livestock)	Ranch-Fed Cattle; Range-Fed Cattle; Cattle Feedlots
OTHER LIVESTOCK (Livestock)	Sheep, Lambs, and Goats; Other Meat Animal Products; Miscellaneous Livestock
HOGS, PIGS, AND SWINE (Livestock)	Hogs, Pigs, and Swine
COTTON (Crop)	Cotton
FOOD GRAINS (Crop)	Food Grains
FEED GRAINS (Crop)	Feed Grains; Prepared Feeds, N.E.C.
HAY AND PASTURE (Crop)	Hay and Pasture
FRUITS (Crop)	Fruits
VEGETABLES (Crop)	Vegetables
TREE NUTS (Crop)	Tree Nuts
OTHER CROPS (Crop)	Tobacco; Sugar Crops; Miscellaneous Crops
OIL BEARING CROPS (Crop)	Oil Bearing Crops
HORTICULTURE/NURSERY (Crop)	Grass Seeds; Greenhouse and Nursery Products
LANDSCAPE AND HORTICULTURAL SERVICES (Other)	Landscape and Horticultural Services
FOREST PRODUCTS (Forestry)	Forest Products; Forestry Products
PROCESSED MEAT/EGGS (Livestock)	Meat Packing Plants; Sausages and Other Prepared Meats; Poultry Processing; Dog, Cat, and Other Pet Food; Animal and Marine Fats and Oils
DAIRY PROCESSING (Livestock)	Creamery Butter; Cheese, Natural and Processed; Condensed and Evaporated Milk; Ice Cream and Frozen Desserts; Fluid Milk

Table 4. (Continued)

MISCELLANEOUS FOOD PROCESSING (Crop)	Canned Specialties; Canned Fruits and Vegetables; Dehydrated Food Products; Pickles, Sauces, and Salad Dressings; Frozen Fruits, Juices, and Vegetables; Frozen Specialties; Bread, Cake, and Related Products; Cookies and Crackers; Sugar; Confectionary Products; Chocolate and Cocoa Products; Chewing Gum; Salted and Roasted Nuts and Seeds; Roasted Coffee; Potato Chips and Similar Snacks; Macaroni and Spaghetti; Food Preparations, N.E.C.; Cigarettes; Cigars; Chewing and Smoking Tobacco; Tobacco Stemming and Redrying
GRAIN/FLOUR MILLING (Crop)	Flour and Other Grain Mill Products; Cereal Preparations; Rice Milling; Blended and Prepared Flour; Wet Corn Milling
FATS AND OILS PROCESSING (Crop)	Cottonseed Oil Mills; Soybean Oil Mills; Vegetable Oil Mills, N.E.C.; Shortening and Cooking Oils
SOFT DRINKS AND LIQUOR (Crop)	Malt Beverages; Malt; Wines, Brandy, and Brandy Spirits; Distilled Liquor, Except Brandy; Bottled and Canned Soft Drinks and Water; Flavoring Extracts and Syrups, N.E.C.
FABRIC MILLS (Crop)	Broadwoven Fabric Mills and Finishing; Narrow Fabric Mills; Women's Hosiery, Except Socks; Hosiery, N.E.C.; Knit Outerwear Mills; Knit Underwear Mills; Knit Fabric Mills; Knitting Mills, N.E.C.; Yarn Mills and Finishing of Textiles, N.E.C.; Carpets and Rugs; Thread Mills; Coated Fabrics, Not Rubberized; Tire Cord and Fabric; Nonwoven Fabrics; Cordage and Twine; Textile Goods, N.E.C.
WOOD PROCESSING (Forestry)	Logging Camps and Logging Contractors; Sawmills and Planing Mills, General; Hardwood Dimension and Flooring Mills; Special Product Sawmills, N.E.C.; Millwork; Veneer and Plywood; Structural Wood Members, N.E.C.; Wood Containers; Wood Pallets and Skids; Mobile Homes; Prefabricated Wood Buildings; Wood Preserving; Reconstituted Wood Products; Wood Products, N.E.C.
PAPER PROCESSING (Forestry)	Pulp Mills; Paper Mills, Except Building Paper; Paperboard Mills; Paperboard Containers and Boxes; Paper Coated and Laminated Packaging; Paper Coated and Laminated, N.E.C.; Bags, Paper; Die-cut Paper and Board; Sanitary Paper Products; Envelopes; Stationery Products; Converted Paper Products, N.E.C.
FURNITURE (Forestry)	Wood Kitchen Cabinets; Wood Household Furniture; Upholstered Household Furniture; Wood TV and Radio Cabinets; Household Furniture, N.E.C.; Wood Office Furniture; Public Building Furniture; Wood Partitions and Fixtures; Blinds, Shades, and Drapery Hardware; Furniture and Fixtures, N.E.C.
LEATHER	Leather Tanning and Finishing; Leather Gloves and Mittens; Personal Leather Goods; Leather Goods, N.E.C.
FOOD STORES	Food Stores
EATING AND DRINKING	Eating and Drinking

Table 4. (Continued)

MINING	Iron Ores; Copper Ores; Lead and Zinc Ores; Gold Ores; Silver Ores; Ferroalloy Ores, Except Vanadium; Metal Mining Services; Uranium-Radium-Vanadium Ores; Metal Ores, N.E.C.; Coal Mining; Natural Gas and Crude Petroleum; Natural Gas Liquids; Dimension Stone; Sand and Gravel; Clay, Ceramic, and Refractory Minerals; Nonmetallic Minerals (Except Fuels) Service; Nonmetallic Minerals, N.E.C.
CONSTRUCTION	New Residential Structures; New Industrial and Commercial Buildings; New Utility Structures; New Highways and Streets; New Mineral Extraction Facilities; New Government Facilities; Maintenance and Repair, Residences; Maintenance and Repair, Other Facilities; Maintenance and Repair, Oil and Gas Wells
PETROLEUM AND CHEMICALS	Alkalies and Chlorine; Industrial Gases; Inorganic Pigments; Inorganic Chemicals, N.E.C.; Cyclic Crudes, Interm. and Indus. Organic Chemicals; Plastic Materials and Resins; Synthetic Rubber; Cellulosic Man-made Fibers; Organic Fibers, Noncellulosic; Drugs; Soap and Other Detergents; Polishes and Sanitation Goods; Surface Active Agents; Toilet Preparations; Paints and Allied Products; Gum and Wood Chemicals; Adhesives and Sealants; Explosives; Printing Ink; Carbon Black; Chemical Preparations, N.E.C.; Petroleum Refining; Paving Mixtures and Blocks; Asphalt Felts and Coatings; Lubricating Oils and Greases; Petroleum and Coal Products, N.E.C.; Tires and Inner Tubes; Rubber and Plastics Footwear; Rubber and Plastics Hose and Belting; Gaskets, Packing and Sealing; Fabricated Rubber Products, N.E.C.; Miscellaneous Plastics Products; Bags, Plastic
METAL INDUSTRIES	Blast Furnaces and Steel Mills; Electrometallurgical Products; Steel Wire and Related Products; Cold Finishing of Steel Shapes; Steel Pipe and Tubes; Iron and Steel Foundries; Primary Copper; Primary Aluminum; Primary Nonferrous Metals, N.E.C.; Secondary Nonferrous Metals; Copper Rolling and Drawing; Aluminum Rolling and Drawing; Nonferrous Rolling and Drawing, N.E.C.; Nonferrous Wire Drawing and Insulating; Aluminum Foundries; Brass, Bronze, and Copper Foundries; Nonferrous Castings, N.E.C.; Metal Heat Treating; Primary Metal Products, N.E.C.; Metal Cans; Metal Barrels, Drums and Pails; Cutlery, Hand and Edge Tools, N.E.C.; Hand Saws and Saw Blades; Hardware, N.E.C.; Metal Sanitary Ware; Plumbing Fixture Fittings and Trim; Heating Equipment, Except Electric; Fabricated Structural Metal; Metal Doors, Sash, and Trim; Fabricated Plate Work (Boiler Shops); Sheet Metal Work; Architectural Metal Work; Prefabricated Metal Buildings; Miscellaneous Metal Work; Screw Machine Products and Bolts, Etc.; Iron and Steel Forgings; Nonferrous Forgings; Automotive Stampings; Crowns and Closures; Metal Stampings, N.E.C.; Plating and Polishing; Metal Coating and Allied Services; Small Arms Ammunition; Ammunition, Except For Small Arms, N.E.C.; Small Arms; Other Ordnance and Accessories; Industrial and Fluid Valves; Steel Springs, Except Wire; Pipe, Valves, and Pipe Fittings; Miscellaneous Fabricated Wire Products; Metal Foil and Leaf; Fabricated Metal Products, N.E.C.

Table 4. (Continued)

GLASS, STONE, AND CLAY	Glass and Glass Products, Except Containers; Glass Containers; Cement, Hydraulic; Brick and Structural Clay Tile; Ceramic Wall and Floor Tile; Clay Refractories; Structural Clay Products, N.E.C.; Vitreous Plumbing Fixtures; Vitreous China Food Utensils; Fine Earthenware Food Utensils; Porcelain Electrical Supplies; Pottery Products, N.E.C.; Concrete Block and Brick; Concrete Products, N.E.C.; Ready Mixed Concrete; Lime; Gypsum Products; Cut Stone and Stone Products; Abrasive Products; Asbestos Products; Minerals, Ground or Treated; Mineral Wool; Nonclay Refractories; Nonmetallic Mineral Products, N.E.C.
MACHINERY AND EQUIPMENT	Steam Engines and Turbines; Internal Combustion Engines, N.E.C.; Lawn and Garden Equipment; Construction Machinery and Equipment; Mining Machinery, Except Oil Field; Oil Field Machinery; Elevators and Moving Stairways; Conveyors and Conveying Equipment; Hoists, Cranes, and Monorails; Machine Tools, Metal Cutting Types; Machine Tools, Metal Forming Types; Industrial Patterns; Special Dies and Tools and Accessories; Power Driven Hand Tools; Rolling Mill Machinery; Welding Apparatus; Metalworking Machinery, N.E.C.; Textile Machinery; Woodworking Machinery; Paper Industries Machinery; Printing Trades Machinery; Special Industry Machinery N.E.C.; Pumps and Compressors; Ball and Roller Bearings; Blowers and Fans; Packaging Machinery; Power Transmission Equipment; Industrial Furnaces and Ovens; General Industrial Machinery, N.E.C.; Commercial Laundry Equipment; Refrigeration and Heating Equipment; Measuring and Dispensing Pumps; Service Industry Machines, N.E.C.; Carburetors, Pistons, Rings, Valves; Fluid Power Cylinders & Actuators; Fluid Power Pumps & Motors; Scales and Balances; Industrial Machines N.E.C.; Transformers; Switchgear and Switchboard Apparatus; Motors and Generators; Carbon and Graphite Products; Relays & Industrial Controls; Electrical Industrial Apparatus, N.E.C.; Household Cooking Equipment; Household Refrigerators and Freezers; Household Laundry Equipment; Electric Housewares and Fans; Household Vacuum Cleaners; Household Appliances, N.E.C.; Electric Lamps; Wiring Devices; Lighting Fixtures and Equipment; Storage Batteries; Primary Batteries, Dry and Wet; Engine Electrical Equipment; Magnetic & Optical Recording Media; Electrical Equipment, N.E.C.
TRANSPORTATION AND COMMUNICATION SERVICES	Railroads and Related Services; Local, Interurban Passenger Transit; Motor Freight Transport and Warehousing; Water Transportation; Air Transportation; Pipe Lines, Except Natural Gas; Arrangement of Passenger Transportation; Transportation Services; Communications, Except Radio and TV; Radio and TV Broadcasting

¹This aggregation scheme was used in Goodwin et al. (2002). Since MIG, Inc. has revised all sectors, this aggregation scheme is no longer valid for the current study and has been replaced with table A.5 below. It is shown here for comparative purposes only.

Table 5. Aggregation Scheme for an IMPLAN Input-Output Analysis of the Agriculture Sector's Impact on the Arkansas Economy, 2001.

Aggregated Sector	IMPLAN Sector
AGRICULTURAL/FORESTRY SERVICES (Other)	Agriculture and forestry support activities
FARM INPUTS AND MACHINERY (Other)	New farm housing units and additions and alterations; Farm machinery and equipment manufacturing; Fertilizer- mixing only- manufacturing; Food product machinery manufacturing; Nitrogenous fertilizer manufacturing; Pesticide and other agricultural chemical manufacturing; Phosphatic fertilizer manufacturing; Sawmill and woodworking machinery; Other nonmetallic mineral mining
POULTRY AND EGGS (Livestock)	Poultry and Egg Production
CATTLE (Livestock)	Cattle Ranching and Farming
OTHER LIVESTOCK (Livestock)	Animal production- except cattle and poultry and eggs
COTTON (Crop)	Cotton
FOOD GRAINS (Crop)	Grain Farming
FRUITS (Crop)	Fruit Farming
VEGETABLES AND MELONS (Crop)	Vegetable and melon farming
TREE NUTS (Crop)	Tree Nut Farming
OTHER CROPS (Crop)	Tobacco; Sugarcane and Sugar Crops; All other crops
OIL BEARING CROPS (Crop)	Oil Seed Farming
GREENHOUSE AND NURSERY (Crop)	Greenhouse and Nursery Production
FOREST PRODUCTS (Forestry)	Forest nurseries- forest products- and timber tracks; Logging
PROCESSED MEAT/EGGS (Livestock)	Animal- except poultry- slaughtering; Dog and cat food manufacturing; Meat processed from carcasses; Other animal food manufacturing; Poultry processing; Rendering and meat byproduct processing; Seafood product preparation and packaging
DAIRY PROCESSING (Livestock)	Cheese manufacturing; Creamery butter manufacturing; Dry- condensed- and evaporated dairy products; Fluid milk manufacturing; Ice cream and frozen dessert manufacturing

Table 5. (Continued)

Aggregated Sector	IMPLAN Sector
MISCELLANEOUS FOOD PROCESSING (Crop)	All other food manufacturing; Bread and bakery product- except frozen- manufactu; Cigarette manufacturing; Coffee and tea manufacturing; Confectionery manufacturing from cacao beans; Confectionery manufacturing from purchased chocola; Cookie and cracker manufacturing; Dry pasta manufacturing; Frozen cakes and other pastries manufacturing; Frozen food manufacturing; Fruit and vegetable canning and drying; Mayonnaise- dressing- and sauce manufacturing; Mixes and dough made from purchased flour; Nonchocolate confectionery manufacturing; Other snack food manufacturing; Other tobacco product manufacturing; Roasted nuts and peanut butter manufacturing; Spice and extract manufacturing; Sugar manufacturing; Tobacco stemming and redrying; Tortilla manufacturing
GRAIN/FLOUR MILLING (Crop)	Breakfast cereal manufacturing, Rice Milling; Flour Milling; Wet Corn Milling
FATS AND OILS PROCESSING (Crop)	Fats and oils refining and blending; Other oilseed processing; Soybean processing
SOFT DRINKS AND LIQUOR (Crop)	Breweries; Distilleries; Flavoring syrup and concentrate manufacturing; Malt manufacturing; Soft drink and ice manufacturing; Wineries
FABRIC MILLS (Crop)	Broadwoven fabric mills; Carpet and rug mills; Fabric coating mills; Fiber- yarn- and thread mills; Knit fabric mills; Narrow fabric mills and schiffli embroidery; Nonwoven fabric mills; Other apparel knitting mills; Other hosiery and sock mills; Other miscellaneous textile product mills; Sheer hosiery mills; Textile and fabric finishing mills; Tire cord and tire fabric mills
WOOD PROCESSING (Forestry)	Custom architectural woodwork and millwork; Cut stock- resawing lumber- and planing; Engineered wood member and truss manufacturing; Manufactured home- mobile home- manufacturing; Miscellaneous wood product manufacturing; Other millwork- including flooring; Prefabricated wood building manufacturing; Reconstituted wood product manufacturing; Sawmills; Veneer and plywood manufacturing; Wood container and pallet manufacturing; Wood preservation; Wood windows and door manufacturing
PAPER PROCESSING (Forestry)	All other converted paper product manufacturing; Coated and laminated paper and packaging materials; Coated and uncoated paper bag manufacturing; Die-cut paper office supplies manufacturing; Envelope manufacturing; Paper and paperboard mills; Paperboard container manufacturing; Pulp mills; Sanitary paper product manufacturing; Stationery and related product manufacturing; Surface-coated paperboard manufacturing
FURNITURE (Forestry)	Blind and shade manufacturing; Institutional furniture manufacturing; Nonupholstered wood household furniture manufacturing; Other household and institutional furniture; Showcases- partitions- shelving- and lockers; Upholstered household furniture manufacturing; Wood kitchen cabinet and countertop manufacturing; Wood office furniture manufacturing
LEATHER	Leather Tanning and Finishing; Other leather product manufacturing

Table 5. (Continued)

FISHING AND HUNTING	Fishing; Hunting and Trapping
MINING	Coal mining; Copper- nickel- lead- and zinc mining; Drilling oil and gas wells; Gold- silver- and other metal ore mining; Iron ore mining; Oil and gas extraction; Sand- gravel- clay- and refractory mining; Stone mining and quarrying; Support activities for oil and gas operations; Support activities for other mining
CONSTRUCTION	Commercial and institutional buildings; Highway- street- bridge- and tunnel construction; Maintenance and repair of farm and nonfarm residents; Maintenance and repair of highways- streets- bridges; Maintenance and repair of nonresidential buildings; Manufacturing and industrial buildings; New multifamily housing structures- nonfarm; New residential 1-unit structures- nonfarm; New residential additions and alterations- nonfarm; Other maintenance and repair construction; Other new construction ; Water- sewer- and pipeline construction
PETROLEUM AND CHEMICALS	Adhesive manufacturing; All other petroleum and coal products manufacturin; Asphalt paving mixture and block manufacturing; Asphalt shingle and coating materials manufacturin; Cellulosic organic fiber manufacturing; Custom compounding of purchased resins; Explosives manufacturing; Foam product manufacturing; Industrial gas manufacturing; Laminated plastics plate- sheet- and shapes; Noncellulosic organic fiber manufacturing; Other basic inorganic chemical manufacturing; Other basic organic chemical manufacturing; Other miscellaneous chemical product manufacturing; Other rubber product manufacturing Paint and coating manufacturing; Petrochemical manufacturing; Petroleum lubricating oil and grease manufacturing; Petroleum refineries; Pharmaceutical and medicine manufacturing; Photographic film and chemical manufacturing; Plastics bottle manufacturing; Plastics material and resin manufacturing; Plastics packaging materials- film and sheet; Plastics pipe- fittings- and profile shapes; Plastics plumbing fixtures and all other plastics; Polish and other sanitation good manufacturing; Printing ink manufacturing; Resilient floor covering manufacturing; Rubber and plastics hose and belting manufacturing; Soap and other detergent manufacturing; Surface active agent manufacturing; Synthetic dye and pigment manufacturing; Synthetic rubber manufacturing; Tire manufacturing; Toilet preparation manufacturing

Table 5. (Continued)

METAL INDUSTRIES

All other forging and stamping; Alumina refining; Aluminum extruded product manufacturing; Aluminum foundries; Aluminum sheet- plate- and foil manufacturing; Ammunition manufacturing; Ball and roller bearing manufacturing; Copper rolling- drawing- and extruding; Copper wire- except mechanical- drawing Custom roll forming; Cutlery and flatware- except precious- manufacturing; Electroplating- anodizing- and coloring metal; Enameled iron and metal sanitary ware manufacturing; Fabricated pipe and pipe fitting manufacturing; Fabricated structural metal manufacturing; Ferroalloy and related product manufacturing Ferrous metal foundries; Hand and edge tool manufacturing; Hardware manufacturing; Industrial pattern manufacturing; Iron and steel forging; Iron and steel mills; Iron- steel pipe and tube from purchased steel; Kitchen utensil- pot- and pan manufacturing; Machine shops; Metal can- box- and other container manufacturing; Metal coating and nonprecious engraving; Metal heat treating; Metal tank- heavy gauge- manufacturing; Metal valve manufacturing; Metal window and door manufacturing; Miscellaneous fabricated metal product manufacturi; Nonferrous forging; Nonferrous foundries- except aluminum; Nonferrous metal- except copper and aluminum- shap; Ornamental and architectural metal work manufactur; Other aluminum rolling and drawing; Other ordnance and accessories manufacturing; Plate work manufacturing; Power boiler and heat exchanger manufacturing; Prefabricated metal buildings and components; Primary aluminum production; Primary nonferrous metal- except copper and alumin; Primary smelting and refining of copper; Rolled steel shape manufacturing; Saw blade and handsaw manufacturing; Secondary processing of copper; Secondary processing of other nonferrous; Secondary smelting and alloying of aluminum; Sheet metal work manufacturing; Small arms manufacturing; Spring and wire product manufacturing; Steel wire drawing; Turned product and screw- nut- and bolt manufacturing

Table 5. (Continued)

MACHINERY AND EQUIPMENT	<p>AC- refrigeration- and forced air heating; Air and gas compressor manufacturing; Air purification equipment manufacturing; All other industrial machinery manufacturing; Automatic vending-commercial laundry and dryclean;Carbon and graphite product manufacturing; Construction machinery manufacturing; Conveyor and conveying equipment manufacturing; Cutting tool and machine tool accessory manufacturing; Electric house wares and household fan manufacturing; Electric lamp bulb and part manufacturing; Electric power; and specialty transformer manufacturing; Elevator and moving stairway manufacturing; Fiber optic cable manufacturing; Fluid power cylinder and actuator manufacturing; Fluid power pump and motor manufacturing; Heating equipment-except warm air furnaces; Household cooking appliance manufacturing; Household laundry equipment manufacturing;Household refrigerator and home freezer manufacturing;Household vacuum cleaner manufacturing;Industrial and commercial fan and blower manufacturing;Industrial mold manufacturing;Industrial process furnace and oven manufacturing;Industrial truck- trailer- and stacker manufacturing;Lawn and garden equipment manufacturing;Lighting fixture;manufacturing;Measuring and dispensing pump manufacturing;Metal cutting machine tool;manufacturing;Metal forming machine tool manufacturing;Mining machinery and equipment manufacturing;Miscellaneous electrical equipment manufacturing;Motor and generator manufacturing;Office machinery manufacturing;Oil and gas field machinery and equipment;Optical instrument and lens manufacturing;Other commercial and service industry machinery manufacturing;Other communication and energy wire manufacturing;Other engine equipment manufacturing;Other major household appliance manufacturing;Overhead cranes- hoists- and monorail systems; Packaging machinery manufacturing; Paper industry machinery manufacturing; Photographic and photocopying equipment manufacturing; Plastics and rubber industry machinery; Power-driven hand tool manufacturing; Primary battery manufacturing; Printing machinery and equipment manufacturing; Pump and pumping equipment manufacturing; Relay and industrial control manufacturing; Rolling mill and other metalworking machinery; Scales- balances- and miscellaneous general purpose; Semiconductor machinery manufacturing; Special tool- die- jig- and fixture manufacturing; Speed changers and mechanical power transmission equipment;Storage battery manufacturing;Switchgear and switchboard apparatus manufacturing;Textile machinery manufacturing;Turbine and turbine generator set units manufacturing;Welding and soldering equipment manufacturing;Wiring device manufacturing</p>
TRANSPORTATION AND COMMUNICATION SERVICES	<p>Air transportation; Book publishers; Cable networks and program distribution; Couriers and messengers; Data processing services; Database- directory- and other publishers; Information services; Motion picture and video industries; Newspaper publishers; Periodical publishers; Pipeline transportation; Postal service Radio and television broadcasting; Rail transportation; Scenic and sightseeing transportation and support; Software publishers; Sound recording industries; Telecommunications; Transit and ground</p>

Table 5. (Continued)

	passenger transportation; Truck transportation; Warehousing and storage; Water transportation
TECHNOLOGY INDUSTRIES	All other electronic component manufacturing; Analytical laboratory instrument manufacturing; Audio and video equipment manufacturing; Audio and video media reproduction; Automatic environmental control manufacturing; Broadcast and wireless communications equipment; Computer storage device manufacturing; Computer terminal manufacturing; Dental equipment and supplies manufacturing; Dental laboratories; Electricity and signal testing instruments; Electromedical apparatus manufacturing; Electron tube manufacturing; Electronic computer manufacturing; Industrial process variable instruments; Irradiation apparatus manufacturing; Laboratory apparatus and furniture manufacturing; Magnetic and optical recording media manufacturing; Ophthalmic goods manufacturing; Other communications equipment manufacturing; Other computer peripheral equipment manufacturing; Search- detection- and navigation instruments; Semiconductors and related device manufacturing; Software reproducing; Surgical and medical instrument manufacturing; Surgical appliance and supplies manufacturing; Telephone apparatus manufacturing; Totalizing fluid meters and counting devices; Watch-clock- and other measuring and controlling
TRANSPORTATION EQUIPMENT	Aircraft engine and engine parts manufacturing; Aircraft manufacturing; All other transportation equipment manufacturing; Automobile and light truck manufacturing; Boat building; Guided missile and space vehicle manufacturing; Heavy duty truck manufacturing; Military armored vehicles and tank parts manufacturing; Motor home manufacturing; Motor vehicle body manufacturing; Motor vehicle parts manufacturing; Motorcycle- bicycle- and parts manufacturing; Other aircraft parts and equipment; Propulsion units and parts for space vehicles; Railroad rolling stock manufacturing; Ship building and repairing; Travel trailer and camper manufacturing; Truck trailer manufacturing
MISCELLANEOUS MANUFACTURING	Accessories and other apparel manufacturing; Blankbook and looseleaf binder manufacturing; Books printing; Broom- brush- and mop manufacturing; Burial casket manufacturing; Buttons- pins- and all other miscellaneous manufac; Commercial printing; Curtain and linen mills; Cut and sew apparel manufacturing; Doll- toy- and game manufacturing; Flexible packaging foil manufacturing; Footwear manufacturing; Gasket- packing- and sealing device manufacturing; Jewelry and silverware manufacturing; Manifold business forms printing; Mattress manufacturing; Metal household furniture manufacturing; Musical instrument manufacturing; Office furniture- except wood- manufacturing; Office supplies- except paper- manufacturing; Prepress services; Sign manufacturing; Sporting and athletic goods manufacturing; Textile bag and canvas mills; Tradebinding and related work

Table 5. (Continued)

NONMETALLIC MINERAL PRODUCTS	Abrasive product manufacturing; Brick and structural clay tile manufacturing; Cement manufacturing; Ceramic wall and floor tile manufacturing; Clay refractory and other structural clay products; Concrete block and brick manufacturing; Concrete pipe manufacturing; Cut stone and stone product manufacturing; Glass and glass products- except glass containers; Glass container manufacturing; Ground or treated minerals and earths manufacturin; Gypsum product manufacturing; Lime manufacturing; Mineral wool manufacturing; Miscellaneous nonmetallic mineral products; Nonclay refractory manufacturing; Other concrete product manufacturing ; Porcelain electrical supply manufacturing; Ready-mix concrete manufacturing; Vitreous china and earthenware articles manufactur; Vitreous china plumbing fixture manufacturing
UTILITY SERVICES	Natural Gas Distribution; Power generation and supply; Water, sewage and other systems
WHOLESALE AND RETAIL TRADE	Building material and garden supply stores; Clothing and clothing accessories stores; Electronics and appliance stores; Food and beverage stores; Furniture and home furnishings stores; Gasoline stations; General merchandise stores; Health and personal care stores; Miscellaneous store retailers; Motor vehicle and parts dealers; Nonstore retailers; Sporting goods- hobby- book and music stores; Wholesale trade
FINANCIAL/REAL ESTATE	Automotive equipment rental and leasing; Funds- trusts- and other financial vehicles; General and consumer goods rental except video tape; Insurance agencies- brokerages- and related; Insurance carriers; Lessors of nonfinancial intangible assets; Machinery and equipment rental and leasing; Monetary authorities and depository credit; Nondepository credit intermediation and related ; Owner-occupied dwellings; Real estate; Securities- commodity contracts- investments; Video tape and disc rental
MISCELLANEOUS SERVICES	Accounting and bookkeeping services; Advertising and related services; All other miscellaneous professional and technical; Architectural and engineering services; Automotive repair and maintenance- except car wash; Business support services; Car washes; Child day care services; Civic- social- professional and similar organization; Commercial machinery repair and maintenance; Computer systems design services; Custom computer programming services; Death care services; Dry-cleaning and laundry services; Electronic equipment repair and maintenance; Employment services; Environmental and other technical consulting servi; Facilities support services; Food services and drinking places; Grant making and giving and social advocacy organize; Hotels and motels- including casino hotels; Household goods repair and maintenance; Investigation and security services; Legal services; Management consulting services; Management of companies and enterprises; Office administrative services; Other accommodations; Other computer related services- including facilit; Other personal services; Other support services; Personal care services; Photographic services; Private households; Religious organizations; Scientific research and development services; Services to buildings and dwellings; Social assistance- except child day care services; Specialized design services; Travel arrangement and reservation services; Veterinary services; Waste management and remediation services

Table 5. (Continued)

ARTS, ENTERTAINMENT AND RECREATION	Bowling centers; Fitness and recreational sports centers; Independent artists- writers- and performers; Museums- historical sites- zoos- and parks; Other amusement- gambling- and recreation industries; Performing arts companies; Promoters of performing arts and sports and agents; Spectator sports
HEALTH SERVICES	Home health care services; Hospitals; Nursing and residential care facilities; Offices of physicians- dentists- and other health; Other ambulatory health care services
EDUCATION	State & Local Education; Colleges- universities- and junior colleges; Elementary and secondary schools; Other educational services
GOVERNMENT	Federal electric utilities; Federal Military; Federal Non-Military; Other Federal Government enterprises; Other State and local government enterprises; State & Local Non-Education; State and local government electric utilities; State and local government passenger transit
BALANCE	Inventory valuation adjustment; Noncomparable imports; Rest of the world adjustment to final uses; Scrap; Used and secondhand goods

Table 6. Major Components of the Crop Sector as defined by IMPLAN Sectors, 2001.

Aggregated Sector	IMPLAN Sector
COTTON (Crop)	Cotton
FOOD GRAINS (Crop)	Grain Farming
FRUITS (Crop)	Fruit Farming
VEGETABLES AND MELONS (Crop)	Vegetable and melon farming
TREE NUTS (Crop)	Tree Nut Farming
OTHER CROPS (Crop)	Tobacco; Sugarcane and Sugar Crops; All other crops
OIL BEARING CROPS (Crop)	Oil Seed Farming
GREENHOUSE AND NURSERY (Crop)	Greenhouse and Nursery Production
MISCELLANEOUS FOOD PROCESSING (Crop)	All other food manufacturing; Bread and bakery product- except frozen- manufactu; Cigarette manufacturing; Coffee and tea manufacturing; Confectionery manufacturing from cacao beans; Confectionery manufacturing from purchased chocola; Cookie and cracker manufacturing; Dry pasta manufacturing; Frozen cakes and other pastries manufacturing; Frozen food manufacturing; Fruit and vegetable canning and drying; Mayonnaise- dressing- and sauce manufacturing; Mixes and dough made from purchased flour; Nonchocolate confectionery manufacturing; Other snack food manufacturing; Other tobacco product manufacturing; Roasted nuts and peanut butter manufacturing; Spice and extract manufacturing; Sugar manufacturing; Tobacco stemming and redrying; Tortilla manufacturing
GRAIN/FLOUR MILLING (Crop)	Breakfast cereal manufacturing, Rice Milling; Flour Milling; Wet Corn Milling
FATS AND OILS PROCESSING (Crop)	Fats and oils refining and blending; Other oilseed processing; Soybean processing
Portion Allocated from FARM INPUTS AND MACHINERY	Nitrogenous and Phosphatic Fertilizers (84.0 percent); Fertilizers, Mixing Only (78.1 percent); New Farm Structures (20.0 percent); Farm Machinery and Equipment (47.0 percent); Food Products Machinery (43.4 percent)
SOFT DRINKS AND LIQUOR (Crop)	Breweries; Distilleries; Flavoring syrup and concentrate manufacturing; Malt manufacturing; Soft drink and ice manufacturing; Wineries
FABRIC MILLS (Crop)	Broadwoven fabric mills; Carpet and rug mills; Fabric coating mills; Fiber- yarn- and thread mills; Knit fabric mills; Narrow fabric mills and schiffli embroidery; Nonwoven fabric mills; Other apparel knitting mills; Other hosiery and sock mills; Other miscellaneous textile product mills; Sheer hosiery mills; Textile and fabric finishing mills; Tire cord and tire fabric mills

Table 7. Major Components of the Livestock Sector as defined by IMPLAN Sectors., 2001

Aggregated Sector	IMPLAN Sector
AGRICULTURAL/FORESTRY SERVICES (Other)	Agriculture and forestry support activities
Portion Allocated from FARM INPUTS AND MACHINERY	Nitrogenous and Phosphatic Fertilizers (11.9 percent); Fertilizers, Mixing Only (18.5 percent); New Farm Structures (75.0 percent); Farm Machinery and Equipment (16.1 percent); Food Products Machinery (25.3 percent)
POULTRY AND EGGS (Livestock)	Poultry and Egg Production
CATTLE (Livestock)	Cattle Ranching and Farming
OTHER LIVESTOCK (Livestock)	Animal production- except cattle and poultry and eggs
PROCESSED MEAT/EGGS (Livestock)	Animal- except poultry- slaughtering; Dog and cat food manufacturing; Meat processed from carcasses; Other animal food manufacturing; Poultry processing; Rendering and meat byproduct processing; Seafood product preparation and packaging
DAIRY PROCESSING (Livestock)	Cheese manufacturing; Creamery butter manufacturing; Dry-condensed- and evaporated dairy products; Fluid milk manufacturing; Ice cream and frozen dessert manufacturing

Table 8. Major Components of the Forestry Sector as defined by IMPLAN Sectors, 2001.

Aggregated Sector	IMPLAN Sector
AGRICULTURAL/FORESTRY SERVICES (Other)	Agriculture and forestry support activities
Portion Allocated from FARM INPUTS AND MACHINERY	Nitrogenous and Phosphatic Fertilizers (2.8 percent); Fertilizers, Mixing Only (2.4 percent); New Farm Structures (5.0 percent); Farm Machinery and Equipment (1.3 percent); Food Products Machinery (3.6 percent)
FOREST PRODUCTS (Forestry)	Forest nurseries- forest products- and timber tracks; Logging
WOOD PROCESSING (Forestry)	Custom architectural woodwork and millwork; Cut stock- resawing lumber- and planing; Engineered wood member and truss manufacturing; Manufactured home- mobile home- manufacturing; Miscellaneous wood product manufacturing; Other millwork- including flooring; Prefabricated wood building manufacturing; Reconstituted wood product manufacturing; Sawmills; Veneer and plywood manufacturing; Wood container and pallet manufacturing; Wood preservation; Wood windows and door manufacturing

Appendix B

Agriculture-Generated Activity by Sector

Table 1. Agriculture-generated Activity by Sector, 1999.

Aggregate Agriculture Contribution to:	Employment Total (Number of Jobs)	Income Total (Million \$)	Value Added Total (Million \$)
Processed Meat/Eggs	39,889	1,036	1,111
Miscellaneous Services	39,575	887	1,198
Wholesale and Retail Trade	29,085	823	1,311
Wood Processing	15,850	483	616
Poultry and Eggs	15,388	333	779
Food Grains	14,230	148	465
Paper Processing	13,479	711	1,212
Miscellaneous Food Processing	12,337	404	898
Transportation And Communication Services	12,136	480	684
Oil Bearing Crops	11,334	108	305
Health Services	10,646	390	439
Financial/Real Estate	9,850	231	1,163
Agricultural/Forestry Services	9,805	204	182
Furniture	9,498	266	369
Cattle	7,841	117	81
Forest Products	5,862	170	429
Other Livestock	4,757	50	42
Fabric Mills	3,185	107	147
Other Crops	2,896	36	127
Cotton	2,559	84	148
Farm Inputs and Machinery	2,515	96	184
Petroleum and Chemicals	2,130	88	156
Arts, entertainment, and recreation	2,122	28	35
Construction	1,623	46	42
Grain/Flour Milling	1,569	52	91
Government	1,397	58	89
Utility Services	1,282	83	216
Education	1,155	21	23
Soft Drinks and Liquor	1,150	53	155
Fats and Oils Processing	802	33	57
Miscellaneous Manufacturing	742	20	28
Metal Industries	740	27	38
Mining	725	28	54
Dairy Processing	662	23	37
Technology Industries	531	16	23
Transportation Equipment	486	17	20
Machinery and Equipment	404	15	21
Greenhouse and nursery	307	13	31
Vegetables and melons	289	9	25
Nonmetallic mineral products	216	7	12
Fruits	143	6	10
Tree Nuts	24	1	1
Leather	18	0	1
Balance	0	0	0
Fishing and Hunting	55	0	1
Total	291,290	7,810	13,053

Table 1. (Continued)

Aggregate Agriculture Contribution to:	Employment Total (Number of Jobs)	Income Total (Million \$)	Value Added Total (Million \$)
Processed Meat/Eggs	39,889	1,036	1,111
Miscellaneous Services	39,575	887	1,198
Wholesale and Retail Trade	29,085	823	1,311
Wood Processing	15,850	483	616
Poultry and Eggs	15,388	333	779
Food Grains	14,230	148	465
Paper Processing	13,479	711	1,212
Miscellaneous Food Processing	12,337	404	898
Transportation And Communication Services	12,136	480	684
Oil Bearing Crops	11,334	108	305
Health Services	10,646	390	439
Financial/Real Estate	9,850	231	1,163
Agricultural/Forestry Services	9,805	204	182
Furniture	9,498	266	369
Cattle	7,841	117	81
Forest Products	5,862	170	429
Other Livestock	4,757	50	42
Fabric Mills	3,185	107	147
Other Crops	2,896	36	127
Cotton	2,559	84	148
Farm Inputs and Machinery	2,515	96	184
Petroleum and Chemicals	2,130	88	156
Arts, entertainment, and recreation	2,122	28	35
Construction	1,623	46	42
Grain/Flour Milling	1,569	52	91
Government	1,397	58	89
Utility Services	1,282	83	216
Education	1,155	21	23
Soft Drinks and Liquor	1,150	53	155
Fats and Oils Processing	802	33	57
Miscellaneous Manufacturing	742	20	28
Metal Industries	740	27	38
Mining	725	28	54
Dairy Processing	662	23	37
Technology Industries	531	16	23
Transportation Equipment	486	17	20
Machinery and Equipment	404	15	21
Greenhouse and nursery	307	13	31
Vegetables and melons	289	9	25
Nonmetallic mineral products	216	7	12
Fruits	143	6	10
Tree Nuts	24	1	1
Leather	18	0	1
Balance	0	0	0
Fishing and Hunting	55	0	1
Total	291,290	7,810	13,053

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Full-time equivalent jobs

Table 2. Crop-generated Activity by Sector, 2001.

Crop Contribution to:	Employment Total (Number of Jobs)	Income Total (Million \$)	Value Added Total (Million \$)
Food Grains	14,230	148	465
Miscellaneous Food Processing	12,337	404	898
Oil Bearing Crops	11,334	108	305
Miscellaneous Services	10,084	220	298
Wholesale and Retail Trade	8,817	257	413
Transportation And Communication Services	3,513	139	197
Fabric Mills	3,185	107	147
Other Crops	2,896	36	127
Financial/Real Estate	2,880	66	340
Health Services	2,804	103	116
Cotton	2,559	84	148
Agricultural/Forestry Services	2,359	49	44
Grain/Flour Milling	1,569	52	91
Soft Drinks and Liquor	1,150	53	155
Farm Inputs and Machinery	900	35	62
Fats and Oils Processing	802	33	57
Petroleum and Chemicals	659	27	46
Arts, entertainment, and recreation	570	8	9
Construction	428	12	11
Government	417	17	26
Utility Services	311	20	51
Greenhouse and nursery	307	13	31
Education	304	5	6
Vegetables and melons	289	9	25
Metal Industries	248	9	12
Miscellaneous Manufacturing	240	7	9
Mining	229	9	17
Nonmetallic mineral products	165	6	9
Fruits	143	6	10
Transportation Equipment	122	4	5
Technology Industries	110	3	5
Machinery and Equipment	102	4	5
Tree Nuts	24	1	1
Paper Processing	22	1	1
Cattle	17	0	0
Fishing and hunting	15	0	0
Poultry and Eggs	13	0	1
Other Livestock	13	0	0
Leather	5	0	0
Furniture	2	0	0
Wood Processing	1	0	0
Forest Products	1	0	0
Processed Meat/Eggs	0	0	0
Dairy Processing	0	0	0
Balance	0	0	0
Total	86,176	2,056	4,144

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Full-time equivalent jobs

Table 3. Livestock-generated Activity by Sector, 2001.

Livestock Contribution to:	Employment Total (Number of Jobs)	Income Total (Million \$)	Value Added Total (Million \$)
Processed Meat Eggs	39,889	1,036	1,111
Poultry and Eggs	15,388	333	779
Miscellaneous Services	15,141	363	472
Wholesale and Retail Trade	9,710	271	430
Cattle	7,841	117	81
Other Livestock	4,757	50	42
Transportation And Communication Services	4,599	180	258
Health Services	3,791	139	156
Financial Real Estate	3,675	85	418
Agricultural/Forestry Services	1,168	24	22
Arts, entertainment, and recreation	768	10	12
Dairy Processing	662	23	37
Construction	630	18	16
Petroleum and Chemicals	545	23	42
Farm Inputs and Machinery	483	16	24
Government	453	19	30
Utility Services	452	29	77
Education	417	7	8
Miscellaneous Manufacturing	242	6	9
Mining	208	8	16
Transportation Equipment	166	6	7
Machinery and Equipment	142	5	7
Metal Industries	123	5	6
Technology Industries	120	4	5
Food Grains	57	1	2
Oil Bearing Crops	27	0	1
Paper Processing	23	1	1
Fishing and hunting	20	0	0
Nonmetallic mineral products	17	1	1
Fabric Mills	16	0	0
Leather	6	0	0
Cotton	6	0	0
Furniture	2	0	0
Other Crops	1	0	0
Wood Processing	1	0	0
Miscellaneous Food Processing	0	0	0
Fruits	0	0	0
Forest Products	0	0	0
Vegetables and melons	0	0	0
Greenhouse and nursery	0	0	0
Tree Nuts	0	0	0
Grain/Flour Milling	0	0	0
Soft Drinks and Liquor	0	0	0
Balance	0	0	0
Fats and Oils Processing	0	0	0
Total	111,548	2,782	4,074

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Full-time equivalent jobs

Table 4. Forestry-generated Activity by Sector, 2001.

Forestry Contribution to:	Employment Total (Number of Jobs)	Income Total (Million \$)	Value Added Total (Million \$)
Wood Processing	15,850	483	616
Miscellaneous Services	13,732	290	410
Paper Processing	13,479	711	1,212
Wholesale and Retail Trade	10,125	283	449
Furniture	9,498	266	369
Forest Products	5,862	170	429
Transportation And Communication Services	3,890	155	222
Health Services	3,856	141	159
Financial/Real Estate	3,163	77	388
Agricultural/Forestry Services	3,141	65	58
Petroleum and Chemicals	900	37	66
Arts, entertainment, and recreation	745	10	12
Construction	540	15	14
Government	509	21	33
Utility Services	506	33	85
Education	414	7	8
Metal Industries	349	13	18
Technology Industries	291	9	12
Mining	277	11	21
Miscellaneous Manufacturing	247	6	9
Farm Inputs and Machinery	228	8	11
Transportation Equipment	188	6	8
Machinery and Equipment	142	6	7
Food Grains	142	1	5
Oil Bearing Crops	67	1	2
Nonmetallic mineral products	33	1	2
Cattle	23	0	0
Fishing and hunting	20	0	0
Poultry and Eggs	18	0	1
Other Livestock	18	0	0
Fabric Mills	16	0	0
Cotton	13	0	1
Leather	6	0	0
Other Crops	2	0	0
Fruits	1	0	0
Miscellaneous Food Processing	1	0	0
Vegetables and melons	0	0	0
Greenhouse and nursery	0	0	0
Grain/Flour Milling	0	0	0
Processed Meat/Eggs	0	0	0
Tree Nuts	0	0	0
Dairy Processing	0	0	0
Soft Drinks and Liquor	0	0	0
Balance	0	0	0
Fats and Oils Processing	0	0	0
Total	88,294	2,830	4,626

Source: Computed using the 2001 Arkansas database from MIG (2004).

^a Full-time equivalent jobs

UofA

UNIVERSITY OF ARKANSAS

DIVISION OF AGRICULTURE