

Agricultural Extension Service  
The University of Tennessee



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# Tennessee's Agriculture



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# Tennessee's Agriculture

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**T**ennessee's agriculture-related businesses belong to an important and ever-changing part of the state's economy.

Many of these changes have been dramatic. In 1950, more than 30 percent of Tennessee's population resided on farms. In 1990, this number was just over 2 percent. Furthermore, in 1970, farm production accounted for 8 percent of the state's gross product. By 1996, production agriculture contributed 1.2 percent to the value of Tennessee's total production. However, these percentages can be misleading. While it is true that the relative share of the state's total economy contributed by production agriculture has declined in percentage terms, the total dollar output of this sector was more than \$2.2 billion in 1997, up almost \$500 million from 1987.

What does this mean in terms of the importance of agriculture in Tennessee? Well, it depends on what you are looking at *and* what you consider to be agriculture. While it is true that the number of people who depend on production agriculture (farming) for their livelihood and the relative share production agriculture and its related services as a percentage of the state's economy have both declined in recent years, every Tennessean depends on agriculture. Agriculture-related businesses produce, process and distribute the food we eat; many of the clothes we wear; the lumber we use to build houses, schools and churches; and the plants we enjoy in our homes and landscapes. Agriculture is also the source of raw materials used in manufacturing many products, ranging from automobiles to zippers, that we use every day.

It takes a vast network of businesses known as the "agribusiness sector" or "agribusiness complex" to provide us with these items. This sector is made up of three basic parts: the businesses that supply inputs to farms, the farms that produce raw agricultural products and the businesses that process these raw products and distribute final goods to consumers.

This agribusiness network creates many jobs for persons who probably do not connect themselves with agriculture. A worker in an industrial plant may make gauges for farm machinery or a textile worker may make clothing from cotton fabric. In fact, 23 percent of the 2.2 million employed persons in Tennessee work in the agribusiness sector.

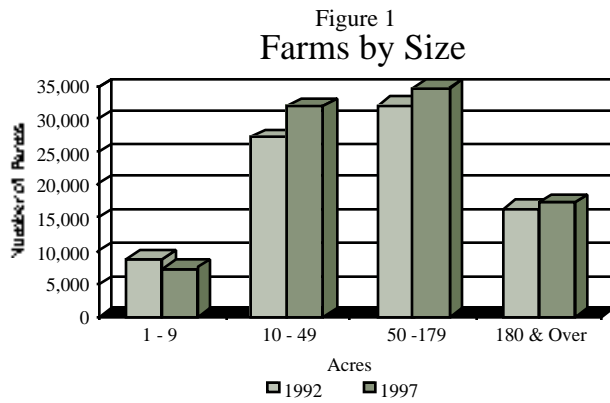
## The Farming Sector

The production agriculture or farming sector is the core of the agribusiness complex and is one of the more amazing economic sectors in the world. In Tennessee, this sector is comprised of over 91,000 farms that utilize roughly 45 percent of the state's total land area.

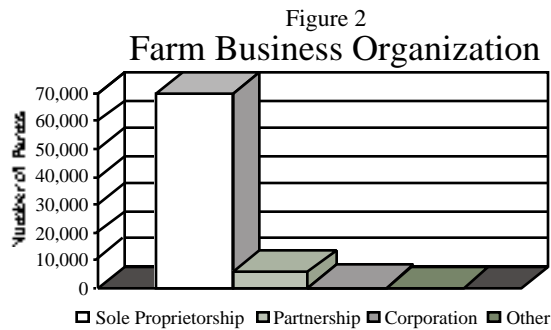
The increasing productivity of American farmers is the envy of many other industries. From 1974-1991, agricultural productivity (output per worker) grew at a rate of 2.17 percent annually, while productivity for the entire economy grew at a rate of 0.21 percent annually. This type of productivity growth allows the average Tennessee farmer to feed 129 persons, 101 in this country and 28 abroad.

Increasing productivity has caused production agriculture to be in a constant state of change. One major change has been in the number of farms. While the trend since the 1940s has been toward fewer and larger farms that use a smaller share of the state's total land area, the Tennessee Department of Agriculture reported a slowing of this trend. From 1993 to 1999, the number of farms in Tennessee declined 2.2 percent from just over 93,000 to approximately 91,000<sup>1</sup>. This change in farm numbers was primarily due to an increase in the number of smaller farms in East Tennessee. While the number of the smallest farms declined, there was a significant increase in the number of farms in the 10- to 179-acre range (12.2 percent) and a slight increase in the

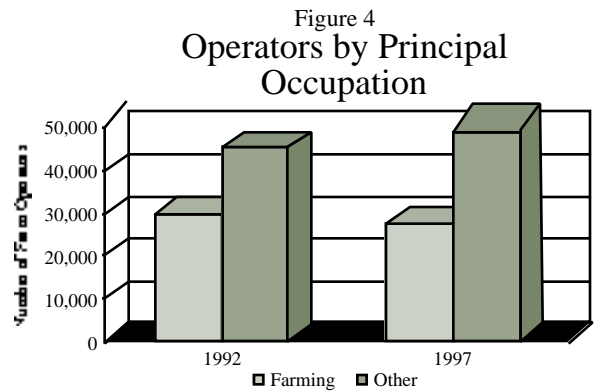
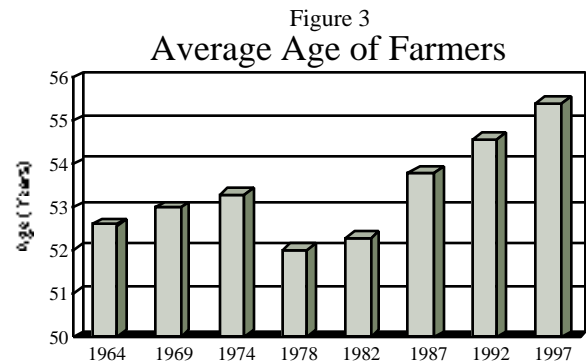
number of medium- and large-size farms, 180 acres or more (5.6 percent). (Figure 1).



Most Tennessee farms are organized as either sole proprietorships or partnerships (see Figure 2). Of the farms organized as corporations in the state, more than 80 percent are family-held corporations. While the number of “other-than-family-held” farms increased from 1992 to 1997, it is clear that Tennessee



is still a “family farm” state. Other trends regarding the typical farmer in Tennessee were still evident in 1997. The typical farmer in Tennessee is getting older, a trend that has basically held since 1964 (Figure 3). Furthermore, fewer farmers list farming as their primary occupation (Figure 4), and the number of operators who have worked off the farm (particularly

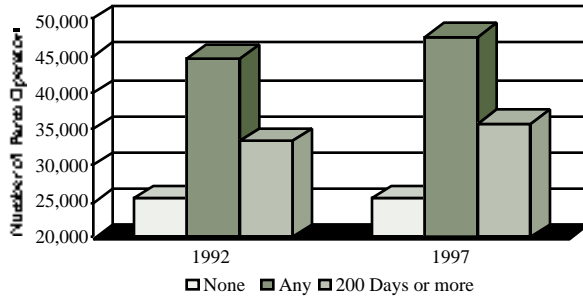


FARMLAND USE				
	1997 (Acres)	1992 (Acres)	1987 (Acres)	1982 (Acres)
Total Cropland	7,069,470	7,086,879	7,185,903	7,602,106
Harvested Cropland	4,064,058	3,817,820	3,854,302	4,548,895
Total Pasture*	4,393,350	4,538,217	4,641,335	4,794,715
Total Woodland	2,613,402	2,771,296	2,957,874	3,248,631
Not-Pastured Woodland	1,649,373	1,721,971	1,803,289	2,019,615

\*Includes cropland and woodland pasture.

those operators who worked in excess of 200 days off the farm) is on the rise (Figure 5). Most farmers in Tennessee had an ownership interest (either full or part ownership) in the land they farmed. Only 5 percent of the farms in production during 1997 were operated on a tenant basis.

Figure 5  
Operators By Days Worked Off Farm



The total land used for farming in Tennessee continued to decline, although at a much slower rate than had been previously experienced. The total land in farms declined 0.4 percent from 1992 to 1997, as compared with a 10.5 percent decline from 1982 to 1992. Figure 6 shows the proportion of farmland lost or gained per county from 1992 to 1997, while Figure 7 shows the percentage of total county land that was included as farmland in 1997. The preceding table

Figure 6  
Percentage Change in Farmland 1992 - 1997

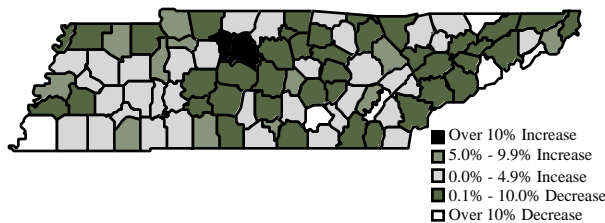


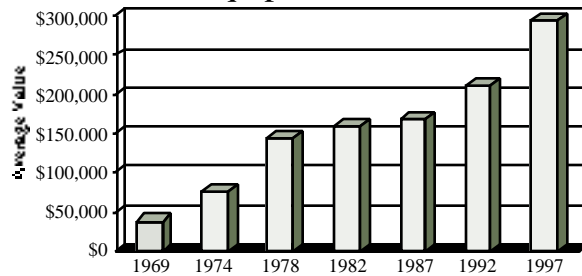
Figure 7  
Proportion of County Land in Farms (1997)



shows some of the uses of farmland from 1982-1997.

The investment required to operate a farm has increased substantially. The market value of land, buildings and machinery required to operate the average farm increased more than 650 percent from 1969 to 1997 (Figure 8). Two major factors were involved in this tremendous increase.

Figure 8  
Average Value of Land, Buildings, Machinery and Equipment Per Farm



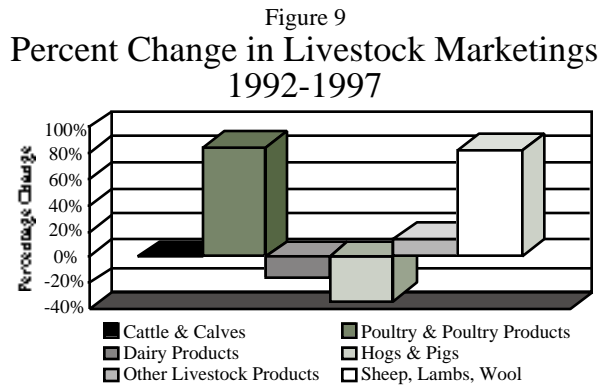
First, there were periods of high inflation during this time. This has caused all prices to increase, including the price of land and equipment necessary for a farming operation. The other factor is the larger and more specialized complements of machinery required to operate larger farms and the increased competition for land resources, particularly agricultural land resources, located on the edge of rapidly expanding urban and suburban areas.

Just as the investment required to farm increased, so did the expenses incurred by farmers. Tennessee farmers spent more than \$1.6 billion in 1997 to produce their crop and livestock products. This was an increase of almost \$150 million over the production expenses incurred in 1992. The following table shows key production expense categories from 1996 - 1999.

However, these production expenses were somewhat offset by an increase in total farm income. The market value of agricultural products sold increased almost 13 percent from 1992 to 1997. The growth in crop marketing receipts outpaced livestock receipts by more than 10 percent and crop sales earned over \$108 million more than livestock marketings.

While the state's largest livestock sector (cattle and calves) remained fairly steady from 1992 to 1997 in terms of marketing dollars, the other livestock sectors experienced dramatic increases or

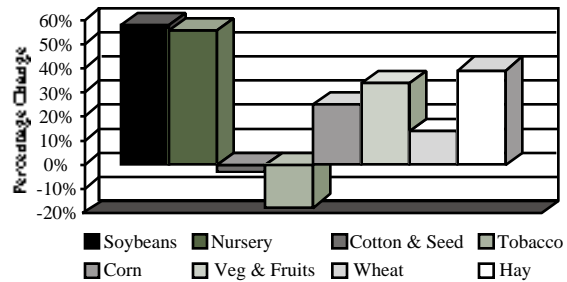
decreases. *Figure 9* shows the percentage change in marketing dollars from 1992 to 1997 by livestock sector in order of sector size in 1997.



The same type of scenario holds true for the crops grown in the state. Soybeans and nursery and greenhouse crops experienced the most significant growth (58.3 percent and 55.7 percent, respectively). Major crops that declined in terms of marketing dollars over the 1992 to 1997 period included cotton and cottonseed (-2.9 percent), tobacco (-17.3 percent) and sorghum (-81.2 percent). *Figure 10* shows the percentage increase or decline of marketing dollars by crop in order of their contribution to 1997 marketing receipts.

Net farm income fell dramatically in 1998 and 1999 due to drought conditions. While government

Figure 10  
Percent Change in Crop Marketings  
1992 -1997



payments, farm-related income and non-cash income rose, these components were not enough to offset the fall in farm marketing cash receipts and increased production expenses.

Production expenses and farm revenues combined caused net cash returns to increase substantially in the 1992 to 1997 period. However, a breakdown between farms selling \$10,000 or more and farms with sales of less than \$10,000 shows quite a different picture. The average farm with sales of \$10,000 or more earned just over \$28,000 in cash returns, while the average farm with sales under \$10,000 lost over \$1,600. While government payments and other farm-related income augmented total farm income, these sources were not enough to completely offset small-farm losses.

	1999 (\$1,000)	1998 (\$1,000)	1997 (\$1,000)	1996 (\$1,000)
<b>OPERATING EXPENSES</b>				
Livestock and poultry purchased	259,000	268,500	280,400	260,700
Feed for livestock and poultry	82,400	75,000	69,500	56,300
Seeds, bulbs, plants, and trees	87,400	78,900	70,800	67,500
Fertilizer	167,700	173,900	163,300	171,900
Agricultural chemicals	108,600	103,200	99,000	93,800
Hired labor	182,200	175,000	160,700	157,700
Petroleum fuels & oils	80,100	78,600	80,200	76,100
<b>FIXED EXPENSES</b>				
Other production expenses	1,072,000	1,119,800	1,063,500	1,012,800
Property taxes	91,700	90,200	91,000	90,100
Interest	189,100	184,400	179,100	169,400
Net rent	152,200	145,700	124,200	148,800

## Input Supply Sector

The farm supply sector is a rapidly growing part of the agribusiness complex. This sector includes the businesses and individuals that provide farmers with the inputs necessary to produce crop and livestock products.

In earlier times, farmers found it necessary to produce their own inputs. However, as farming grew and developed, farmers found it more profitable to concentrate on producing marketable crops and livestock products and to purchase inputs from other businesses. This trend has enabled others to build businesses that concentrate on meeting the need for items such as feed, seed, chemicals and fertilizer and services such as repairs, veterinary services and farm labor management services.

Many of these businesses are small, independent and locally owned. Farm supply cooperatives owned by their member-patrons are an important part of this sector. In addition, large national and multi-national companies produce such items as fertilizer, chemicals and farm machinery.

The growth of this sector can be partially seen by examining the operating expenses table in the previous section. The expenditures on operating inputs increased substantially from 1996 to 1999. Furthermore, businesses providing services to farms<sup>3</sup> also grew. From 1993 to 1997, the number of agricultural service businesses (not including landscape and horticultural services) increased by 16 percent, the

level of employment in these businesses increased by 33 percent and the level of payroll expenditures increased by 74 percent. The following table shows the number of establishments, number of employees and total annual payroll for industries within the agricultural supply sector.

	1993	1994	1995	1996	1997
Establishments	600	618	637	650	697
Employees	3,633	3,743	4,068	4,644	4,830
Payroll (\$1,000)	51,779	58,329	72,550	73,610	90,220

## The Processing and Distribution Sector

This sector includes the businesses and individuals who handle agricultural products in their journey from the farm to the final customer. These firms take raw agricultural products and bring them to us at the time, the place and in the form we desire. This sector has expanded greatly in recent years because of our increased use of convenience foods such as frozen “heat and serve” meals and our increased purchases of meals away from home.

Tennessee’s processing and distribution sector contains a wide variety of firms. Field crop handlers, for example, purchase soybeans, grains and cotton for conversion into food, feed, chemicals and clothing or for export. Food processing firms in Tennessee

Market Value of Agricultural Products Sold				
	1999 (\$1,000)	1997 (\$1,000)	1992 (\$1,000)	1987 (\$1,000)
Total Sales	1,974,369	2,178,389	1,933,506	1,617,636
Crop Sales	963,097	1,143,674	969,439	701,828
Corn for Grain	102,669	436,207	317,916	247,853
Soybeans	114,168	245,375	154,979	138,414
Cotton & Cottonseed	151,148	207,709	213,873	167,404
Tobacco	217,560	188,584	228,106	121,268
Nursery & Greenhouse	195,106	213,365	137,076	108,772
Livestock Sales	1,011,272	1,034,714	964,067	915,807
Poultry & Products	294,521	293,222	159,458	136,378
Dairy Products	224,190	209,378	250,919	248,721
Cattle & Calves	391,138	426,261	425,755	372,458
Hogs & Pigs	39,987	72,005	108,934	142,913

	1999 (\$1,000)	1998 (\$1,000)	1997 (\$1,000)	1986 (\$1,000)
Farm Marketing Cash Receipts	1,973,500	2,205,000	2,265,700	2,368,900
Government Payments	208,200	128,000	76,200	79,800
Farm-Related Income	189,600	168,100	127,700	135,100
Non-Cash Income	378,900	391,800	356,500	335,600
Value of Inventory Adjustment	(88,900)	(82,500)	(16,500)	(199,400)
Production Expenses	2,516,800	2,493,400	2,361,600	2,305,100
Net Farm Income	144,500	316,800	448,000	415,000

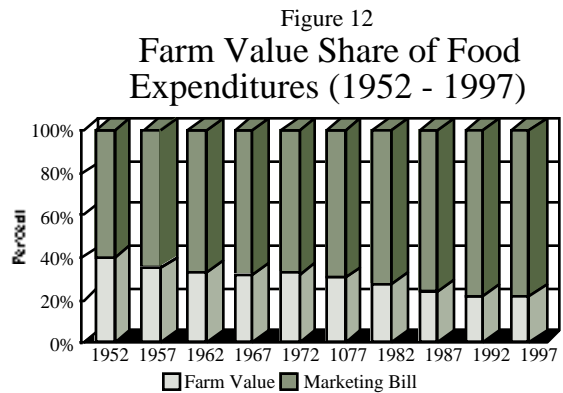
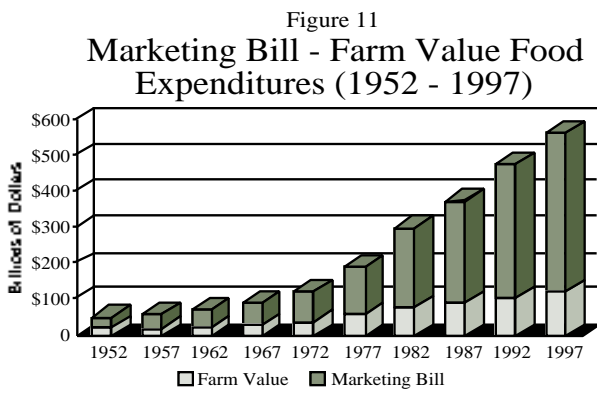


Figure 13



include dairy plants, meat packers, vegetable processors and bakeries. Food processors operating in Tennessee include nationally known firms as well as many smaller firms with local or regional markets.

Other Tennessee firms involved in the processing and distribution sector of the agribusiness complex include wood processors, textile manufacturers and product distribution firms. The wide variety of firms that are integrated into the total economy makes it difficult to measure the full impact of the agribusiness sector. For example, the portion of the transportation industry that carries inputs from the manufacturer to the farmer and then moves raw and processed agricultural products through the processing and distribution chain is a part of agribusiness.

The following table helps to describe the importance of the processing and distribution portion of the agribusiness sector to the economy.

The processing and distribution sector accounts for a large portion of the bill consumers pay for agricultural products. For example, processing and distribution costs (commonly called the “marketing bill”) made up approximately 79 percent of the average consumer’s food bill in 1997. This money was used for costs such as labor, packaging, transportation, fuel, advertising, depreciation, rent and taxes that were incurred by firms involved in making food products easier to use and obtain. *Figure 11* shows the total food expenditures made by consumers and how these expenditures were divided between the farm and the processing and distribution sector from 1952 to 1997. *Figure 12* shows the proportion of the total food dollar that went to the farmer versus the processing and distribution firms over the past 45 years. *Figure 13* shows a detailed breakout of what the consumer’s food dollar was used for in 1997.

Another way to look at agribusiness in the economy is to consider the effects of the money farm

sales bring into a community. These effects are expressed in terms of a “multiplier.” Farmers generally tend to buy and sell locally. As a result, each dollar of agricultural sales generates considerable local economic activity in addition to the initial expenditure.

As can be seen from the following table, agriculture has a large multiplier effect in Tennessee communities. The multiplier measures the level of sales in the economy that results from a one-dollar sale in some business activity.

SECTOR	OUTPUT MULTIPLIER
Crops and Livestock	2.24
Forestry and Fisheries	2.11
Mining	2.09
Construction	2.47
Food Manufacturing	2.14
Tobacco Manufacturing	2.05
Services	2.06
Other	2.35

For example, one dollar in added sales in crops and livestock results in a total impact of \$2.24 to the state’s economy. The additional sales come from all the links to the farm base outlined in the first part of this report.

All sectors are needed for a healthy, growing economy. But, on a dollar-for-dollar basis, these estimates mean that an additional dollar of sales by the agricultural production sector will have more total benefits than an added dollar of sales by other parts of the Tennessee economy. This is due to the high level of participation in the local economy by farmers and their families. Their local spending helps maintain other businesses and service establishments, making them available for all residents in the community and creating additional jobs.

Selected Agribusiness Data (1997)				
Product	Sales (\$1,000)	Number of Firms	Total Employees	Payroll (\$1,000)
Lumber and wood products	1,161,000	1,087	21,044	457,675
Furniture and fixtures	1,007,000	322	26,007	567,457
Food and kindred products	2,748,000	136	37,373	1,096,833
Tobacco products	216,000	8	896	28,457
Textile mill products	720,000	164	18,291	452,766
Apparel and textile products	956,000	482	40,000	685,758
Paper products	1,429,000	171	18,092	665,108

## Community Development

Firms belonging to the agribusiness sector are not just interested in taking from the communities in which they do business. They are also citizens who are interested in better communities and are willing to support efforts aimed at improving their communities.

These businesses help their community grow through involvement in civic affairs, concern over local issues and involvement in the local economy. For example, many agribusiness owners and managers volunteer their time by serving on trade and civic boards, working in youth-related activities or serving in elected positions. Working together for mutual benefit and helping a neighbor in time of need are parts of Tennessee's heritage. Many community efforts have benefitted by involving the agribusiness segment of the community.

## What's in the Future?

The future undoubtedly holds many changes and challenges. Agribusiness provides many jobs and economic opportunities. It is a "value-adding," productive part of the economy. Agribusiness has given Tennessee the economic base for past growth and will continue to play a major role in future development.

New and innovative inputs will be developed to further expand the productive potential of Tennessee agribusinesses. Many of the changes in the production sector, such as the trend to larger and fewer farms with increased investment in machinery and new technology, will undoubtedly continue. This increase in farm size and efficiency, however, is not without its problems. Large, confined-animal feeding operations will need to be sensitive to both a fragile environment and other persons living in the area. Production by farmers operating relatively small holdings, perhaps on a part-time basis, may become more common, especially in the livestock area. This suggests that the role of the middle-size farm may decline in the future.

Processing and distribution operations will continue to change in response to consumer demands. Increased competition will force many of these firms to become more efficient and/or to seek specialized or "niche" markets.

The future promises more complexity, but it also promises exciting opportunities. Taking advantage of these opportunities will require a clear understanding of our mutual problems and close working relationships between agribusinesses and other sectors of the state's economy.

## The Role of Your Institute of Agriculture

The University of Tennessee's Institute of Agriculture is vitally interested in agribusiness. Agriculture has been a part of the university since 1869, when UT was designated as the state's land grant college.

Training young men and women for careers in the many occupations offered by the state's agribusiness sector is an important function of the university that is undertaken by the College of Agricultural Sciences and Natural Resources.

The university works continuously with agribusinesses concerning the problems of producing, processing, and distributing agricultural products. Priority research projects undertaken by the Tennessee Agricultural Experiment Station include those dealing with environmental quality, crop and livestock production systems, agribusiness management systems and economic sustainability.

The College of Veterinary Medicine offers continuing education for Tennessee veterinarians, animal owners and livestock producers, in addition to training new veterinarians and conducting basic and applied research on animal disease problems.

The University of Tennessee Agricultural Extension Service has Extension agents in each of the state's 95 counties and a specialist staff to assist agricultural producers, input supply firms, processors and marketing and distribution firms to use research findings for the benefit of agribusiness firms and consumers. The Agricultural Development Center, a branch of the Extension Service, provides financial analysis, marketing and production technology assistance to "value-added" processing or marketing firms in Tennessee.

The University of Tennessee, through the Institute of Agriculture, serves the agribusiness sector of the state's economy in the interest of all Tennesseans.

<sup>1</sup>The 1997 Census of Agriculture reported 76,818 farms in Tennessee. However, due to non-returns of the census questionnaire and a changing farm definition, the National Agricultural Statistics Service revised these numbers to the ones revealed in the report.

<sup>2</sup>This map could be misleading if all county land uses are not taken into consideration. For example, the percentage of land in Polk County that is used as farmland is 11.5 percent. This may make it seem that Polk County is a metropolitan county. How-

ever, more than 54 percent of the land in this county is in the Cherokee National Forest. This type of situation is fairly prevalent in counties that have land in the Cherokee National Forest, the Big South Fork National River and Recreation Area, state and national parks, wildlife refuges, state forests, and other types of government owned areas that are protected from development.

<sup>3</sup>This category includes soil preparation services, crop services, veterinary and animal services, and farm labor and management services.

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture,  
and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.

Agricultural Extension Service

Charles L. Norman, Dean