

Outlook for Tennessee Agriculture

Prepared for
*An Economic Report to the Governor
of the State of Tennessee: January 1997*

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Tennessee Agriculture: A Quick Primer

With its diverse geography, Tennessee naturally has a diverse agricultural sector compared with states in the Cornbelt or Great Plains, which produce relatively few agricultural commodities. The flat West Tennessee region is dominated by cotton and soybeans production. Farming in the middle portion of the state is dominated by tobacco and beef cattle operations, while the mountainous East Tennessee region focuses on tobacco and dairy operations.

Though these commodities are important for Tennessee, figure 1 illustrates that they by no means monopolize crop production. Both corn and nursery operations have ranked fourth and fifth (often switching places) in terms of cash receipts for Tennessee farmers since 1990.¹ Other important crops include wheat, floriculture, hay, and vegetables. Moreover, cattle operations generate more income in the aggregate for Tennessee than any other single commodity.

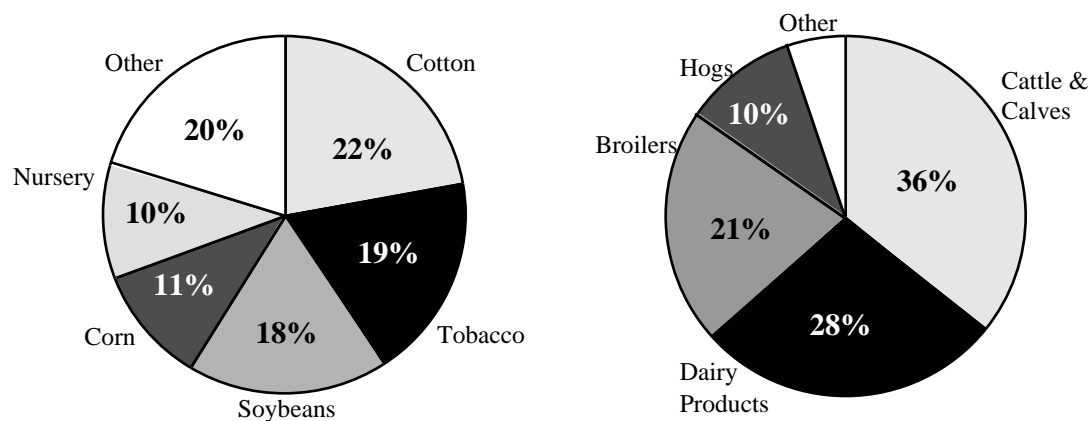


Figure 1. Tennessee Commodities by Cash Receipts, Percent of Total Crop or Livestock Receipts

¹ Unless otherwise noted, all historical data are derived from publications issued by the Tennessee Agricultural Statistics Service, particularly *Farm Facts* and *Tennessee Agricultural Statistics: 1996*.

In all, production agriculture generates more than \$2 billion in annual cash receipts for Tennessee farmers. Farm profit in recent years, however, has fluctuated sharply from a \$799 million peak in net cash income for 1992's record production year to \$614.7 million in 1995.

Net cash income in 1996 was expected to be substantially higher than the prior year due to the second consecutive year of high prices for many crops in 1996. Tennessee enjoyed generally good weather, while corn prices rose well above \$3.00 per bushel, and soybean prices were higher due to tight national feed grain stocks.

In fact, Tennessee land planted to corn and soybeans in 1996 grew 30,000 acres and 20,000 acres, respectively, over 1995 plantings. Tobacco acreage and production in 1996 were significantly higher than the prior year, which had been characterized by disease and drought. On the other hand, cotton production fell somewhat in 1996, due primarily to declining acreage.

Despite state-level acreage gains in feed grains, the tight national supply forced livestock feed prices higher, and cattle prices dropped concurrent with a spate of herd downsizing. Tennessee producers were caught in a price squeeze, as the state recorded its largest number of beef cows since 1987 and near-record numbers of heifers. Because the majority of Tennessee livestock producers run cow/calf operations, the squeeze from higher feed prices in 1996 came indirectly. High corn prices directly affect the cost to finish cattle (i.e., bringing animals to a marketable weight) and, in turn, pushed down feeder cattle prices.

Also, milk production in 1996 was expected to be down 16 percent, continuing a downward trend begun in the mid-1980s. Pork producers, on the other hand, weathered the higher feed prices relatively well, as higher demand kept prices up. Tennessee hog numbers in 1996, however, were down slightly from the previous year.

Tennessee Outlook Good under New Farm Bill

Introduction

The analytical portion of this outlook for Tennessee agriculture will examine three issues: 1) the projected performance of the state's crop sector through 2002, 2) issues of risk and volatility which may not be captured in that forecast, and 3) the potential impact of a changing crop mix on the overall Tennessee economy.

The coming year will be the first full year under the 1996 farm bill, which radically changed the character of federal income support for agriculture. What had become the traditional structure of commodity programs – target prices, base acreages, and deficiency payments – was eliminated in the new bill. In their place are Production Flexibility Contracts which provide farmers a steadily declining payment over the course of the seven-year contracts.

Overall for the entire nation, nearly all eligible farmers enrolled in the new contracts, and Tennessee was no exception. Nearly 99 percent of eligible Tennessee farmers will be operating under Production Flexibility Contracts during the next seven years, and 99.7 percent of eligible cotton farmers enrolled, according to the U.S. Department of Agriculture.

Whether the contracts actually will mark the end of federal involvement in agriculture, as proponents claimed during the legislative process in 1995-96, remains uncertain. What *is* known, however, is that Tennessee agriculture will benefit from the bill – especially in the next few years when federal payments are substantially higher than what farmers would have received under the old policy regime.

One of the most important features of the new bill is that federal payments are almost completely divorced from farm production decisions. Farmers enrolled in commodity programs now have the ability to respond to market forces and can change their crop mix in response to changes in commodity prices. This dramatic change in agriculture is the catalyst for the final portion of this outlook. To evaluate the implications of this change,

1996's changes in cotton, corn, and soybean acreage will be examined in terms of their impacts on employment, output, value-added, and income.

Forecast Results

Total acreage planted for all purposes to the seven major crops (corn, grain sorghum, oats, barley, wheat, soybeans, and cotton) trends quite flat during 1997-2002, growing only by 34,000 acres to reach 3.1 million acres in 2002. Slight acreage gains are evident for cotton, soybeans, and wheat (figure 2). Despite the gains in corn acreage this year, corn trends down until rebounding in 2001; by 2002, however, corn acreage planted for all purposes does not reach its 1997 level.

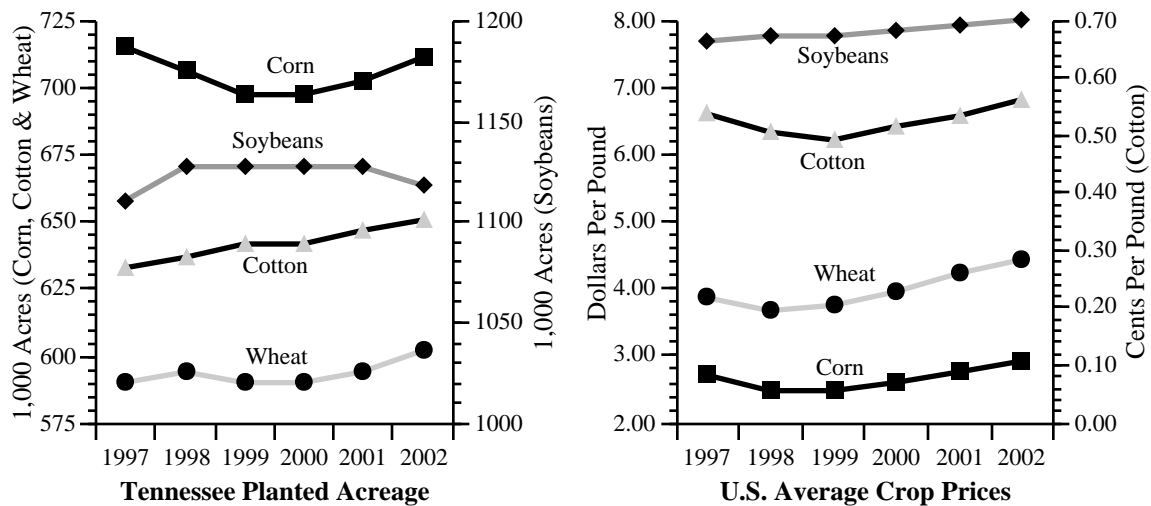


Figure 2. Tennessee Corn, Soybeans, Cotton, and Wheat Acreage and its Associated U.S. Average Price, 1997-2002

Acreage expands primarily because prices generally trend up over the final years of the forecast period. Corn and wheat prices dip somewhat during the middle portion of the forecast period but recover to at least 20 cents per bushel above 1997 levels by 2002. Cotton prices rise slowly but steadily over the forecast period, ending 4 cents per pound above the 1997 level of 66 cents per pound.

Per-acre returns to production (excluding government payments) of the seven major crops end the forecast period above 1997 levels (figure 3) as a result of the higher prices and generally stable production costs. Corn, wheat, and soybeans returns per acre, however, dip in the earlier years of the forecast as agriculture adjusts to the tight-stock situation of 1996. Total net returns (including government payments) to the seven crops follow a similar trend, dipping somewhat in 1998-9 before rebounding and reaching \$475.5 million in 2002 – an increase of 9.3 percent from 1997 returns.

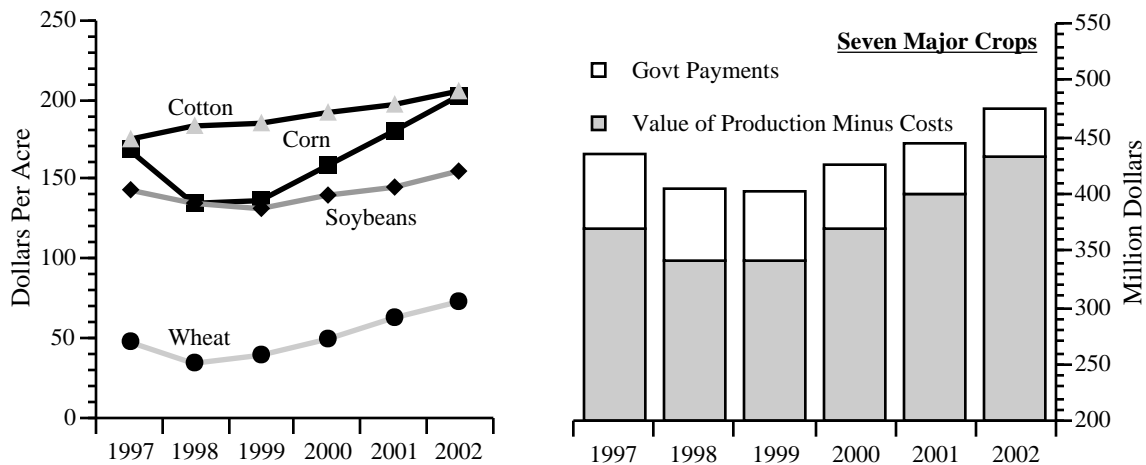


Figure 3. Tennessee Crop-Specific Returns Excluding Government Payments and Net Returns to Seven Major Crops

What the Forecast Misses

The above analysis assumes, among other things, average weather and production conditions. How agriculture actually performs, however, will depend greatly on real conditions. Given the structure of the 1996 farm bill's commodity programs, agriculture faces considerably greater risk and volatility than in previous years; this increased volatility is not precisely captured in the analytical results.

How does the new farm bill increase volatility and risk? Over the past decade and a half, the federal government has phased out the use of buffer stock programs designed to

stabilize commodity prices and ensure adequate supplies in short-crop years. Before the 1996 farm bill was signed into law, the only mechanism in use specifically designed to control crop supply was the Acreage Reduction Program. The 1996 legislation eliminated that option.

Now, the only option available in times of tight supplies is the release of Conservation Reserve Program lands – and many of those lands are marginal and would not return to production in most cases. So without government stocks to stabilize prices, farmers can expect more volatility in years with low carry-over stocks.

Another important factor is what happens internationally. For example, a large share of the summer's price movement in wheat stems from China's cancellation of wheat purchases. China can indeed become a major importer of U.S. agricultural goods in the coming years, but it can be the source of dashed export hopes just as easily.

These conditions are not going to go away any time soon. Further, it is doubtful – unless low-supply situations drive consumer food prices substantially higher – that the federal government will return to a more intrusive role in U.S. agriculture. Integration of the pork and poultry industries is expected to continue, and export demand can be expected to remain difficult to second-guess.

In such a policy environment, agriculture had better get used to supply and price volatility, and not just for feed grains.

Potential Effects of 1996 Bill on State Economy

The 1996 farm bill allows farmers nearly complete freedom in their production decisions and, as a result, substantial changes in the crops produced in Tennessee can occur as farmers pursue different crop mixes to increase their profits. Furthermore, the production of various crops requires varying regimes of chemical, labor, and other inputs as well as different levels of value-added activity. The final portion of this outlook examines the potential effects on the overall Tennessee economy of such changes.

This analysis examines the impact of the acreage gain in corn (30,000 acres) and wheat acreage (20,000 acres) which occurred in 1996. To simplify the analysis, it is assumed that all of this acreage shifts away from cotton production and, further, that the entire production shift occurred in the westernmost regions of the state, the effects on the Tennessee economy's output, employment, value-added, and personal and total income are estimated. A more complete description of these effects are listed in table 1.

Table 1. Description of Economic Effect Categories for the Production Shift Analysis

Category	Description
Output	The output generated in other industries
Employment	The full-time equivalent (FTE) jobs created
Value-Added	Employee compensation, proprietary income, and other property type of income generated by value-added activities
Personal Income	Employee compensation
Total Income	All employee compensation, proprietary income, and other property type income

As presented here, these categories reflect the combined results of estimating direct, indirect, and induced effects – the latter two of which measure the economic “ripples” (or multiplier effects) created by the direct effects of agricultural production. Prices used in the analysis are 1997 estimates (which are consistent with the above forecast) for the West Tennessee region.

The results show that farmers' increased ability to pursue different agricultural activities does indeed have implications for the Tennessee economy (table 2).² The shifting of 30,000 acres of cotton production to corn costs the overall Tennessee economy an estimated \$8.5 million in total income and output from other industries for 1997. Also, 112 jobs are lost with the shift.

² Note on the analysis: to estimate potential impacts on the overall economy, this analysis looks at the economic multipliers associated with the impacts of producing various crops on the larger state economy. These multipliers are drawn from the Impact Analysis for Planning (IMPLAN) model.

Table 2. Income, Employment, and Output Effects on the Tennessee Economy of Shifting West Tennessee Cotton Production to Corn and Wheat

Category	Total Impact of Shifting Acreage From Cotton Production to:		
	Corn (30,000 acres)	Wheat (20,000 acres)	Combined Effects of Production Shift
<i>Million Dollars (FTE Jobs for Employment)</i>			
Employment	-112	-119	-231
Output	-\$5.13	-\$13.30	-\$18.43
Value-Added	-\$1.75	-\$3.82	-\$5.57
Total Income	-\$1.57	-\$3.48	-\$5.05
Personal Income	-\$0.99	-\$1.94	-\$2.93
Sum of Income, Value Added and Output Effects	-\$8.45	-\$20.60	-\$29.05

Shifting 20,000 acres of West Tennessee cotton production to wheat production costs the state an estimated \$20.6 million in total income and output from other industries in 1997. In this case, 119 jobs are lost due to the shift in production. The job losses result from fewer chemical input purchases and lower machinery costs associated with reduced input applications, as well as lower cotton production available for value-added activity.

Overall, \$29.1 million in total income and output, plus an estimated 231 jobs, are lost to the overall economy as a result of the hypothetical production shifts. These results stem from the fact that cotton production requires additional chemical and other inputs than do corn and wheat production. Also, a great deal of cotton value-added activity occurs within the state.

Although these impacts are nearly insignificant when compared with the overall economy, they may pose significant economic impacts for the regions and industries in which they are centralized. Further, a 50,000-acre shift represents 7.9 percent shift in forecasted 1997 cotton acreage; greater shifts would increase these impacts. At any rate, it should be realized that as farmers change their production mixes to increase their profit, it is

not solely farm profits which are affected. Under volatile market conditions, agriculture's shifting between crops can create economic ripples which may be felt through the overall economy.