Oklahoma Agricultural Production Trends

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Summary

This study was stimulated by concerns that Oklahoma agriculture must diversify and consider alternative products and practices if it is to play a sustained, strengthened role in the state's economy. We examined published statistics for the past 50 years with an eye toward identifying trends relating to the economic impact of major commodities included in the annual surveys. This information was evaluated against a backdrop of change in rural and farm populations in Oklahoma, not only to assess the economic importance, but also to determine changes in the roles of various commodities and commodity groups.

Agriculture continues to be of great importance to the state's economy. The contribution of agriculture, based on cash receipts at the farm gate, to the Gross State Product (GSP) has been maintained at about five percent since 1970, growing in absolute terms to $2.8 billion in 1990, after adjustment for inflation. Inclusion of associated industries and the multiplier impact of cash receipts to agriculture results in attributing an estimated 15.4 percent of the GSP to agriculture.

Although small farm tracts and "ranchettes" of less than 50 acres in size have increased in number, the average size of Oklahoma farms and ranches is generally increasing, and the numbers of farmers and ranchers are decreasing. Reductions in farm numbers have occurred because of the decrease in the number of farms from 50 to 999 acres in size during the last decade. Two-thirds of the Oklahoma population resided in rural areas in 1940. However, that ratio is now reversed, with two-thirds of the state's population residing in urban settings. Projections are for the trend toward increased urbanization to continue.

Total cash receipts from livestock have progressively increased during the last 50 years. However, the proportion of cash receipts attributable to beef cattle and dairy decreased during the past decade, while the share attributed to poultry increased. Likewise, the share of cash receipts from crops other than hard red winter wheat has steadily increased, especially since 1975, to exceed receipts attributable to wheat grain in 1990. However, from the long-term perspective, these data indicate not only growth in the economic contributions of the state's base agricultural commodities—beef cattle and wheat—but a progressive increase in the number of sources of agricultural income in Oklahoma. Moreover, the estimates do not capture the critical role of wheat grown as forage in the increasing receipts generated by beef cattle.

Some important sources of cash receipts to agriculture are not included in the survey of major commodities. Estimates by OSU researchers and extension specialists of income from these sources, as well as the documented increase in cash receipts attributed to livestock other than beef cattle and to crops other than wheat marketed as grain, reinforce the conclusion that there is a prevailing trend toward diversification of agriculture in Oklahoma. In addition, one of the greatest potentials for the state's economy lies in adding value to the raw commodities it produces.

The challenge is to develop methods by which diversification can be accelerated while retaining the growth pattern for base commodities. Studies have indicated that enhancing the rate of technology development and transfer and strengthening the state's infrastructural support system are primary mechanisms for achieving this goal.

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C. J. Scifres
Associate Director,
Oklahoma Agricultural Experiment Station

J. E. Osborn
Head, Department of Agricultural Economics

Introduction

Is Oklahoma's agricultural destiny tied solely to wheat and beef cattle? Or are there trends indicating that our state's agricultural sector is becoming broader-based? What is the contribution of agriculture to the state's economy, and what is the potential for agriculture to play an increasingly important role in the sustained economic development of the state?

We evaluated agricultural records from 1940 to 1990 to provide background data for addressing the above questions and to evaluate the dynamics of recent agricultural trends. Of equal importance is examination of any changes in the relative size and other characteristics of the private sector responsible for agricultural production trends. Oklahoma is generally viewed as a rural state with relatively few metropolitan centers scattered among small towns in agricultural settings. It is important to note that rural population does not equate to farm and ranch population. Oklahoma offers the opportunity for many of its residents to enjoy rural living without being engaged in agricultural production as a part of earning their livelihood, although many are involved in the part-time production of crops and/or livestock. Indeed, many individuals who earn their primary income in cities and towns also produce agricultural commodities, often on small land holdings (see "Demographics" section, this publication) and categorize themselves as farmers or ranchers.

With energy production down since the early 1980s, the relative importance of agriculture to our state's economy has increased. Yet many feel Oklahoma agriculture has not achieved the scale or level of competitiveness necessary to provide the economic base for sustained, progressive development of the state. One argument is that our state's agriculture, with its (perceived) narrow commodity base, must diversify to play its appropriate role in the future, on a national as well as on a global basis.

Impacts of various industrial sectors on any state's economy are difficult to weigh and contrast because of differences in function, organization, and operational character. One standard of measurement is contribution to gross state product (GSP). Oklahoma's GSP has grown from $11.2 billion in 1970 to $59.2 billion in 1990 (Table 1). The annual contribution of cash receipts from production agriculture (i.e. cash receipts at the farm and ranch gates) to the GSP has been about five percent since 1970. However, the GSP generated by cash receipts to agriculture essentially doubled from 1980 to 1990, from about $1.5 billion to $2.8 billion in value (after adjustment for inflation). Again, it is important to

Table 1. Gross state product (GSP), Oklahoma, in 1970, 1980, and 1990. (Source: 1991 Oklahoma Economic Outlook, Office of Business and Economic Research, College of Business Administration, Oklahoma State University.)

	Year		
Source	*1970*	*1980*	*1990*
	($ Millions)		
GSP	11,175	38,200	59,207
All mining	1,382	6,748	5,583
Agriculture	547	1,464	2,823

emphasize that "production agriculture," as listed herein, accounts only for sales at the farm gate.

The impact of each dollar generated at the farm gate is multiplied many times as it moves through the state's economy. In addition to direct cash receipts from agriculture, the associated industries — such as farm equipment and agricultural chemicals — generate output of at least $5.5 billion. **Thus, a total of 15.4 percent of the GSP is estimated to be associated with agriculture.** This is a conservative estimate of full economic impacts from agriculture and associated industries and does not consider government payments.

Stability and sustainability are important considerations in assessing the economic impact of any industry on a state's future GSP. Agriculture is unique among industries in that, by its very nature, it must be stable. Heavy industry sectors (even entire industries) may react to management decisions in a relatively short time frame to redirect manufacturing and/or services, or even relocate entirely to a different state. Some government operations and their economic roles may also be shifted geographically and in relatively short time periods, as has been the case with military installations. In contrast, production agriculture, especially in the Midwest, appears to be much less subject to such dramatic geographical shifts, especially in the short- to mid-term.

Much the same analogy can be drawn relative to demand for specific agricultural commodities. Shifts in demand for agricultural commodities occur over longer periods than with consumer preference shifts for hard goods and services. Consumer trends, however, do create notable exceptions, such as the recent apparent interest in poultry and fish products. In the long run, agriculture has proved to be a relatively stable industrial sector, one that can be depended upon as a growth sector for planning purposes.

In the fall of 1991, the House Agricultural Committee of the Oklahoma legislature conducted an interim study entitled "Marketability of Agricultural Products." The object of this study was to answer the question, "What can be done to create an even stronger sustained economic role for Oklahoma agriculture?" The following suggestions emerged:

- Diversify into new enterprises.
- Add value to traditional raw materials.
- Increase the rate at which technology is created and transferred to consumers.
- Broaden the base of publics served by agricultural research and education.
- Strengthen the infrastructure—that foundation of public and private support systems that promotes and reinforces economic development of agriculture.

A first step in acting upon such suggestions is to clearly characterize historical production/economic data. This report was written to that end: to provide some of the background necessary for evaluating the status of agriculture in Oklahoma and to interpret its present standing in relation to apparent trends.

Oklahoma's Natural Resource Base

Although a complete description of Oklahoma's natural resources is beyond the scope of this study, it is pertinent to consider in broad terms the nature of those resources of particular importance to the state's agricultural industry. Among Oklahoma's notable characteristics is diversity of natural resources, weather, and climate. For example, average precipitation ranges from more than 50 inches per year in southeastern Oklahoma to less than 18 inches per year in the western Panhandle. The average growing season varies from 180 days in the Panhandle to 240 days in the extreme southeast. Annual temperatures range from 64 degrees Fahrenheit in the southeast to 54 degrees Fahrenheit in the northwest. Thus, variation in growing conditions in Oklahoma from semiarid in the west to subhumid in the east offer potential opportunities for diversification in crop and livestock production.

However, the limits of agriculture in a given region lie in its variability in weather and climate, and Oklahoma is variable. It is not unheard of for drought conditions to occur in one end of an Oklahoma county, while the other end is flooded. State temperature records range from minus 26 to 120 degrees Fahrenheit. In Oklahoma City on November 11, 1911, a high of 83 and a low of 17 degrees Fahrenheit were recorded on the same day. Such potential extremes must be considered by farmers, agricultural researchers, and decision makers when dealing with issues concerning Oklahoma agriculture.

Oklahoma's extensive surface water system may be one of its most underestimated natural resources. More than 200 major man-made lakes provide recreation, hydroelectric power, and irrigation. Lakes, streams, and ponds cover a total of 2,000 square miles and have a sustainable storage capacity in excess of two million acre-feet. The McClellan-Kerr Arkansas River Navigation System provides the state with an inland waterway on which agricultural products and inputs may be shipped and literally links our state with the seaports of the world.

Oklahoma farms and ranches account for some 31.5 million acres. Of that, 14 million acres are in cropland, with only 500,000 acres under irrigation. Irrigation is used primarily for crops such as cotton, peanuts, corn, and grain sorghum.

Forests cover nearly 10 million acres, mostly in southeastern Oklahoma. Oklahoma's rangelands and grazeable forests occupy about half of the state's land area, providing not only forage for livestock, but areas for hunting and other outdoor recreational activities.

Soils are variable because of differences in parent material and climate, giving rise to highly variable native vegetation. Many of the most productive soils occur as alluvial plains and associated terraces along streams and rivers that drain the state.

In summary, Oklahoma is characterized by variation—some of it extreme—in weather, topography, soils, and vegetation. All of these factors combine to lend diversity to the state's agriculture.

Demographics

Population Distribution. The natural resource of overwhelming importance to any economy is people. How, when, and where they engage in various enterprises determines, to a large extent, the nature of the economy.

The U.S. Census of Population (1980, Part 3) defines an area as metropolitan if it is populated with 2,500 or more inhabitants. The remainder of the population is characterized as rural.

Oklahoma's population grew from about 2.3 million in 1940 to over three million in 1980 (Table 2). The 1990 census revealed little change in total Oklahoma population, with 3.1 million people. During the 1940-1980 time period, however, the urban population grew from 38 percent to 67 percent of the population. The rural population decreased from about 1.5 million (62 percent of the total) in 1940, to about 980,000 (33 percent of the population) in 1980. It is evident that Oklahoma can no longer be characterized as a rural state based on population distribution.

Given the trends for the past 50 years, it is projected that Oklahoma's rural population will be about 1.2 million in the year 2000, with about 2.5 million people living in urban areas (Table 3). It is also estimated that most of the urban population (about 1.8 million) and about half of the total population will be in Oklahoma and Tulsa counties. Again, it is emphasized that rural population, as defined by the U.S. census, does not equate to "farm population" (that part of the population actually engaged in agricultural production).

Farms and Farm Population. Most recent census data for farm numbers, size, and farm population were published in 1987. For the sake of discussion, these data were compared to statistics published in 1978.

Table 2. Urban and rural population, Oklahoma, 1940-1980 (Source: U.S. Census of Population, 1980, Part 38).

Year	State	Population		Proportion	
		Urban	Rural	Urban	Rural
	(1,000)			(%)	
1940	2336.4	879.7	1456.7	38	62
1950	2233.4	1107.3	1126.1	50	50
1960	2328.4	1419.8	908.5	61	39
1970	2559.5	1740.3	819.2	68	32
1980	3025.3	2035.1	990.2	67	33

Table 3. Projected population for Oklahoma (Source: NPA Data Services, Inc.).

Year	*Oklahoma*	*Urban*	*Rural*
		(1,000)	
1970	2559	1740	819
1980	3025	2035	990
1990	3155	—	—
2000	3423	2380	1043
2010	3639	2462	1177

(Combined population for Oklahoma and Tulsa Counties, 1,783,000 in 2000 and 1,855,000 in 2010.)

The total amount of Oklahoma land in farms decreased from 78 percent in 1978, to 72 percent in 1987 (Table 4), a net decrease during the nine-year period of six percent. The total number of farms decreased by 2,009, a change of slightly less than three percent, during the same period of time.

Average farm size in the state increased from 467 acres in 1978 to 499 acres in 1987. However, it might be more meaningful to note that total numbers of farms 49 acres or smaller increased from 10,643 to 13,800 (a 30 percent increase) during the 1978 to 1987 period, and the total numbers of farms 1,000 acres or more also increased (Table 4). Farms

Table 4. Oklahoma farm data in the selected years 1978 and 1987 (Source: Oklahoma Agricultural Statistics, 1980).

	1978	1987
Total land area	44,021,760	43,939,270
Land in farms	34,387,681	31,541,977
Number of farms	72,237	70,228
Farm operations by size:		
less than 10 acres	2,749	3,666
10-49 acres	7,894	10,134
50-179 acres	23,643	22,331
180-499 acres	20,352	18,006
500-999 acres	10,038	8,405
1000 acres or more	7,561	7,686
Average farm size (acres)	467	499
Full owners, all farms (no.)	38,822	40,153
Part owners, all farms (no.)	24,852	22,807
Tenants, all farms (no.)	8,563	7,286
Average farm operators age (years.)	51.4	53.6

of 50 to 999 acres decreased by 5,291, or 11 percent, during the same period.

The number of full owners of farms increased, reflecting the increase in small farms from 1978 to 1987 (Table 4). Numbers of tenant farm operators decreased during the same period. Finally, the average age of farm operators increased from about 51 to 54.

Oklahoma Agriculture: General

Oklahoma is recognized first as a producer of hard red winter wheat and beef cattle. Yet Oklahoma should also be known for its agricultural diversity. An array of horticultural crops, some of the nation's highest quality alfalfa hay, forestry products, open rangelands, and a renowned horse industry are all important parts of its agricultural industry. The economic impacts of the state's recreational enterprises, as nonconsumptive use of agricultural resources, and their potential also are grossly underestimated.

Agricultural statistics understandably do not include detailed estimates of output from all agricultural and natural resource sectors. The Oklahoma Agricultural Statistics (1990) survey reports on selected major commodities. It does not include the impact of the horse industry or the importance of urban agriculture as related to lawns, gardens, greenbelts, and golf courses. Nor does it gauge the full impact of the forestry industry or economic activity generated by hunters, fishermen, and other outdoor enthusiasts. However, this survey—again, conducted in 1990—does list some 60 plant and animal products from the 1987 census as "minor commodities" for which no value is assigned. These include specialty crops, seeds, fruits and berries, vegetable crops, milk goats, and various other small animals and fowl. For example, according to the Oklahoma Agricultural Statistics, some 3,200 tons of mungbeans, 8,750 tons of Irish potatoes, and more than 200 tons of sunflower seed were also harvested in Oklahoma in 1987. Other enterprises are just entering the

economy; the catfish industry is one example, and there is growing interest in novel breeds of animals and enterprises such as producing mohair, llamas, and ostriches.

In 1990, gross receipts from vegetable production (fresh market and processing) were placed at $41 million, fruits and nuts other than peaches and pecans at $400,000, and floriculture crops at $25 million. These enterprises are integral to the overall agricultural and natural resources base of Oklahoma.

Thus, one could argue that Oklahoma's agricultural and natural resources economic base is considerably more diverse and dynamic than just a wheat-beef cattle economy. Yet these two commodities are presently the major driving influences for the agricultural economy.

Production Trends

Cash Receipts Generated by Agriculture. Based on cash receipts plus government payments, growth in agricultural economic activity at the farm gate increased by an average of about $73 million annually, unadjusted for inflation, from 1940 through 1990. During the past 15 years, cash receipts from surveyed commodities have increased from $1.9 billion to $3.9 billion (Figure 1).

This economic growth has not been without considerable variation. Growth from 1940 to 1965 averaged about $24 million per year in unadjusted terms. Growth from 1965 through 1990 occurred at about $122 million annually, based only on the selected commodities surveyed by Agricultural Statistics. The rate of growth for the entire 50-year period, after adjustment for inflation, averaged $28.5 million per year (see Appendix Table 1).

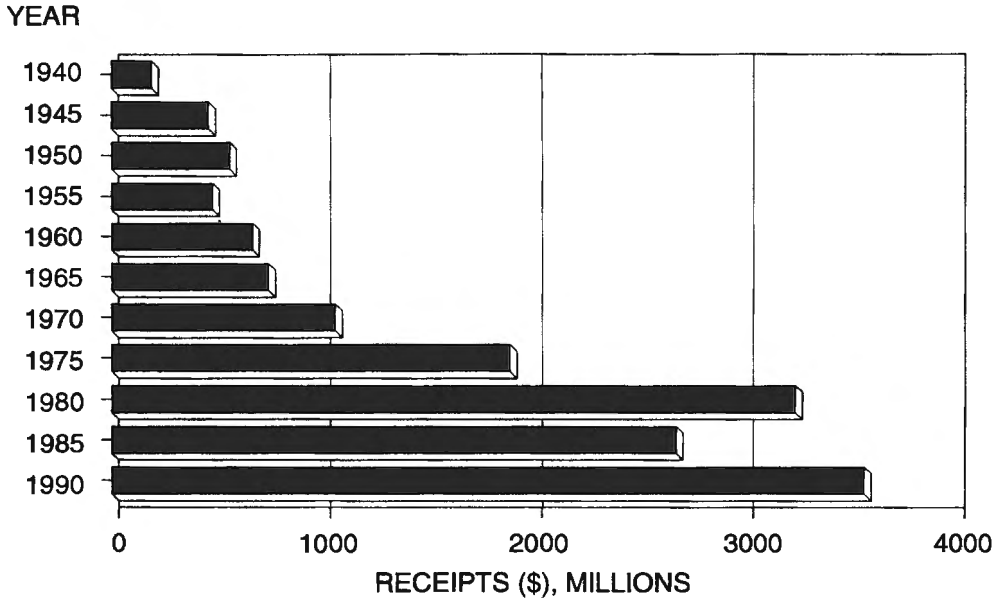

FIGURE 1. Cash receipts (unadjusted for inflation) from selected agricultural commodities and excluding government payments in Oklahoma, 1940-1990. (Source: Oklahoma Agricultural Statistics, Oklahoma Department of Agriculture and USDA.) Data adjusted for inflation are given in Appendix Table 1.

Government payments to agriculture varied significantly during the past 50 years, depending on prevailing policy and production levels of targeted commodities. No attempt was made to adjust the payments for inflation, but they illustrate the variance associated with this source of income. For example, payments to Oklahoma agriculture dropped from $25 million in 1940 to about $6 million in 1955. By 1970, they had increased to $118 million, then decreased again to $19 million in 1975. Since 1975, the trend has been sharply upwards, topping at an all-time high of $319 million in 1990, when government payments represented about eight percent of the cash receipts generated by agriculture.

Cash Receipts Generated by Forestry. The value of forest products delivered to mills or direct users in 1991 (roughly equivalent to farm gate sales) totalled $88.4 million (Table 5). About 39 percent of the value was harvested as softwoods for sawlogs and veneer. Hardwood sawlogs were valued near $13 million, and posts and poles generated nearly $14.5 million. Firewood, miscellaneous products and pulpwood made up the remainder.

Table 5. Value of harvested timber products, Oklahoma, 1990[a].

Category	*Value($)*
Softwood, sawlogs	27,286,200
Veneer	7,212,800
Hardwood, sawlogs	12,917,750
Posts and poles	14,506,955
Pulpwood	6,362,912
Firewood	19,097,540
Miscellaneous	626,514
Christmas trees	359,670
	Total—88,370,341

[a]Based on annual average removals from Birdsey and May, 1988. Value of Christmas trees from Marcouiller and Anderson, 1991.

1991 data show that Christmas trees, a relatively new crop for Oklahoma, increased over 1990, up to $360,000.

Natural Resources-Based Recreation. According to national survey data, some 1.1 million people (20 percent of them nonresidents) fished the ponds, lakes, rivers, and streams of Oklahoma in 1985 and spent a total of $468.8 million (about $427/participant). Nearly half of the expenditures by anglers were trip related, infusing an estimated $234 million into local economies. The industry holds potential for landowners to benefit in different ways, such as from fee fishing, paid camping sites, or other opportunities.

Landowners are becoming increasingly interested in lease hunting as a source of income. About 371,000 persons (16 years or older) hunted in Oklahoma in 1985, 87 percent of whom were residents. They spent $173.2 million. Taken in total, this $642 million for fishing, hunting, and related activities represents a growth industry for Oklahoma. Giving this industry the concerted attention it warrants could conceivably help create a near-$1 billion industry statewide, a share of which could be captured by agriculture.

Oklahoma ranks third, following only California and Texas, in total numbers of horses and supports the greatest density (six per square mile) of horses in the nation. Our thriving horse industry also contributes significantly to state income via both pleasure and sporting events. The conservative estimate of total direct and indirect income generated by the racing horse industry is nearly $69 million annually and accounts for more than 4,000 jobs. Considering land, facilities, and other capital investments, the total horse industry accounts for hundreds of millions of dollars annually.

Urban Agriculture. With a wholesale value estimated at $75 million, Oklahoma's steadily growing nursery production industry is an excellent example of the broadening influence of agriculture on society in general. Other examples of urban agriculture are industries related to management and maintenance of golf courses. Although statistics as to the total value of the state's turfgrass industry are not currently available, one estimate puts a $50 million figure on turfgrass establishment alone for 1990. There are several large turfgrass businesses located in the eastern part of the state.

Historical Contrast: Crops and Livestock. Crops and livestock each accounted for about 50 percent of the cash receipts to the state in the 1940s (Figure 2). The apparent trend since has been toward an increasing share attributed to livestock. During the 1980s, about 35 percent of state agricultural income was attributed to crops, with 65 percent generated by livestock. Data from 1975 through 1990 indicate that the relative role of livestock in generating income may be gradually increasing (Figure 3). Again, during the past 50 years, the proportion of income from government payments varied significantly—from 12 percent in 1940 to one percent in 1955, 1975, and 1980. The greater proportion of government payments probably should be attributed to crop production.

It should be noted that livestock sales are not increased without support from crops that provide feed and forage. The ultimate example of the close integration of agricultural commodities is wheat and beef cattle in Oklahoma. Wheat serves as both the forage base for the beef industry and a feed grain. There has yet to emerge a method to easily estimate the share of beef cattle income that should be attributed to the wheat industry, since cattle harvest the wheat forage and thus gain in value. However, it has been estimated that the value of the 1991 wheat crop, as forage alone, was from $135 million to $317 million (Horn, 1992). This was based on the value of gain from grazing only 3.75 million acres of the 7.4 million acres of wheat planted in Oklahoma.

Still, it is appropriate that changes within those two broad commodity categories be continually monitored. Oklahoma's stocker industry has progressively supplied an increasing percentage of the national supply of feeder cattle since 1970.

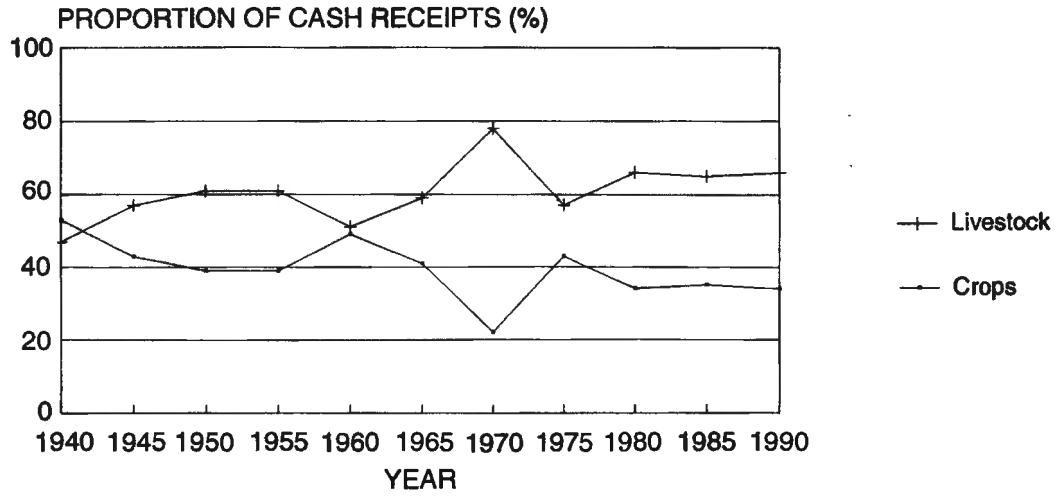

FIGURE 2. Proportion of cash receipts attributable to crops and to livestock, excluding government payments, 1940-1990. (Source: Oklahoma Agricultural Statistics, Oklahoma Department of Agriculture and USDA.)

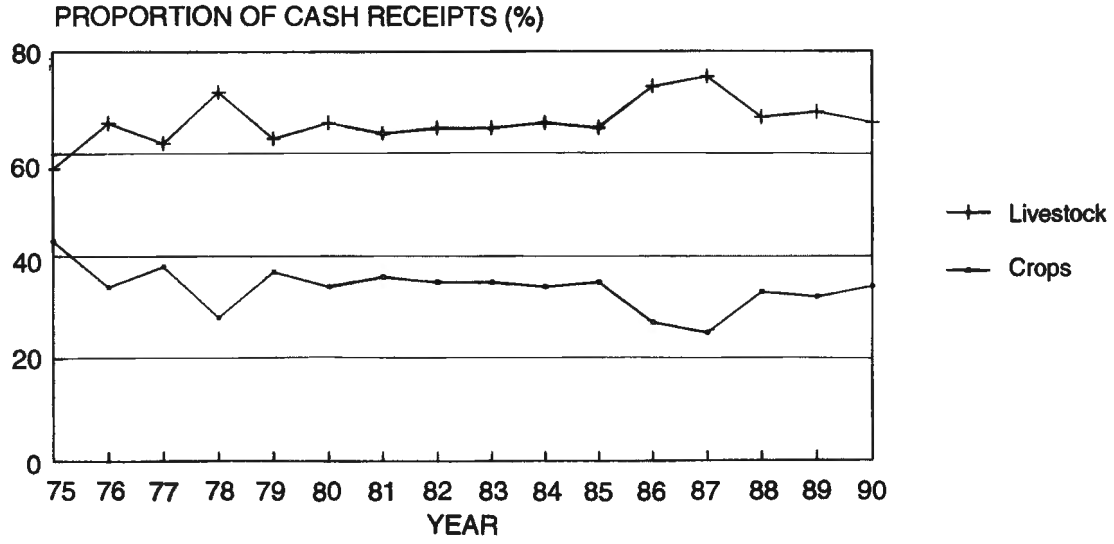

FIGURE 3. Proportion of cash receipts attributable to crops and livestock, excluding government payments, 1975-1990. (Source: Oklahoma Agricultural Statistics, Oklahoma Department of Agriculture and USDA.)

Trends within the Livestock Industry. In 1950, cattle and calves accounted for 35 percent of the gross receipts to agriculture, compared to 27 percent from dairy and seven percent from poultry (including eggs, but excluding turkeys) in 1950 (Figure 4). By 1970, receipts generated by cattle and calves had increased to 58 percent, dairy had decreased to six percent, and poultry to three percent. The impact of the dairy industry continued to decrease to about four percent in 1990. However, poultry receipts increased to five percent in 1985, then to seven percent in 1990. A relatively new contributor to agricultural receipts, catfish production, generated $2 million in 1990 (Appendix Table 3).

The apparent potential of the poultry industry indicates it will probably capture an increasing share of the economic activity in the state. The trend toward contract production of broilers is well established in eastern Oklahoma.

There was essentially no change in the share of cash receipts attributable to the pork industry from 1980 to 1990, but there appears to be potential for growth in the industry via contract growing. It is not expected that growth of "new" animal industries will supplant a significant portion of the beef industry; rather, in terms of production requirements, the newer ventures should add to the existing animal industry base.

Trends in Crop Production. Superior wheat varieties and improved management practices, especially in regard to fertilization and pest control, allowed production of hard red winter wheat for grain to dramatically increase, especially in the mid-1970s. During

that same time period, however, improved technology also allowed the increase in the value of cash receipts from all other crops (Figure 6).

Cash receipts attributable to crops other than wheat tended to steadily increase beginning in the mid-1970s (Figure 6). The share of cash receipts attributable to crops other than wheat has increased dramatically since 1980. Thus, the impact of other crop commodities on the economy has steadily increased, relative to that of wheat grain, over the past 40 years. This change has occurred in the face of variations in annual production attributable to differences in growing conditions, varying prices, and the increasing use of wheat as forage. However, as with livestock production, where beef has been the primary contributor, wheat is still considered the crop production mainstay as other crops become more important to the economy. Whether or not other crops will begin to displace wheat remains to be seen.

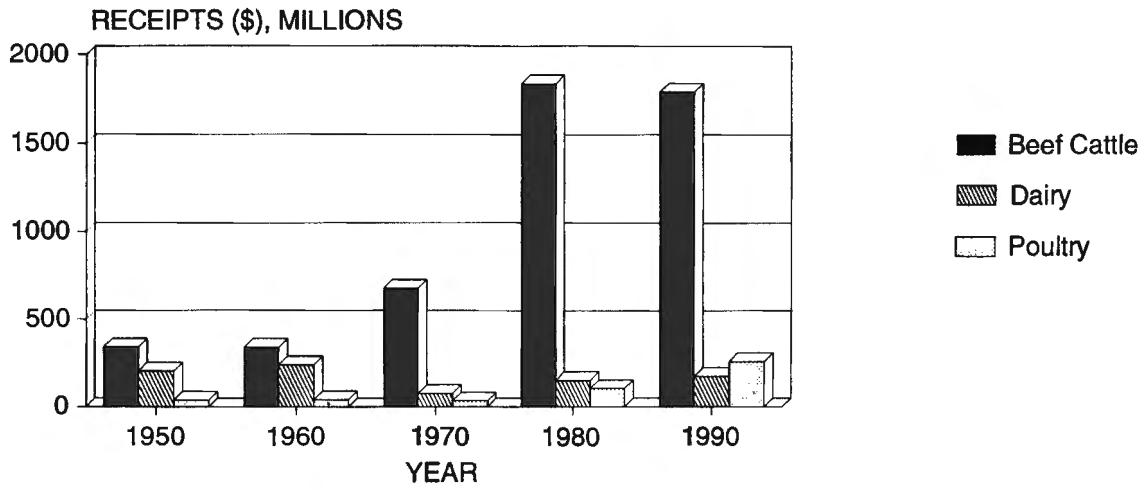

FIGURE 4. Cash receipts, excluding government payments, generated by beef cattle, dairy, and poultry in Oklahoma, 1950-1990. (Source: Oklahoma Agricultural Statistics, Oklahoma Department of Agriculture and USDA.)

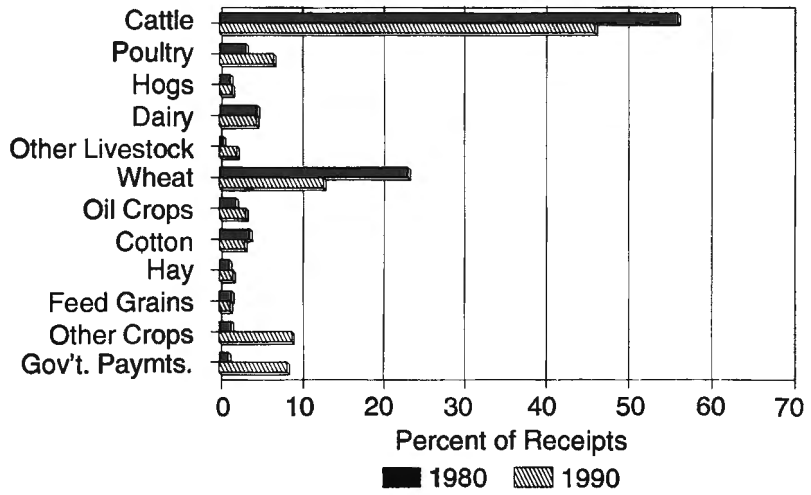

FIGURE 5. Share of cash receipts attributed to selected commodities and to government payments, Oklahoma, 1980 and 1990. Tabular data given in Appendix Tables 2 and 3.

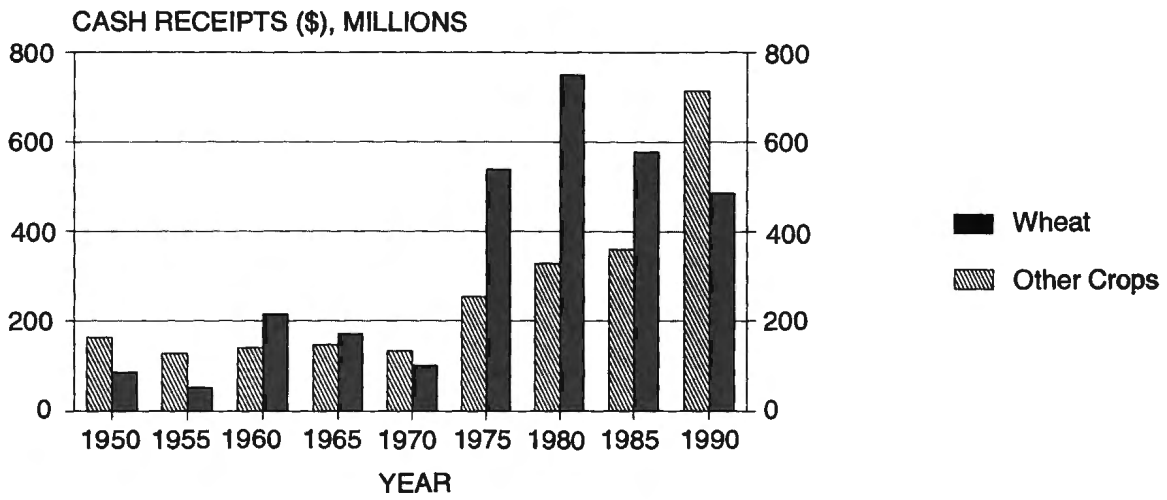

FIGURE 6. Share of cash receipts excluding government payments attributable to wheat and to all other crops in Oklahoma, 1950-1990. (Source: Oklahoma Agricultural Statistics, Oklahoma Department of Agriculture and USDA.)

Potential for Alternative Products and Adding Value to Oklahoma Agricultural Products

According to an interim study conducted in 1991 by the Agricultural Committee, Oklahoma House of Representatives, the keys to sustaining an economically viable agriculture for the 1990s and beyond for Oklahoma are (1) providing the capability to efficiently produce marketable commodities; (2) improving the marketability of raw commodities; (3) diversifying the production base by increasing the alternatives available to the state's producers; and (4) having an adequate supply of investment capital to fuel new and novel agricultural enterprises.

Alternative Products. While traditional crops and livestock will continue to provide the foundation for Oklahoma's agricultural economy, this important base must be broadened through the adoption of alternative commodities, enterprises, and activities. Attention should be focused not only upon new and novel products—those commodities and enterprises that have little or no history of performance in Oklahoma—but also upon those that are presently produced in small volume and represent significant opportunities for expansion. The list includes, but is not limited to, small fruits, vegetables, tree fruits, nursery stock, ornamental plants, greenhouse turf and sod, forest production and products, Christmas trees, spice plants, exotic oil-producing plants, fiber crops, catfish, sheep, mohair, goats, and horses.

Progress in diversifying crop production is evident in several areas. For example, over the past several years there has been a steady increase of five to 10 percent per year in commercial vegetable production in Oklahoma. This trend is expected to accelerate in the future due to several factors. Acreage devoted to vegetables could double during the next six to seven years with a similar increase in farm value provided that necessary assistance from extension and research is available to the industry.

Questions that must be asked and evaluated when considering an alternative crop or enterprise include:

- Is it technically feasible?
- Is it economically feasible?
- Is the management level sufficient?
- Is there sufficient information available on the production aspects of this enterprise?
- Is there a quality labor force available?
- Can financing be arranged to fit the enterprise?
- Can the risks be easily identified?
- Is there an existing or developing dependable market?

Potential for Adding Value to Oklahoma Products. Most of the value of agricultural products is added as they are processed. Value-added processing includes those

food products which involve newer and more complex formulations. However, most of the commodities produced on Oklahoma's farms and ranches are transported out of state for processing.

Oklahoma's food-processing industry is composed primarily of small firms. More than 70 percent have fewer than 50 employees each. A total of 362 firms employ 10,800 people. The annual average value added per employee through food processing is $67,046. The multiplier for a single food processing employee is 4.6. This means that for each employee in food processing, an additional 3.6 employees are required in other industries to provide the necessary support and services. It has been estimated that a 50 percent increase in the food processing industry in Oklahoma could create almost 25,000 new jobs in food processing and supporting industries.

As an extreme contrast in the benefits to be accrued from food processing, consider exporting $1 million worth of bulk wheat in a semi-processed form such as wheat flour, which involves a minimal amount of processing. By exporting flour instead of bulk wheat, an additional $9 million in business activity is generated, employment for 109 workers is created, and $1.9 million in additional personal income, $160,000 in federal personal income taxes, and $199,000 in federal corporate income taxes are generated. Many other examples could be cited, and potential economic benefits could significantly improve the business climate in Oklahoma.

Conclusions

1. The contribution of agricultural receipts *at the farm gate* to the GSP has been maintained at about five percent since 1970, and the dollar contribution has about doubled in absolute value since 1980. When associated industries are considered, agriculture accounts for about 15% of the GSP.

2. Urban population has increased from 38 percent of the total in 1940 to 67 percent in 1990. The accompanying decrease in rural population has resulted in a change from about 1.5 million to about 990,000 during the same period.

3. An emerging, clear trend is the reduction in numbers of farms 50 to 999 acres in size; an increase in the number of farms of less than 50 and greater than 1,000 acres; and an overall decrease in the number of farm operators.

4. Cash receipts to agriculture from selected major commodities in Oklahoma have grown at an average rate of $28.5 million per year for the past 50 years, after adjustment for inflation.

5. Additional cash receipts to agriculture and natural resources not included in annual surveys are conservatively estimated at present as $43 million from forestry products, $75 million from nursery stock, $25 million from floricultural crops, $41 million from vegetable crops, $50 million from the turfgrass industry and $69 million from the horse industry. These estimates do not include the potential from nonconsumptive (recreational) uses.

6. Total receipts from beef cattle have increased during the past 10 years, but the share of cash receipts attributed to beef cattle and dairy decreased, while the share attributed to poultry increased. This trend is expected to continue, at least in the short term.

7. The share of cash receipts captured by crops other than hard red winter wheat marketed as grain has steadily increased, especially since 1975. It is expected that this trend also will continue for the foreseeable future.

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Although we attempted to use statistically drawn and published information when possible, data were not available for a number of agricultural commodities and resource uses. In those cases, we asked experts to provide best estimates to meet certain data needs. We greatly appreciate the information and opinions provided by Drs. Don Gill, Gerald Horn, Dale Maronek, and David Lewis for this analysis. Also, information developed by Drs. David Henneberry, Daniel Tilley, and Stanley Gilliland for an interim study by the Agriculture Committee, Oklahoma House of Representatives was used in this document. Access to that information was appreciated. However, the authors take all responsibility for the interpretations, as presented herein, of the information in this publication.

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APPENDIX TABLES

Appendix Table 1. Cash Receipts, Current and Real, Crops and Livestock, Oklahoma, 1940 - 1990

Year	Deflator* (1982-84=100)	Receipts Current	Receipts Real
		($ Millions)	
1940	14.0	215	1536
1945	17.9	476	2659
1950	24.0	569	2371
1955	26.7	483	1809
1960	29.5	692	2346
1965	31.5	815	2587
1970	38.8	1176	3031
1975	53.8	1900	3532
1980	82.4	3266	3964
1985	107.6	2913	2707
1990	130.7	3873	2963

* U.S. Statistical Abstract

Appendix Table 2. Share of cash receipts excluding government payments attributable to selected commodity classes in Oklahoma in 1990 compared to 1980 (Source: Agricultural Statistics, Oklahoma Department of Agriculture and USDA).

	1980	1990
	(percentage)	
Livestock and Products	65.7	60.9
Cattle and calves	56.2	46.2
Poultry	3.2	6.6
Hogs	1.3	1.5
Dairy	4.6	4.5
Other livestock	0.4	2.1
Crops	33.2	30.8
Wheat	23.2	12.7
Oil crops	2.0	3.2
Cotton lint/seed	3.7	3.1
Hay	1.2	1.6
Feed grains	1.5	1.3
Other crops	1.5	8.9
Government Payments	1.1	8.3

Appendix Table 3. Cash receipts attributable to selected commodities in 1980 compared to 1990, Oklahoma (Source: Agricultural Statistics, Oklahoma Department of Oklahoma and USDA).

	Year 1980	Year 1990
	($ Millions)	
Animal Products		
Cattle and calves	1,490	1,461
Poultry* and eggs	107	254
Dairy	153	178
Hogs and pigs	47	51
Sheep and wool	3	4
Angora goats	NR	4
Catfish	NR	2
Plant Products		
Winter wheat	751	514
All hay	163	283
Cotton lint	80	116
Peanuts	36	95
Grain sorghum	52	33
Soybeans	23	24
Corn grain	19	23
Pecans	**	5
Oats	8	4
Peaches	**	3
Barley	4	1
Rye	2	1

* Turkey production not included.
** Peaches and pecans combined at $5M in 1980.
NR - None reported.

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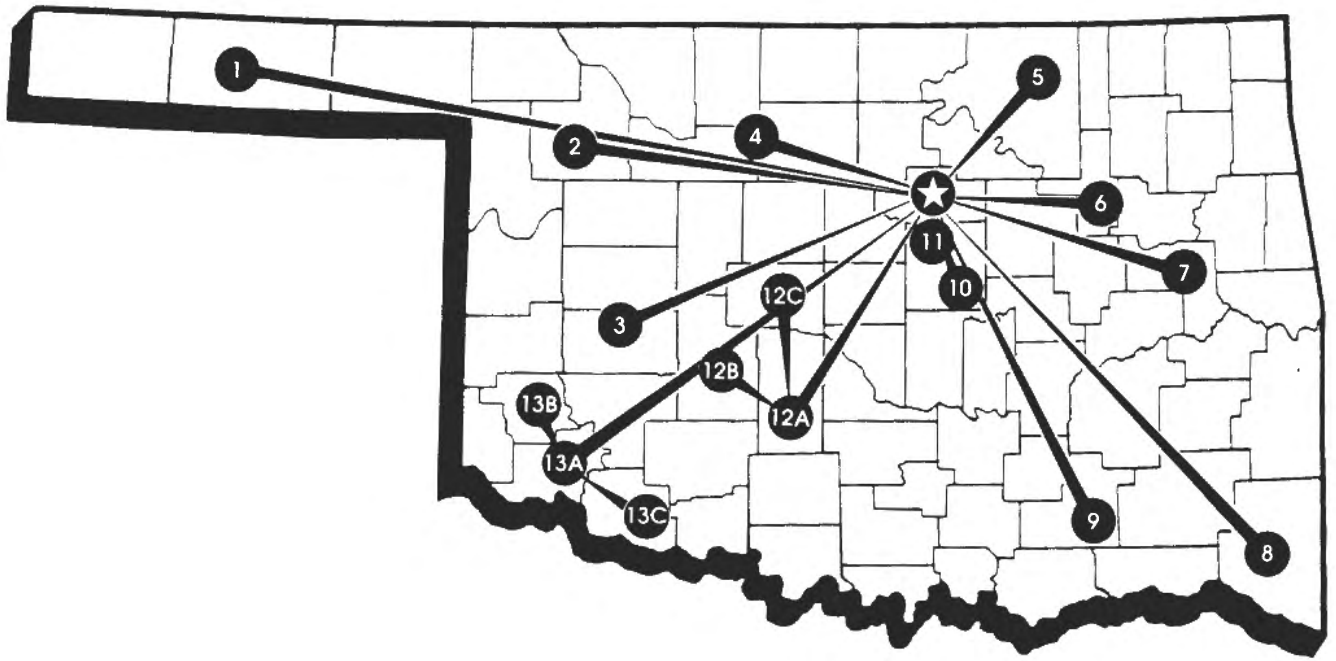

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