

Structural and Financial Characteristics of U.S. Farms, 1995

20th Annual Family Farm Report to the Congress

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Introduction

This report is the 20th in a series of annual reports prepared by the U.S. Department of Agriculture's Economic Research Service to inform the Congress on the status of family farms. Family farms in the United States are all farms except those with hired managers or those organized as nonfamily corporations or cooperatives. The family farm report was first mandated by the Food and Agriculture Act of 1977, which required the Department to provide information on trends in family and nonfamily farms, and the effects of government programs and Federal laws on the family farm system.

To describe farming in the United States today requires more than a compilation of facts on farm numbers, farm sizes, and farm production. Farming is both diverse and complex, and national averages often mask the variation and interactions that are key to understanding the major participants in agricultural production, i.e., farm businesses, farm operators, and farm operator households. Such an understanding is essential to assessing the economic health of the sector and estimating the effects of changes in government policies and programs.

Farms differ in their natural resource endowments (land, water, and climate). Farm businesses vary with respect to such characteristics as size (sales and acres), product mix, legal organization, land tenure, and financial performance. They range from small operations run by families that supply all the labor for the farm but get most of their income from off-farm work, to multimillion-dollar incorporated farms that control vast resources, hire paid farmworkers, and provide a better-than-average income to the operator household.

Farm operators show diversity in demographic characteristics, in the hours they spend working on and off the farm, and in their managerial practices. Farm operator households differ in their financial well-being and sources of income, particularly in their level of dependence on the earnings generated from the farm operation.

Complexity in farming stems from business interactions that restrict farm operators' independent decisionmaking, such as contractual arrangements for output or regulations related to government program participation. While production or marketing contracts generally decrease production and price risks, they may also limit farmers' choices in what and how to produce, and when and where to sell. In like manner, government programs may enhance income, but may also impose constraints such as conservation compliance.

Another element adding complexity to farming is the global nature of agricultural production and marketing, because economic events in the rest of the world add an element of unpredictability, along with opportunity, to domestic and foreign trade. Finally, changing technology adds complexity as new crops and new production practices offer both opportunity and challenge to farm operators. Complexity in agriculture increases the need for operator management expertise in order for farm businesses to survive.

This report describes the Nation's farm businesses as well as the operators who run them and their associated households. It presents information not just for the Nation, but for regional groupings and major subcategories of farms.

Background

In the mid-1990's, most U.S. farms are still controlled by families, primarily as sole proprietorships but with a small but growing share legally organized as (family) corporations. While technological advances have generally decreased the farm labor requirement, costly new technologies have increased the capital investment required for farming. At the same time, part-time farming coupled with substantial off-farm income has become increasingly common, although full-time commercial operators continue to produce the bulk of agricultural output.

A significant share of farm operators use government program participation and other risk management strategies to deal with an increasingly challenging economic environment. Environmental concerns and conservation compliance demand additional efforts from farm management. In 1995, Federal program participation requirements continued to play a significant role in farm operators' production decisions, although government payments provided a relatively small share of gross farm income.

In order to understand the elements that underlie these general observations, we look at the farms, operators, and households that are the primary actors in production agriculture. Note that this report is based primarily on 1995 data, when farm programs were administered according to provisions of the 1990 Food, Agriculture, Conservation, and Trade Act. Therefore, implications of the 1996 Farm Act are not considered. However, this report can be used as a baseline to assess changes resulting from the new farm legislation.

About the Data

USDA's Agricultural Resource Management Study (ARMS) is designed to capture the physical, financial, demographic, and managerial attributes of farm businesses and people engaged in farming. The survey was formerly called the Farm Costs and Returns Survey (FCRS). The ARMS is an annual survey of farms conducted jointly by the Economic Research Service (ERS) and the National Agricultural Statistics Service (NASS). The survey covers farm and ranch operations in the 48 contiguous States.

In 1995, nearly 8,800 farm operators nationwide participated in the ARMS. This sample is representative of the more than 2 million farm businesses that produced the Nation's food and fiber. This report is the sixth in the family farm report series to use data from the ARMS as the primary information source, and uses data from the 1995 ARMS, collected in the spring of 1996, and from the 1992 Census of Agriculture, the most current information available.

USDA's Agricultural Resource Management Study

The ARMS is a multiframe, probability-based survey in which sample farms are randomly selected from groups of farms stratified (sorted into groups) by attributes such as economic size, type of production, and land use. Each selected farm represents a known number of farms with similar attributes. Weighting (multiplying) the data for each surveyed farm by the number of farms it represents is the basis for calculating estimates for all U.S. farms.

The survey collects data to measure the financial condition and operating characteristics of farm businesses, the costs of producing agricultural commodities, and the well-being of farm operator households. Specially trained interviewers contact each selected operator personally, so that questions are asked and interpreted the same way throughout the Nation.

Several versions of the survey questionnaire are used in a given year, one whole-farm version and several rotating commodity-specific versions. For example, in 1995, four questionnaires were used: the Farm Operator Resources (FOR or whole-farm) version, the sorghum cost-of-production (COP) version, the burley tobacco COP version, and the peanuts COP version. The FOR version provides greater detail on some survey items that describe the overall farm

operation and includes unique questions on farm operator household characteristics. The COP versions contain indepth questions on production practices for the selected commodity, but have less detailed information about the overall farm business.

Each year, the survey questions are evaluated and revised to reflect changes in agriculture and to address new topics of interest to the agricultural community. Two topics introduced in the 1995 FOR version are sources of farm business loans and operators' use of computer technology in the office and in the field.

Statistical Measures

Many possible samples can be drawn from a population of all farms. In spite of the soundness of the sampling technique and the data collection procedures, each of those samples may yield different results. Thus, we refer to values derived from the sample data as "estimates" and we know that the "true" value for the total population is more likely to be a value that lies within some range around our estimate. We therefore use statistical measures to assess the validity and reliability of the estimates. Two statistical measures used in this analysis, the relative standard error (RSE) and the t-statistic (or t-test), are summarized below.

The RSE provides a perspective on how well the data represent a particular sample. The RSE of an estimated mean (average) is the standard error of the mean divided by the mean itself, expressed as a percent. The standard error of the mean measures the amount of variation between individual farms in the group and the group mean. When we divide the standard error by the mean, we eliminate the units of denomination (such as dollars or acres), and the effects of scale (the relative size of numbers used in measuring, such as dollars or millions of dollars).

A small RSE for a mean implies that the mean represents the underlying data better than a mean with a large RSE. In general, an RSE that exceeds 25 percent indicates that the information should be used with caution. Although we calculate RSE's for all estimates, we do not publish them in the report tables. Instead, we identify estimates with RSE's above 25 percent with one or more asterisks.

We use the t-statistic to determine whether or not observed differences between means are statistically significant. A lower t-statistic indicates less likelihood that the two means are actually different. In general, the higher the RSE's, the lower the t-statistic.

The standard used to identify significantly different means in this report is the 5-percent level of significance. This means that if we calculated means and the associated t-statistics for a large (infinite) number of samples, there is a 5-percent chance that the test would lead us to conclude that the means are different when they actually are not.

For additional discussion of statistical methodology, see Appendix B.

Comparing Farm Business Estimates to Farm Sector Estimates

Financial measures presented in this report are based on information provided through the ARMS by operators of farm businesses that comprise a representative sample of all farming and ranching operations in the contiguous United States. These measures, which relate strictly to farm businesses, differ conceptually from official USDA sector estimates for the 50 States and are not directly comparable. The difference is basically whose economic activity is being measured.

For example, the ARMS income estimates use the income of farm businesses, which includes the income of all those with an ownership interest in the operation--farm operators, partners, and shareholders. USDA's official sector income estimates include not only those participants, but also others, such as landlords and contractors, who share in the risks of production. The ARMS income estimate is an aggregation of farm-level data, weighted appropriately.

The official USDA farm sector income estimate is developed from a complex process involving many data sources, such as production and price estimates from NASS data collection, government program payments from administrative records of USDA agencies, and income and expense information from the ARMS.

Commonly Used Terms

Some terms that are often used in general discussions of farming have very specific definitions in this report. A few examples are given below. Additional information is available in Appendix A, the glossary.

Farm

Since 1850, when minimum criteria defining a farm for census purposes were first established, the farm definition has changed nine times, as the Nation has grown and changed. A farm is currently defined, for statistical purposes, as any place from which \$1,000 or more of agricultural products (crops and livestock) were sold or normally would have been sold during the census year. This definition has been in place since August 1975--by joint agreement among USDA, the Office of Management and Budget, and the Bureau of the Census--and is used in determining the suitability of a farm for inclusion in the ARMS. According to NASS data, U.S. farms numbered just over 2 million in 1995.

Type of Farm

Type of farm generally refers to the commodity that best characterizes the farm's primary production activity, for example, cash grain farm or dairy farm. Using ARMS data, we construct two enterprise indicators related to type of farm, namely farm type and majority enterprise type. Farm type is the commodity or commodity group that accounts for the largest share of the farm's gross sales. Farm type is selected by the operator from a list of choices on the ARMS questionnaire, such as cash grains or dairy.

Majority enterprise type is the commodity or commodity group that accounts for at least half of the operation's estimated gross value of production. Majority enterprise type is, in some cases, more specific than farm type. For example, instead of grouping all cash grains together as in farm type, majority enterprise type identifies five separate cash grain commodities: wheat, corn, soybeans, grain sorghum, and rice.

A farm that does not meet the 50-percent criterion for any one of the 15 specific majority enterprise types could be classified as either a general crop farm (crops account for at least 50 percent of the value of production) or general livestock farm (livestock accounts for at least 50 percent of the value of production) based on the crop and livestock components of the value-of-production estimate.

Family Farms and Farm Households

Most U.S. farms are organized as sole proprietorships, partnerships, or family corporations, and they account for 98 percent of all farms (fig. 1). Because these farms are generally controlled by one or more households (including the operator's household), we consider them to be family farms. A farm household includes all persons living in the same dwelling with the operator, or living away but still dependent on support from the household.

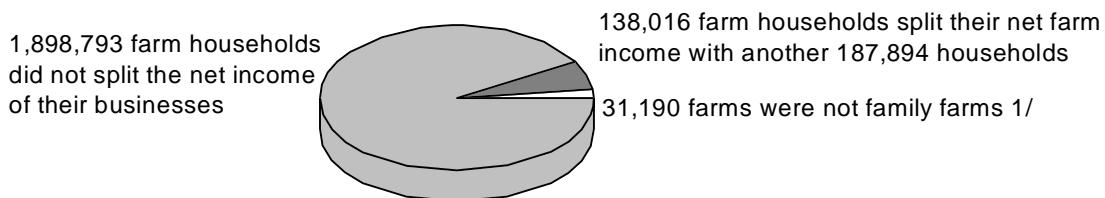
In multifamily operations, the operator is the person who makes most of the day-to-day decisions about the farm. Household information is collected only for the operator's household. Collecting information on both the farm and off-farm components of farm family household income allows us to make valid comparisons of financial well-being between farm households and all U.S. households.

Farms that are nonfamily corporations, cooperatives, or run by a hired manager are classified as nonfamily farms. Nonfamily farms account for only 2 percent of all U.S. farms. Nonfamily farms are not represented in estimations related to farm operator households, but they are included in the rest of the analysis.

Figure 1

Family farms in the United States, 1995

More than 98 percent of farms in the U.S. were family farms, and 7 percent of family farm operator households shared the net farm income of the business with an additional 187,894 households.



1/ Includes nonfamily corporations, cooperative farms, and farms operated by hired managers. These farms are not closely held by an operator household.

Source: USDA, Economic Research Service, 1995 Agricultural Resource Management Study.

Farm Sales

Gross value of farm sales is an indicator of economic farm size. Gross value of sales measures what the farm sold during a year, including sales from inventory, regardless of whether the proceeds were received by the operation, landlord(s), or contractor(s). Gross value of farm sales includes cash sales of all agricultural commodities, sales under marketing contracts, the value of share rent, the value of commodities produced under production contracts, and government payments related to output. The definition of gross value of sales used for ARMS purposes is the same definition used by USDA to establish its official estimates of number of farms by economic size (sales class).

Farms with a gross value of sales under \$50,000 are referred to as noncommercial-size farm businesses in this report, while farms with sales of \$50,000 or more are called commercial-size operations.

Farm Income

One measure of farm income is gross cash farm income. In contrast to gross value of farm sales, gross cash farm income is only the farm operation's share of receipts from gross value of sales. Because gross cash income excludes any shares of production accruing to landlords and contractors, it may be lower than the gross value of farm sales.

Another measure of farm income is net cash farm income, which is gross cash farm income less cash expenses. Farm operators use net cash income from farming to purchase farm capital items, reduce farm debt, and meet family obligations.

Earnings of the operator household from farming activities is primarily the household's share of net cash farm income less depreciation. This definition is largely consistent with the Census Bureau's Current Population Survey (CPS) definition of farm self-employment income and allows us to directly compare the income position of farm households with the average for all U.S. households (for further explanation, see Appendix C). Earnings of the operator household from farming activities does not include some resources the farm business may provide to the household, such as unspent depreciation expense, nonmoney or in-kind receipts, and additions to inventory.

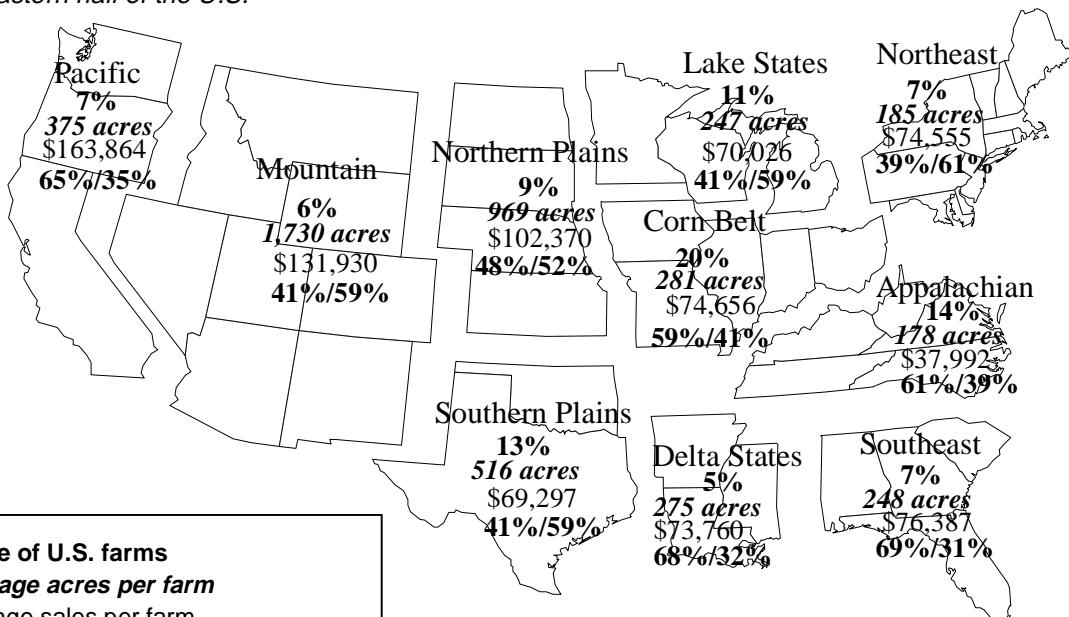
Farm Structure

Farm structure or agricultural structure refers to a broad set of characteristics that describe U.S. farms, as well as the distribution of farm production resources and returns to those engaged in farm production activities. For example, producing units (farms and ranches) may be categorized by farm size (value of sales or number of acres), primary output, and geographic location. Farm businesses may be delineated by form of legal organization, degree of land ownership, marketing or production contractual arrangements, and financial position. Farm operators may be described by age, education, and primary occupation. Finally, farm households may be characterized by features of their associated farm businesses and interaction with the nonfarm sector, such as off-farm employment or income from nonfarm sources. Any or all of these elements can be used to construct a structural portrait of farming in the Nation. Figure 2 illustrates some elements of agricultural structure by describing the 10 farm production regions using share of all farms, average acres operated and value of sales, and crop/livestock share of farm sales.

Figure 2

Characteristics of farming in 10 farm production regions, 1995

Two-thirds of the Nation's farms are in the 6 farm production regions that make up the eastern half of the U.S.



Source: USDA, Economic Research Service, 1995 Agricultural Resource Management Study.