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## The 1950 Census of Agriculture as a Source of Basic Data for Economic Research

By Alvin T. M. Lee and Kenneth L. Bachman

*Research workers in agricultural economics will find a wealth of source material in the reports on the 1950 Census of Agriculture. Inclusion of new items in the questionnaire accounts for some of the increase over previous censuses in the quantity of data published. Of special interest to research workers are the classifications which include tabulations of several key items of farm data by size of farm, type of farm, economic class of farm, and tenure of operator. Many of the other classifications represent merely a count of farms having given amounts of items such as number of cows or acres of wheat. Important uses of census data in agricultural economic research may be found in studies of the structure of agriculture in the United States and variations in the levels of productivity. Also, the data may have unusual value in providing a framework for selection, sampling, and generalization in agricultural economic studies.*

**P**LANS for the 1950 Census of Agriculture provided for the tabulation and publication of many items of farm data for each major classification. This was made feasible by the use of State economic areas as the unit for tabulation and presentation of the statistics. Use of State economic areas reduced the number of reporting units from more than 3,000 counties to 362 groups of counties, all within State boundaries. The larger numbers of farms in an economic area as contrasted with the number in a county made it possible to obtain sufficient accuracy with the use of a sample. Use of the sample reduced the cost of processing, and use of State economic areas held the reporting units down to manageable proportions, as to both volume of material to be analyzed and publication space required. Nearly all of the data on farm characteristics relating to size, type, and class of farm, and tenure of operator are based

on the tabulation of a sample comprising all large farms and 20 percent of the other farms.

### State Economic Areas

The grouping of counties into State economic areas was a cooperative effort of the Bureau of the Census, the Bureau of Agricultural Economics, and the Scripps Foundation for Research in Population Problems at Miami University, Oxford, Ohio. State agricultural colleges and other agencies and institutions also participated in the review of areas as first delimited.

The general objective was to group the counties that were reasonably similar in natural resources, in kind of farming, and in population characteristics, but which differed in these characteristics from other nearby counties. Sixty items in these broad fields were tabulated and used as guides in grouping the counties. As

a broad objective each area was to include a minimum of about 100,000 inhabitants and 10,000 farms; but exceptions were made in a few instances. The State economic area is the basic unit for which most data on cross classifications have been published.<sup>1</sup> The 362 State economic areas have been grouped into 119 subregions.<sup>2</sup> This further reduction in number of units was effected largely by combining similar economic areas across State lines. The subregions were established cooperatively in the same way as the State economic areas.

The grouping of counties for portraying cross classification of census data was intended to be useful to several subject-matter fields. A different grouping would have resulted if only one or two subject-matter fields were to be served. It is hoped that research workers will be able, in most instances, to accept the areas as outlined. They should keep in mind the multiple-purpose use of these areas and exert care in generalizing on specific items as to their degree of existence in all counties within the area. For some work, such as preparing detailed maps showing type-of-farming areas, it will be preferable to work with county data when they are available.

All of the basic data on acreages of cropland, pasture, woodland, and individual crops, and on livestock numbers, sales of farm products, farm facilities, tenure of operator, labor resources, and other related data are available by counties as in past censuses. The classifications available by State economic areas, however, provide many data not available at the county level. Some of the classifications merely give a frequency distribution of the farms; others show a considerable quantity of data for each group of farms in the classification.

County data consist primarily of totals for the items enumerated, a count of farms reporting each item, and a count of farms for some of the same classifications made on the State

economic-area level. Research workers can often, and with reasonable accuracy, interpolate data for the counties that differ significantly from the other counties in a State economic area. This can be done by using averages shown for the classifications within the State economic area and the number of farms as shown for the classification within the county.

### Data and Classifications Available from the 1950 Census of Agriculture

Several basic differences in the methods employed and items enumerated in the 1950 census as contrasted with earlier censuses affect the quantity or quality of data available. The more important differences are the following:

1. Forty-one variations of the questionnaire were prepared in 1950 to permit the greatest possible adaptation to State conditions. In 1945 only 7 versions were adapted to groups of States. By having a separate questionnaire for each of most of the States it was possible to have the names of all of the important crops printed on the questionnaire. It was believed that this insured greater accuracy of enumeration than if it had been necessary to write in the names of crops frequently grown within some States but not produced nationwide.

2. More sales questions were asked in the 1950 Census of Agriculture than in any previous census. These ranged from 31 to 39 for individual States. In nearly all instances, each sales question followed the commodity or group of commodities to which it was related. This made it easy to relate sales to production during enumeration and during the editing of the questionnaire.

3. Value of products produced on the farms for use by farm families was not enumerated in 1950 as in previous censuses.

4. In previous censuses all of the information on land related only to the land that was considered to be operated by the respondent. In the 1950 census the respondent was asked to report all the land he owned as well as the land he rented from and to others. The classification of farms by tenure of operator may have been affected somewhat because of this slight change in classification criteria. The method used in 1950 made clearer to the respondent the acreage

<sup>1</sup> BOGUE, DONALD J. STATE ECONOMIC AREAS. A DESCRIPTION OF THE PROCEDURE USED IN MAKING A FUNCTIONAL GROUPING OF THE COUNTIES OF THE UNITED STATES. Washington, D. C., Bureau of the Census.

<sup>2</sup> Totals of selected data from the 1950 Census of Agriculture for these 119 Economic Subregions appear in a special publication, "FARMS AND FARM CHARACTERISTICS BY ECONOMIC SUBREGIONS," Part 10 of Volume V of the reports of the 1950 Census of Agriculture.



and identification of the land toward which succeeding inquiries were to be directed.

5. In the 1950 Census of Agriculture the data on land values, farm facilities, farm labor, and expenditures were obtained only for large farms and for one in five of the remaining farms. These data were expanded to represent all farms. They are subject to considerable sampling error in some counties because of the small number of farms.

6. In 1945 and earlier censuses, enumerators were given the definition of a farm, and they were required to enumerate all places they found to be qualified. In 1950 they were asked to obtain an agriculture questionnaire for (1) each place that the operator considered a farm, (2) each place of 3 or more acres even though not considered a farm, and (3) certain specialized operations, such as nurseries and greenhouses, small poultry enterprises, and apiaries, regardless of acreage. By using this method more questionnaires were taken and later eliminated in the processing in 1950 than in any previous census. The final number tabulated in 1950 was less than that of any year since 1920. Questionnaires kept for tabulation in 1950 had to meet the following criteria: Places of less than 3 acres had to have sales of agricultural products in 1949 valued at \$150 or more, while places of 3 acres or more had to have a total value of farm production (home use, not including garden, and sales combined) of \$150 or more in 1949. The more rigid standard for a farm in 1950 caused a drop of about 150,000 to 170,000 places that would have been included as farms under the earlier definitions.

The causes of the remaining decrease were the enlargement of farms and the discontinuance of agricultural production on many residential farms that were included in the 1945 and earlier censuses.

A list of classifications made up of individual items of data from the 1950 Census of Agriculture is summarized in table 1. It shows the level on which the classifications were made—whether county, State economic area, or the State. Tables in which the data appear are identified. In most of these classifications a single item was merely sorted into frequency groups and a count made of the number of farms in each group. For some of the classifications listed in

table 1 a tabulation was made of one, two, or more related items. The items tabulated were selective and not comprehensive enough to portray all the characteristics of the farms in the group.

In five classifications many farm characteristics are shown (table 2). At the county level the farms were classified into two groups, "commercial" and "other." County table 6 of Volume I presents separate data for these two groups of farms. This table helps to focus attention upon commercial farming in each county. The "other farms" consist of part-time, residential, and abnormal farms. These are often numerous but in most counties they account for an insignificant proportion or volume of the total farm sales. Deriving averages per farm for the commercial farms separately results in a more realistic average if one is concerned primarily with the commercial segment of agriculture.

At the State economic area level, four basic classifications were made—one for size involving 12 groupings, another for type of farm involving 12 groupings, a third for economic class of farm involving 9 groupings, and a fourth, 10 groupings by tenure of operator. Each of these classifications was independent of the others, except that a count of farms was made for each classification within each of the other classifications. For example, for each type of farm group there is a count of the farms (1) in each economic class, (2) in each size group, and (3) in each tenure-of-operator group. Averages of farm characteristics such as acres of cropland, number of cows, value of sales, and other items represent all of the farms in a given type group regardless of economic class of farm, size of farm, or tenure of operator.

Subsorting the farms on the basis of two or more characteristics represents a useful analytical tool for studying relationships in farm organization. For many purposes the farm characteristics for a three-level breakdown of the farms would be desirable. Such a stepdown sorting process for the commercial farms might be as follows:

First sort—Tenure of operator (4 groups)

- (1) Full owners (2) Part-owners (3) Managers and
- (4) Tenants

Second sort—Type of farm (12 groups within each tenure)

TABLE 1.—Farm characteristics by frequency distributions and where published in Volume I, 1950  
Census of Agriculture

Items classified	Where data are published in volume I		
	County table	Economic area table	State table
<i>Operator</i>			
Color	2		3, 5
Tenure by color of operator <sup>1</sup>	2a		3, 14, 15, 16
Age		1, 5, 6, 7, 8	5, 15
Years on present farm		1, 5, 6, 7, 8	5, 15
Off-farm work		1, 5, 6, 7, 8	5, 15
Residence		5, 6, 7, 8	5, 15
<i>Acreage per farm</i>			
Cropland harvested	1	5, 6, 7, 8	1, 15
Woodland pastured		1	
Woodland not pastured		1	
<i>Livestock—Number per farm</i>			
Horses and/or mules		3	
Cattle and calves		3	
Milk cows <sup>1</sup>		3	
Sows and gilts for spring farrowing		3	
Calves butchered		3	
Cattle, excluding calves butchered		3	
Hogs and pigs butchered		3	
Chickens on hand 4 months old and over <sup>1</sup>		3	
<i>Specified crops</i>			
Acres of corn for all purposes		4	
Acres of corn for grain		4	
Acres of sorghums for all purposes		4	
Acres of sorghums for grain		4	
Acres of land from which hay was cut		4	
Tons of hay sold		4	
Acres of potatoes <sup>1</sup>		4	
Other principal crops (varies by States) <sup>1</sup>		4	
<i>Orchards</i>			
Acres of land in orchards		4	
Apple trees of bearing age		4	
Apple trees of nonbearing age		4	
Bushels of apples harvested		4	
Peach trees of bearing age		4	
Peach trees of nonbearing age		4	
Bushels of peaches harvested		4	
<i>Farm machinery, work power, equipment, and roads</i>			
Class of work power	3	5, 6, 7, 8	7, 15
Kind of tractor <sup>1</sup>	3	5, 6, 7, 8	7, 15
Tractor by year of newest model		5, 6, 7, 8	7, 8, 15
Number of tractors per farm			7
Automobile by year of newest model		5, 6, 7, 8	7, 8, 15
Motortruck by year of newest model		5, 6, 7, 8	7, 8, 15
Kind of road on which located	3	5, 6, 7, 8	7, 15
Distance to trading center	3		7
Distance over dirt road	3		
<i>Labor force</i>			
Kind of workers for specified week <sup>1</sup>	3	2, 5, 6, 7, 8	9, 15
Expenditures for hired labor		2	9, 19 to 22
Hours worked by operator		2	
Number of hired workers			19 to 22
Number of seasonal hired workers		2	19 to 22
Number of regular hired workers		2	19 to 22
Wage rates paid			19 to 23
Hired workers by type of perquisites furnished		2	23 to 27
Hired workers by basis of payment <sup>1</sup>		2	19 to 27
<i>Land values, taxes, and rent</i>			
Value of owned land and buildings for full owners and part owners by taxes paid			18
Value of rented land and buildings for those paying cash rent			17
<i>Sales</i>			
Value of products sold	7		

<sup>1</sup> For each of these frequency distributions, in addition to a count of farms reporting, there is also included a tabulation of one or more selected items. For example, in the distribution by number of milk cows there is tabulated the total number of cows milked yesterday, the quantity and value of cream sold, the quantity and value of whole milk sold, and the value of all dairy products sold.

(1) Cash-grain (2) Cotton (3) Other field crop, and so forth,

Third sort—Economic class of farm (6 groups within each type, within each tenure)

This sorting process would result in a possible total of 288 groups ( $4 \times 12 \times 6 = 288$ ). Examination of the data in a few selected areas probably would show that most of the farms classify into only a few of the groups. A sorting process as illustrated would serve to weed out farms for the minor and unusual tenures, types, and economic classes in an area so that a major statistical analysis could be limited to the more significant groups. A two- or even three-way sort provides a method for making a more meaningful analysis of the data.<sup>3</sup> Table 3, which shows characteristics of dairy farms by eco-

<sup>3</sup> Exploratory work of this type was done in a special tabulation of economic classes within selected type-of-farm groups. The special tabulations were made for 19 selected State economic areas showing characteristics of farm organization for the modal economic classes within the most common type-of-farm groups in the area. Only the economic classes having approximately 500 farms within each type-of-farm group were included in the study. The smaller groups were considered as not having sufficient statistical reliability. The statistics for the 191 groups tabulated may be found in the special publication of subregions mentioned in this article.

nomic class of farms for 7 selected State economic areas, affords an example of the kind of comparisons that could be made for similar classes and types of farms in various areas of the country if such tabulations were available more extensively.

### Use of Data in Measuring Resource Productivity

Much attention has recently been given to levels of productivity in the farm and nonfarm sectors of our economy, especially among different groups of farmers. But measurement of even the relative levels of productivity has been greatly handicapped because data have been available only for conglomerate groupings of farms that cover a variety of situations from the standpoint of production conditions. Separation of part-time and residential farms from commercial farms and tabulation of information concerning resources, income, and expenditures by local areas make meaningful estimates of this nature a distinct possibility.

To make comparisons of resource productivity among farms in the United States, estimates are needed of output and resources for the important groups of farms in our agriculture. The 1950 census provides a basis for geographical and functional groupings such as type of farm,

TABLE 2.—*Farm Classifications—Number of groups in each classification, items tabulated and where published in Volume I—1950 Census of Agriculture*

Basis of classification	County <sup>1</sup>			Economic area <sup>1</sup>		
	Groups	Table number	Data tabulated	Groups	Table number	Data tabulated <sup>2</sup>
Size of farm (acres)---	Number 13	2	Number of farms----- Land in farms-----	Number 12	5 and 9	241 major items of farm data showing the characteristics of the farms in each group. <sup>3</sup>
Tenure of operator----	10	2	Number of farms----- Land in farms----- Cropland harvested----	10	6 and 10	Do.
Type of farm-----	12	7	Number of farms-----	12	7 and 11	Do.
Economic class-----	9	7	Number of farms-----	9	8 and 12	Do.
Commercial and other--	2	6	79 major items of farm data.	-----	-----	-----

<sup>1</sup> County and Economic Area tables each have a summary column giving State totals. Classifications for size of farm, tenure of operator, and type of farm are for commercial farms only.

<sup>2</sup> Identical items are tabulated in tables 5, 6, 7, and 8 and in tables 9, 10, 11, and 12.

<sup>3</sup> Tabulations include several subclassifications showing number of farms by such groupings as acres of cropland harvested per farm, days worked off-farm by operator, years on present farm, and by each of the other major farm classifications listed in this table.



TABLE 3.—Characteristics of dairy farms, by economic class of farm, selected State economic areas, Part 10, Volume V, 1950 Census of Agriculture

State economic area	Number of farms					Percentage distribution of dairy farms				
	Class II	Class III	Class IV	Class V	Class VI	Class II	Class III	Class IV	Class V	Class VI
	Number	Number	Number	Number	Number	Percent	Percent	Percent	Percent	Percent
New York 6E	1,647	3,326	2,240	826	180	19.7	39.8	26.8	9.9	2.2
Ohio 2	220	655	820	620	280	8.4	25.1	31.5	23.8	10.7
Wisconsin 2A	667	4,430	6,466	3,080	795	4.3	28.6	41.8	19.9	5.1
Virginia 3A	113	125	220	361	500	8.4	9.2	16.3	26.7	37.0
Kentucky 6AB	392	1,070	1,151	715	640	9.8	26.8	28.9	17.9	16.0
Tennessee 5B	276	723	1,512	2,705	1,760	3.9	10.3	21.6	38.6	25.1
California 6E	510	745	495	315	70	20.3	29.7	19.7	12.6	2.8
	Acreage of land per farm					Acreage of cropland harvested per farm				
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
New York 6E	293.1	199.4	154.1	109.9	(1)	87.3	59.7	47.2	32.2	(1)
Ohio 2	(1)	157.1	103.7	58.5	(1)	(1)	99.2	61.1	28.0	(1)
Wisconsin 2A	319.2	195.9	143.1	106.1	86.7	148.2	89.7	60.0	39.8	26.9
Virginia 3A	(1)	(1)	(1)	(1)	89.1	(1)	(1)	(1)	(1)	15.3
Kentucky 6AB	(1)	159.8	124.8	96.3	70.3	(1)	50.9	30.0	18.3	9.8
Tennessee 5B	(1)	222.2	149.1	102.4	67.3	(1)	68.6	39.7	26.3	15.7
California 6E	191.1	80.8	62.4	(1)	(1)	49.3	28.1	16.6	(1)	(1)
	Milk cows per farm					Value of dairy products sold per farm				
	Number	Number	Number	Number	Number	Dollars	Dollars	Dollars	Dollars	Dollars
New York 6E	37.6	22.0	14.3	9.0	(1)	12,014	6,007	3,362	1,643	(1)
Ohio 2	(1)	14.0	8.7	6.0	(1)	(1)	3,702	1,760	913	(1)
Wisconsin 2A	28.4	19.1	13.7	9.1	5.8	7,217	4,070	2,440	1,336	67
Virginia 3A	(1)	(1)	(1)	(1)	5.1	(1)	(1)	(1)	(1)	37
Kentucky 6AB	(1)	17.7	12.1	7.6	4.4	(1)	4,040	2,087	1,110	359
Tennessee 5B	(1)	24.0	14.7	9.3	5.4	(1)	4,469	1,994	994	457
California 6E	42.2	24.7	14.4	(1)	(1)	11,967	5,055	2,690	(1)	(1)
	Percentage dairy products sold is of all farm products sold					Value of hogs and pigs sold per farm				
	Percent	Percent	Percent	Percent	Percent	Dollars	Dollars	Dollars	Dollars	Dollars
New York 6E	84.8	83.9	89.3	79.1	(1)	41	10	6	5	(1)
Ohio 2	(1)	53.4	50.3	52.4	(1)	(1)	879	442	155	(1)
Wisconsin 2A	53.7	62.5	66.8	69.5	74.0	1,610	741	232	94	40
Virginia 3A	(1)	(1)	(1)	(1)	53.0	(1)	(1)	(1)	(1)	25
Kentucky 6AB	(1)	58.5	55.3	59.9	54.0	(1)	271	142	74	22
Tennessee 5B	(1)	64.6	57.6	56.7	61.3	(1)	546	260	136	53
California 6E	77.0	72.3	74.7	(1)	(1)	171	46	43	(1)	(1)
	Value of poultry and poultry products sold per farm					Percentage of farms reporting milking machines				
	Dollars	Dollars	Dollars	Dollars	Dollars	Percent	Percent	Percent	Percent	Percent
New York 6E	452	253	90	69	(1)	94.5	87.2	76.6	44.2	(1)
Ohio 2	(1)	448	467	173	(1)	(1)	84.0	56.1	25.8	(1)
Wisconsin 2A	641	439	264	111	51	92.5	93.6	76.9	37.8	15.1
Virginia 3A	(1)	(1)	(1)	(1)	88	(1)	(1)	(1)	(1)	(1)
Kentucky 6AB	(1)	118	105	61	40	(1)	81.8	52.1	24.5	5.5
Tennessee 5B	(1)	80	94	69	49	(1)	71.9	33.1	9.8	4.0
California 6E	130	42	57	(1)	(1)	88.2	87.2	68.7	(1)	(1)

<sup>1</sup> Data not tabulated because of small number of farms.

economic class, and tenure of operator. Much of the information on output and resources is provided or can be estimated for these groupings. The value of the 1949 crops sold or to be sold and the value of livestock and livestock products sold were obtained in the 1950 census. Expenditures reported included: Labor and machine hire, feed and seed purchased, livestock purchased, gasoline and petroleum fuel and oil, tractor repairs, and machinery repairs. Information on resources reported in the census includes: Value of land and buildings; information on operator, family, and hired labor; number of specified machines; number of tractors, automobiles, and trucks; and number of livestock.

Although much information is available from the census there remain rather distinct limits to the degree of accuracy possible in measures of productivity developed from these data. The limitations arise from three major sources: (1) Underreporting of the value of sales, which varies considerably among the different farm commodities, (2) omitted items relating to output and input, and (3) definition of a farm.

Certain data concerning farm income and expenses were not obtained by the 1950 census. From the standpoint of the value of output, the value of home use must be estimated. Nearly two-thirds of the current expense items are covered in the items reported in the census. Fertilizer represents a major item omitted in the 1950 census.

Information on production and "product added" are useful when related to the resources used. Considerable information is given on resources but definite limitations and gaps exist. The value of land and buildings is similar to that obtained in previous censuses. Machinery values are omitted but information is given for numbers of certain specified machines. Numbers of productive livestock provide a basis for calculating value for this class of capital. Estimates of operator's labor available can be made for commercial farms (farming units) from information on the basis of amount of work off the farm and age of operator. Wages paid, together with numbers of hired workers, provide a basis for a reasonable estimate of hired labor requirements. But the only information on family labor in 1950, other than operator, re-

lates to the numbers employed 15 hours or more during the week preceding the enumeration.

In the use of data concerning parts of the South where cropper operations are important, comparisons of product added by type and size of farm need to be analyzed carefully. The census counts as a farm each cropper and tenant operation. Where these form part of a plantation the data on machinery and some of the data on expenses are often enumerated with the plantation home-farm. But comparisons by areas relating to commercial farms as a group should be affected only slightly because most home farms are classified as commercial.

Calculation of accurate estimates of net income from census data alone does not seem possible. But meaningful estimates might be made of the relative quantity of product added, and of resources employed, for comparisons among broad groups of farms. Two studies of this type in a national perspective are now under way. One, in the Bureau of Agricultural Economics, is an analysis of major areas of low-production farms and levels of productivity. The other is a study of levels of productivity in United States agriculture being made by the Bureau of Agricultural Economics and Iowa State College cooperating.

### Role of Census Data in Studies of the Structure of American Agriculture

Census reports before 1950 emphasized State and regional differences in the production and organizational characteristics of agriculture. The 1950 Census of Agriculture makes available comprehensive data for such functional groupings for areas within States.

These developments deserve special emphasis in studies of the economic structure of agriculture in this country. Much needed information relating to important sectors of agriculture is provided in data on the characteristics of commercial farms for economic areas, by economic class of farm, size and type of farm, and by tenure of operator. A frequent criticism of farm programs is that they are based too greatly on the assumption that all farms are commercial farms. Data from the 1950 census will permit much better comparisons and descriptions of both commercial and other farms by farming areas, with respect to the salient differences in



organization and production, than were previously possible.

Information on numbers and characteristics of commercial farms by economic class, type of farm, and tenure of operator for economic areas may modify some assumptions on which farm policy is developed. The distribution of farm operators by tenure differs considerably between commercial farms and all farms. The proportion of full owners is high among the part-time and residential groups.

Research in this area can provide useful information for the economic appraisal of many problems of our agriculture, such as questions of ownership, tenure, size of farm, resources, productivity, and stability of incomes. Information can be developed to answer such specific questions as: What are the apparent relationships of tenure to the adoption of technological development? Under what conditions do large-scale farms constitute an important sector of agriculture? How important are purchased inputs on various types and sizes of farms? How may net incomes be affected by changes in prices or yields?

#### Uses of Data in Selection, Sampling and Generalization of Research

A bridge for the integration of individual-farm and overall analysis is provided by the classification of farms in each economic area into size and type groups. For example, production possibilities for the chief type or size situations can be outlined by using these organizations as a framework. Similarly, given a general analysis of adjustments for an area in connection with production capacity studies as an example, the organizational data for major groups of farms make it possible in many cases to adapt such overall recommendations to the

major organizational situations in the area. Although cross classifications are not available for many areas, type or size will frequently represent the significant breakdown from the standpoint of evaluating alternatives. In north-eastern Montana, for example, the difference between wheat and livestock farms is of paramount importance for many purposes. In the eastern Wisconsin dairy area, on the other hand, size rather than type of farm may be the important breakdown for analyzing production possibilities.

A more desirable sampling system can be devised when more is known about the universe. Area stratification represents only one of the means to efficient sampling. These generalizations are particularly true of research in production economics, which usually studies relationships. As Heady has emphasized "...so much emphasis has been given the 'random versus block' argument that the real core of farm production economics sampling has been bypassed. . . . The appropriate sample is one which gives (approximately) equal . . . distribution of the independent variable throughout the entire range of the data."<sup>4</sup>

The information made available by the 1950 Census of Agriculture provides a wide range of stratification that can be related to the purpose of the studies. As mentioned earlier, these include data by type of farm, tenure of operator, economic class, and size of farm. The availability of such data can make for easier sampling and generalization in studies of economy of scale, tenure, incomes, organization of the typical family-operated farm, production opportunities, and other significant research in production economics.

<sup>4</sup> HEADY, EARL. ELEMENTARY MODELS IN FARM PRODUCTION ECONOMIC RESEARCH. *Jour. Farm Econ.* 30: 222-223, May 1948.