

UNITED STATES CENSUS OF **AGRICULTURE**

1945



DEPARTMENT OF COMMERCE

Charles Sawyer, Secretary

BUREAU OF THE CENSUS

J. C. Capt, Director

**FARMS AND
FARM CHARACTERISTICS
BY
SIZE OF FARM**

UNITED STATES CENSUS OF AGRICULTURE: 1945

SPECIAL REPORT FARMS AND FARM CHARACTERISTICS BY SIZE OF FARM

Farms, Farm Acreage, Facilities in Farm Dwellings, Farm Equipment,
Farm Population, Number of Principal Kinds of Livestock,
Production of Important Livestock Products,
Acreage and Production of Principal Crops,
and Value of Farm Products Sold
or Used by Farm Households
By Size of Farm

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UNITED STATES CENSUS OF AGRICULTURE: 1945

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State reports, with statistics by counties for farms, acreage, value, livestock, livestock products, crops, fruits, and value of farm products, 33 parts. (Price list for Volume I, Final Reports, U. S. Census of Agriculture available upon request.)

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BY SIZE OF FARM
BY VALUE OF PRODUCTS
BY TYPE OF FARM

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COOPERATIVE REPORTS

(Bureau of the Census of the U. S. Department of Commerce and the Bureau of Agricultural Economics of the U. S. Department of Agriculture. Basic data primarily from the Censuses of Agriculture.)

LAND UTILIZATION—GRAPHIC SUMMARY

A cooperative report, of the Bureau of the Census of the U. S. Department of Commerce and the Bureau of Agricultural Economics of the U. S. Department of Agriculture, presenting graphically the uses being made of the agricultural land resources, both inside and outside farm boundaries. Attention has been given to factors contributing to record volumes of crop and livestock production with little expansion in physical area. 41 p., il., paper, \$0.20.

FARM TENURE—GRAPHIC SUMMARY

Provides a graphic presentation of the extent and general nature of the various forms of tenure under which farms are held or operated. The factors contributing to trends and changes in farm tenure since 1880 are analyzed. 42 p., il., paper (in press).

LETTER OF TRANSMITTAL

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
Washington, D. C.

May 21, 1948

SIR:

I transmit herewith a special report of the 1945 Census of Agriculture. This report presents statistics compiled for a sample of all farms included in the 1945 Census of Agriculture. It includes data by size of farm for farms, farm acreage, facilities in farm dwellings, farm equipment, farm population, the number of principal kinds of livestock, the production of important livestock products, the acreage and production of principal crops, and the value of farm products sold or used by farm households.

This is the first publication issued by the Bureau of the Census giving extensive, detailed, basic information on the characteristics and organization of farms of various sizes. The making of tabulations for a sample of all farms made it possible to present, in this special report, data that could not be tabulated for all farms because of the cost.

The 1945 Census of Agriculture was taken in conformity with the Act of Congress providing for the Fifteenth Decennial Census and subsequent censuses, approved June 18, 1929. The collection of data was performed by Census enumerators under the direction of supervisors appointed by the Director of the Census. The compilation of the statistics in this special report was made under the supervision of Ray Hurley, Chief, Agriculture Division, and Warder B. Jenkins, Assistant Chief, with the assistance of Hilton E. Robison, John A. Burroughs, Carl R. Nyman, Harold Nisselson, Lois Hutchison, Orville M. Slye, Gladys L. Eagle, Elmer O. Rea, and Henry A. Tucker. The mechanical tabulation, by electrical machines, was made under the supervision of C. F. Van Aken. The maps and charts were prepared under the supervision of Clarence F. Batschelet, Geographer.

Acknowledgement is made of the technical assistance and of the loan of technical personnel by the United States Department of Agriculture in the planning, the enumeration, and the compilation of the 1945 Census of Agriculture.

Respectfully,

J. C. CAPT,
Director of the Census.

HON. CHARLES SAWYER,
Secretary of Commerce.

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SPECIAL REPORT—FARMS AND FARM CHARACTERISTICS BY SIZE OF FARM

Introduction.—This special report, presenting information for farms classified on the basis of the total land in farms, supplements other reports of the 1945 Census of Agriculture in giving a detailed picture of our agricultural resources and their utilization by different producing groups. It makes available to students and to agricultural workers generally a mass of detailed information for farms of various sizes.

Source of data.—The statistics in this special report are estimates prepared on the basis of tabulations for a cross section, or a sample, of all farms included in the 1945 Census of Agriculture. This sample included approximately 50,000 designated large farms and a sample of approximately 323,000, or about 6 percent, of all other farms.

Description of sample.—In the sampling plan a cross section of small areas throughout the country was selected in such manner that the farms in those sample areas might represent all farms in the United States, as well as all farms in each State, for the items to be included in the enumeration. For this purpose, every county in the United States was completely subdivided into small areas or segments which averaged about 5 farms each and 2.5 square miles in area. A sample of 1 out of every 18 of these segments or sample areas was drawn. Every county in the United States was represented in the sample, with the exception of a few counties containing only a very small number of farms. Provision was made to insure the proper representation of farms in incorporated places and thickly settled unincorporated areas, as well as in open country areas. A detailed statement of the specific methods used in selecting this sample and for evaluating the precision of results may be obtained by writing to the Bureau of the Census. The sample was developed jointly by the Bureau of the Census and the Bureau of Agricultural Economics, with the cooperation of the Statistical Laboratory of Iowa State College, for use in connection with the 1945 Census of Agriculture and for general use in sample surveys in the field of agriculture.

All farms having their headquarters (farm dwellings, farm buildings, or farm entrance) within the selected areas were designated as sample farms. In addition, the sampling plan provided for the inclusion of approximately 50,000 of the largest farms in the United States, regardless of whether or not these were located in sample segments. For many items these large farms, although few in number, accounted for a considerable part of the State and national totals, and efficient sampling called for their inclusion in the sample. The criteria for selection of these large farms varied from State to State but were such as to insure the inclusion of most of these farming operations making large individual contributions to the total agriculture of the State. Lists of these specified large farms, prepared by the district supervisors, were provided the enumerator in advance of his canvass.

The sample, by including all the larger farms in addition to 1 in 18 of the remaining farms, covered about one-fourteenth of the farms in the United States and a much larger proportion of the acreage and production. This size of sample, except for a few of the smaller States and some of the more detailed tabulations, provided an adequate basis for State and national estimates.

Comparisons with other published data.—When data are tabulated for a sample, exact agreement with the results that would have been obtained from a tabulation of all farms is not, in general, expected. The differences in such cases are partly due to sampling variation, and partly to possible differences between the enumeration and processing of sample farms and other farms.

State totals based on all farms enumerated in the 1945 Census of Agriculture are published in both volume I (Statistics by Counties) and volume II (General Report, Statistics by Subjects) for all items presented in this report except the following:

- *Expenditures for:
 - Purchase of livestock and poultry
 - Commercial fertilizer
 - Lime and other liming materials
 - Seeds, bulbs, plants, and trees
 } Farms reporting and dollar amounts
- *Stationary gasoline engines, farms reporting by horsepower of largest engine and total number of engines
- *Combines, farms reporting and number
- *Milk machines, farms reporting
 - Farms by class of work power
 - Farms by value of land and buildings
- *Farms reporting specified facilities in farm operator's dwelling:
 - Kitchen sink with drain
 - Mechanical refrigeration
 - Power-driven washing machine
- *Farms reporting by year of newest model:
 - Motortrucks
 - Automobiles
- *Electric motors, total and by horsepower, farms reporting and number
- *Number of tractors by kind

Items marked with an asterisk are among those for which information was obtained for only a sample of the farms enumerated in the 1945 Census of Agriculture. Information for those items not marked with an asterisk was obtained for all farms, but the data were tabulated for only those farms included in the sample.

Comparison of the State totals of the estimates, presented here by size of farm, with the corresponding published State totals for all farms provides a measure of the sampling and other variations to which the estimates are subject. Measures of sampling reliability for all statistics in this report are given in the section titled "Sampling Reliability of Estimates."

Tabulations based on all farms classified by size of farm are also published by State, in both volume I and volume II, for the following items:

- Total number of farms
- All land in farms, acres
- Specified classes of land in farms according to use, acres
- Value of farms (land and buildings), dollars
- Cropland harvested, number of farms reporting by acres harvested

Comparisons with the estimated numbers presented in this report, however, would lead to an underestimate of the variations to which the data as a whole are subject, because, in processing the sample, adjustments based on the known total numbers of farms reporting were introduced.

Definitions and explanations.—Definitions and explanations are given below for the various items for which data are included in this report.

Farm.—The schedule book for the 1945 Census of Agriculture was entitled "Farm and Ranch Schedule." The following definition appeared in each schedule book:

A farm, for Census purposes, is all the land on which some agricultural operations are performed by one person, either by his own labor alone or with the assistance of members of his household, or hired employees. The land operated by a partnership is likewise considered a farm. A "farm" may consist of a single tract of land, or a number of separate tracts, and the several tracts may be held under different tenures, as when one tract is owned by the farmer and another tract is rented by him. When a landowner has one or more tenants, renters, croppers, or managers, the land operated by each is considered a farm. Thus, on a plantation the land operated by each cropper, renter, or tenant should be reported as a separate farm, and the land operated by the owner or manager by means of wage hands should likewise be reported as a separate farm.

Include dry-lot or barn dairies, nurseries, greenhouses, hatcheries, fur farms, mushroom cellars, apiaries, cranberry bogs, etc.

Do not include "fish farms," "fish hatcheries," "oyster farms," and "frog farms." Do not report as a farm any tract of land of less than 3 acres, unless its agricultural products in 1944 were valued at \$250 or more.

Farming, or agricultural operations, consists of the production of crops or plants, vines, and trees (excluding forestry operations) or of the keeping, grazing, or feeding of livestock for animal products (including serums), animal increase, or value increase. Livestock, as here used, includes poultry of all kinds, rabbits, bees, and fur-bearing animals in captivity, in addition to mules, asses, burros, horses, cattle, sheep, goats, and hogs. Frequently certain operations are not generally recognized as farming. This is especially true where no crops are grown or where the establishments are not commonly considered as farms.

There was provided a partial list of types of specialized agriculture and of operations not generally recognized as farming but for which a report was required. This list included such operations as apiaries (bee farms), feed lots, greenhouses, hatcheries, mushroom cellars, etc.

Farms reporting.—The term "farms reporting," as used in the tables, denotes the estimated number of farms for which the specified items would have been reported in a complete enumeration, based on the number of farms reporting the item in the sample.

Land in farms.—The acreage designated as "all land in farms" includes considerable areas of land not actually under cultivation and some land not even used for pasture or grazing, but all such land must have been under the control of the operator and considered a part of his farm. However, large areas of timberland or other nonagricultural land held by an operator of a farm as a separate business, and not used for pasture or grazing, or for any other farm purpose, were to be excluded. Land neither owned nor leased but from which crops, including wild hay, were harvested was to be reported as part of the farm. When cattle, sheep, or other livestock were grazed or pastured on land neither owned nor leased by the operator, such land was not to be included as a part of the farm. Operations limited to livestock grazing on open range and reported as having no land owned or leased were given "0" acres and were included with farms of under 3 acres.

The 1945 Census also includes in farm acreage more Indian grazing land than prior censuses because of changes in the method of enumerating agricultural activities on Indian reservations. In 1945, if land in an Indian reservation was used by the Indians on a cooperative basis, the entire acreage in the reservation was reported as a single farm. In such cases, much grazing land, not included in farms in previous censuses, was included as land in farms in 1945.

In 1945, data were obtained for eight classes of land based upon the use made of the land in 1944. Data are presented in this report for only cropland harvested and total land pastured.

Cropland harvested.—The land from which cultivated crops were harvested; land from which hay (including wild hay) was cut; and land in small fruits, orchards, vineyards, nurseries, and greenhouses. When two or more crops were harvested in 1944 from the same acreage, such acreage was included only once in the acreage for cropland harvested. However, the acreage and the quantity of each individual crop were reported separately as crops harvested.

Total land pastured.—Total land pastured represents the sum of the acreages reported for three separate classes of land in farms, namely, cropland used only for pasture, woodland pastured, and pasture other than woodland and cropland. Cropland used only for pasture comprises land used only for pasture in 1944 that had been plowed within the last 7 years. Woodland pastured comprises all farm wood lots or timber tracts, natural or planted, and cut-over land with young growth that had or would have value as wood or timber which were used for pasture or grazing in 1944. Pasture other than cropland and woodland includes nonwooded land that was not suitable for cropping or had not been plowed within 7 years which was used for pasture or grazing in 1944.

Farm values.—The enumerators were instructed to obtain from each farm operator the value of the farm (land and

buildings) owned by the operator and, also, the value of that part of the farm rented from others. The value to be reported was the market value.

The operator was asked to place an over-all value on the farm implements and machinery used in operating the farm. This was to represent the present market value and was to include not only the farm implements but also the tools, tractors, motortrucks, wagons, harnesses, dairy equipment, gins, threshing machines, combines, and all other farm machinery. However, the values of automobiles, commercial mills and factories, and, also, permanently installed irrigation and drainage equipment were to be omitted.

The difference in the number of farms reporting value of implements and machinery and the total number of farms indicates that this item may be incompletely reported, as it is not likely that the number of farms not having implements and machinery is as great as this difference indicates.

Farm operator.—A "farm operator," according to the Census definition, is a person who operates a farm, either performing the labor himself or directly supervising it. The number of farm operators is identical with the number of farms.

Years on farm.—The data on years on farm were secured on the basis of the answer to the question "Year the operator began to operate this farm (continuously)." The data will reflect the stability or the instability of operators on particular farms. They do not necessarily represent the total years of farm experience.

Work off farm.—Many farm operators obtain additional income from personal services performed off their farms. In some cases the operator supplements his farm income with work at odd or spare-time jobs or businesses. In many other cases, his off-farm job provides the principal source of his income, and his farm activities are only secondary. The figures on the number of farm operators reporting work off their farms represent the minimum number of farm operators working off their farms in 1944 as reports were not secured for a considerable number of farm operators.

Farm population.—The inquiries on farm population called for the number of persons in each of four age-sex groups. Farm population was defined as all persons living in specified occupied dwellings on farms. Enumerators were instructed not to report as persons living on farms inmates of institutions, persons living in dwellings rented to others (other than the farm operator), and those living in tourist camps. The figures for farm population, as given in this report, represent an understatement of the farm population because of the failure of Census enumerators to report all persons living in the second, third, fourth, etc., dwellings on farms. This underenumeration of farm population is estimated to be between 300,000 and 850,000 for the United States as a whole.

Specified farm expenditures.—Data are presented in this report for only six items of farm expenditure, namely, cash wages paid for hired labor; feed for livestock including dairy cattle and poultry; purchases of livestock and poultry; commercial fertilizer; lime and other liming materials; and seeds, bulbs, plants, and trees. The value of lime and other liming materials includes the value of lime, etc., furnished by the Agricultural Conservation Programs but excludes the cost of lime used in sprays, disinfectants, etc.

Specified facilities in farm operator's dwelling.—The number of farms reporting running water, electricity, radio, and telephone was obtained by means of the inquiry, "Does the farm dwelling have—Running water? Electricity? Radio? Telephone?" The data given in this report represent the number of farms with occupied and unoccupied dwellings reporting "Yes" for these inquiries. On those farms included in the sample, the head of each household living on the farm was asked, in addition, whether or not there was on the farm—

1. Kitchen sink with drain.
2. Mechanical refrigeration.
3. Power-driven washing machine.

The figures on the number of farms reporting kitchen sink with drain, mechanical refrigeration, and power-driven washing machines relate only to those farms that have resident farm operators. However, the figures include estimates made for resident farm operators for whom Census enumerators failed to obtain all the household information. These estimates were made on the basis of the reports for resident operators for whom the information was obtained by enumerators.

Distance to all-weather roads.—The Census enumerator was instructed to indicate the distance from the farm to the nearest all-weather road, that is, to the nearest road that is passable at all times and all seasons. If the main farm entrance was on an all-weather road, the enumerator was asked to report "0" miles; if not, to give the distance along the highway to the nearest road that was passable at all times and all seasons. Data are presented in this report for farms located less than 0.3 of a mile from an all-weather road and for those located 0.3 of a mile or more from an all-weather road.

Specified farm machinery and equipment.—Data were secured regarding the number of motortrucks, tractors, automobiles, combines, electric motors, and stationary gasoline engines on farms and the number of farms reporting milking machines. In general, the data for these items represent minimum numbers as occasionally enumerators failed to obtain the information for every farm. In addition to the total number of tractors, the number of garden tractors, crawler tractors, and tractors other than garden and crawler was obtained. For tractors other than garden and crawler, a classification was obtained according to type, that is, whether they had rubber tires on all wheels, rubber tires on rear wheels only, or no rubber tires. Garden tractors were not defined. The inquiries regarding the type of tractors were answered for only about 90 percent of the farms that reported tractors. Occasionally, these reports were inconsistent with the total number of tractors reported for that farm. After the tabulations were made, the tractors on those farms for which the type of tractor was not reported were distributed on the basis of the distribution of tractors on those farms which reported the type.

Data were also secured on the year of model of the newest automobile and motortruck. Approximately 90 percent of the farms that reported automobiles on farms reported the year of model of the newest automobile and about 85 percent of the farms that reported motortrucks reported the year of the newest model. After the tabulations were made, farms reporting automobiles and motortrucks, but not reporting the year of newest model, were distributed according to the year of newest model in the same proportions as shown for those farms for which the year of model was reported. For farms with two or more automobiles and motortrucks, the year of model was obtained only for the newest automobile and motortruck; therefore, it was not possible to classify all automobiles and motortrucks on farms as to the year of model.

The questionnaire contained two inquiries on electric motors. One of these inquiries called for the number of electric motors under one horsepower but at least one-third horsepower and the other called for the number of electric motors of one horsepower and over. The enumerators were not given any instructions regarding the exclusion of household motors as it was believed that the exclusion of electric motors under one-third horsepower would eliminate household electric motors such as those used for vacuum cleaners, electric refrigerators, etc. The inquiries on stationary gasoline engines on farms called for the number of such engines that were not self-propelled. The second inquiry regarding stationary gasoline engines called for the horsepower of the largest engine on the

farm. The horsepower of the largest stationary gasoline engine was reported for approximately 74 percent of the farms reporting engines. Farms reporting gasoline engines but not reporting horsepower were distributed by horsepower of the largest engine in the same proportion as indicated for those farms reporting both gasoline engines and horsepower of the largest engine.

Horses and mules.—Inquiries on horses and mules called for the total number of all ages on the farm on January 1, 1945. The number of horses was to include horses, colts, and ponies.

Cattle and calves.—The data given in this report for cattle and calves represent the sum of the number reported for each of the following sex and age groups: Cows and heifers 2 years old and over kept for milk, cows and heifers 2 years old and over not kept for milk, heifers 1 year old and under 2 kept for milk, heifers 1 year old and under 2 not kept for milk, steers 1 year old and over, bulls 1 year old and over, 1944 heifer calves, and 1944 bull calves and steer calves. The inquiries for the sex and age groups of cattle were made for only those farms included in the sample. Census enumerators failed to give the number by sex and age groups for some farms for which the total number of cattle and calves was reported. Since the figures given for cattle and calves in this special report represent a sum of the number reported for each of the 8 sex and age groups and not the total number of cattle and calves reported, the figures represent an understatement of the farms reporting and total number of cattle and calves of all ages on farms and for cows and heifers 2 years old and over.

The understatement for farms reporting cattle and calves for the United States is 4.8 percent and for cows and heifers 2 years old and over, 4.3 percent. Likewise, the number given for the United States for cattle and calves represents a 2.5 percent understatement and for cows and heifers 2 years old and over, a 3.2 percent understatement. These understatements result in the average number per farm reporting being 2.4 percent too large in the case of cattle and calves and 1.2 percent in the case of cows and heifers 2 years old and over.

Hogs and pigs.—Figures are given in this report for hogs and pigs of all ages and also for sows and gilts kept for spring farrowing.

Sheep and lambs and goats and kids.—Inquiries on sheep and lambs and on goats and kids called for the total number of animals of all ages on January 1, 1945.

Cows milked and dairy products.—"Cows milked" includes cows and heifers of all kinds reported as having been milked any time during 1944. The inquiry following the one on cows milked called for the number of gallons of milk produced in 1944. Several inquiries were made concerning the utilization of milk produced in 1944, namely, gallons of whole milk sold, pounds of butterfat sold as cream, and pounds of butter sold. The information for butter sold was more completely reported for farms included in the sample than for all farms; therefore, the data given in this special report for butter sold probably more nearly represent the total amount of butter sold than the data given for all farms in volumes I and II of the reports for the 1945 Census of Agriculture.

Farm slaughter and sales of livestock.—The inquiry on farm slaughter called for the number of animals butchered for use on the particular farm, as well as those for sale as dressed meat from that farm. Animals butchered off the farm on a custom basis, or otherwise, for use on the farm were to be reported by the operator of the farm for which the animals were butchered.

Animals sold alive were reported for the farm from which sold whether produced on that farm or purchased from others. However, enumerators were instructed not to report animals purchased and resold immediately.

Chickens on hand, eggs produced, and chickens raised.—The inquiry on chickens called for the number over 4 months old on hand January 1, 1945. The question on eggs produced called for the number of dozens produced in 1944. The enumerators were instructed to report the total number of chickens raised regardless of whether or not they were still on the farm at the time of the census. However, some of the enumerators did not always provide reports on chickens raised. Other enumerators failed to report chickens raised from baby chicks purchased from hatcheries or those that were sold or consumed before they reached 4 months of age. In the editing process for those farms included in the tabulations for this special report, adequate adjustments for the underreporting of chickens raised were not made; thus, the totals given for chickens raised represent an understatement of approximately 4 percent for the United States.

Turkeys raised.—The only inquiry made in the 1945 Census of Agriculture regarding turkeys called for the number raised in 1944. The number of turkeys raised as shown in this report represents an understatement of the actual number as enumerators failed to secure a report for every farm on which turkeys were raised.

Selected crops harvested.—Data are given in this report for only selected crops. The acreage of the crops for which data are presented represents approximately 85 percent of the acreage of all crops. The acreage or area given in the tables for these crops represents the acreage harvested in the crop year of 1944, except that the acreage given for land in fruit orchards and vineyards and planted nut trees represents the land in bearing and nonbearing orchards on January 1, 1945. The production for the various crops represents the quantity harvested during the crop year of 1944. Totals for "all hay" include all kinds of hay cut except sorghums saved for hay or dry forage, cowpeas for hay, soybeans for hay, and peanut vines saved for hay.

Vegetables harvested for sale.—Figures were obtained for all States for fresh beans, cabbages, tomatoes, green peas, and all other vegetables and melons harvested for sale. The acreage for all vegetables harvested for sale other than fresh beans, cabbages, tomatoes, and peas has been included as a total for all other vegetables and melons. Vegetables sold to canneries, as well as vegetables harvested for the fresh market, were to be reported as vegetables harvested for sale. "Vegetables harvested for sale" does not include Irish or sweet potatoes.

Land in fruit orchards.—Enumerators were instructed to report all land in bearing and nonbearing fruit orchards, vineyards, and planted nut trees. On many farms, there were a few fruit or planted nut trees or grapevines which were not a part of a well-defined orchard or vineyard. In many such cases, reports were secured for the number of trees or vines with or without production, but no acreage was reported. Unless there were sufficient trees to equal the number of trees usually planted on two acres, the acreage was not supplied during the editing process. For this reason, the number of farms reporting specified fruits may exceed the number of farms reporting the acreage in orchards, vineyards, and planted nut trees.

Selected fruits.—The inquiries on tree fruits call for the number of trees of all ages and the production during the crop year of 1944. Data are given in this report for only apples, peaches, and pears.

Value of farm products sold or used by farm households.—The values presented in this report as "Value of farm products sold or used by farm households" were obtained by the enumerators from farm operators. The 1945 Farm and Ranch Schedule contained nine questions relating to the value of farm products sold, traded, or used by farm households. The

total value of farm products sold or used by farm households represents the sum of the individual reports of farm operators for the nine value-of-products questions on the schedule. The total value of farm products, or the value of farm products sold plus the value of farm products used by farm households, gives an approximate measure of gross farm income. The arrangement on the schedule of these nine questions was such that each question immediately followed the production reports on the items to which the value questions related; for example, the inquiry on the value of field crops sold immediately followed the inquiries on the acreage and production of field crops.

The value questions relating to livestock and livestock products, horticultural products, and forest products apply, in general, to sales during the calendar year 1944; whereas, those relating to fruit and nut crops, vegetables harvested for sale, all other crops (field crops), and farm products used by farm households are for the crop year immediately preceding the census.

Since the individual farm is the unit of enumeration, the value-of-products figures necessarily include duplications because of interfarm sales. For example, feed crops produced on Farm A may be sold to Farm B; in this case, their value will be reflected in the gross livestock income for Farm B. Similarly, a Texas ranch may show sales of feeder cattle, and the same cattle may be fattened and sold from an Illinois farm.

The value-of-products figures do not include income from nonagricultural sources, such as work off the farm by the farm operator or members of his family.

Enumerators were instructed not to include in the value of farm products any government payments, such as soil conservation and dairy feed or dairy production payments.

Fruits and nuts sold.—In general, the figures reported for this question cover the value of all fruits and nuts harvested in 1944 that had been or were to be sold at the time of the census enumeration. However, the information on citrus fruit applies to the 1943-1944 season, that is, to the crop harvested from the bloom of 1943. The value figures on fruit cover all tree fruits, nuts, and grapes, as well as small fruits. Sales of wild fruits and nuts are excluded with two exceptions: wild blueberries were to be reported on the Census schedule if the land was used primarily for their production; and wild or seedling pecans were also reported whether grown in orchards, farmyards, pastures, or elsewhere on the farm or ranch. The enumerator was instructed that, for all the value-of-products questions, gross receipts or values were desired without deductions for expenses of any kind. However, in many commercial fruit areas there was a noticeable tendency for growers to report their net receipts instead of the gross value of all fruit sold or traded. This was particularly true in sections where certain marketing costs were commonly deducted from the payments to the grower. Another factor which may have contributed to the tendency to report net receipts for fruit crops was the absence of any questions on the schedule regarding expenditures for such items as spray materials, orchard cultivation, irrigation water, containers, and other production and marketing costs.

Vegetables sold.—The values reported for this item represent the total value of vegetable crops harvested in 1944 for sale. Irish and sweet potatoes were not included under vegetables but were included under field crops.

Horticultural specialties sold.—The values reported for this item include the value of sales for crops grown under glass and propagated mushrooms; nursery products; and flower and vegetable seeds, bulbs, and flowers and plants grown in the open.

All other crops (field crops) sold.—This question covers the value of the sales of field crops, such as corn, sorghums, small

grains, annual legumes, hay, clover and grass seeds, and miscellaneous crops, including Irish and sweet potatoes, cotton (lint), tobacco, sugarcane, sugar beets, hops, etc. In addition, the enumerator was instructed to include the value of sales of byproducts, such as cottonseed, beet pulp and tops, pea vines, etc., although no provision was made on the schedule for reporting the production of such byproducts. On some schedules the value of sales of cottonseed apparently was not included in the value of field crops sold or traded. The enumerator was also instructed that, if the farm operator was a tenant, the landlord's share should be included in reporting the value of sales not only for this item, but also for all other value-of-products questions. Receipts for the grazing of livestock on a per-head basis were also included under this question.

Dairy products sold.—This question called for the value of all dairy products sold or traded in 1944, including sales of cheese, buttermilk, and skimmed milk, as well as sales of whole milk, butterfat, and butter. The value of sales of dairy products purchased was to be excluded.

Poultry and poultry products sold.—Sales of ducks, geese, guineas, pigeons, baby chicks, poults, etc., were included, as well as sales of eggs, broilers, fryers, other chickens, and turkeys.

Livestock and livestock products sold (other than dairy and poultry).—This question included the value of animals sold alive, such as horses, mules, cattle and calves, hogs and pigs, sheep and lambs, goats, fur animals in captivity, and bees; and livestock products not included with dairy and poultry, such as meat, goat milk, wool, mohair, hides and pelts, and honey.

Forest products sold.—The values reported for this question include sales of firewood, fuel wood, standing timber, sawlogs, veneer logs, pulpwood, mine props, bark, charcoal, fence posts, railroad ties, poles and piling, turpentine, resin, maple sirup and sugar, etc.

Farm products used by farm households.—This question called for the value of products of the farm in 1944 that were or were to be used by all households on the farm. The following items were to be included in this question if consumed on the farm where produced: meat, milk, cream, butter, poultry, eggs, honey, vegetables, fruit, firewood, fuel wood, and Irish and sweet potatoes. Farm products of institutional farms which were used by inmates of the institution were considered as sold, and the values were included under the other value-of-products questions. The same procedure was followed with respect to products of Community Victory gardens.

Tenure of operator.—Farm operators are classified according to the tenure under which they operate their farms.

Full owners own all the land they operate.

Part owners own a part and rent from others the remaining part of the land they operate.

Managers operate farms for others and are paid wages or salaries for their services. Persons acting merely as caretakers or hired as laborers are not classified as managers.

Tenants operate hired or rented land only. Cash tenants pay a cash rental, such as \$4.50 per acre for the cropland, \$500 for the use of the whole farm, etc. Share-cash tenants pay a part of their rental in cash and part as a share of the crop or livestock production. Share tenants pay a share only of either the crop or livestock production or both. Croppers have been defined as share tenants to whom their landlords furnish all the work animals or tractor power in lieu of work animals. In some of the cropper areas, tenants pay cash rent for noncash crops and a share of the crop for the cash crop. These tenants, as well as those for whom the method of rental was not reported, were classified as croppers if the work power was furnished by the landlord. Other and unspecified tenants include those whose rental agreement was unspecified

and those who could not be included in one of the other subclasses.

Classification of farms by value of products.—The data given in this special report are for farms classified according to the total value of farm products sold or used by farm households. The value group into which an individual farm has been placed was determined by obtaining a total for the amounts reported for the eight inquiries on the value of farm products sold plus the amount reported for the inquiry on the value of farm products used by farm households.

Classification of farms by type.—In the 1945 Census, all farms were classified mechanically by type of farm, based on the principal source of income in 1944. The procedure was as follows:

After eliminating "farms with no products" and "unclassified" farms, which could not be classified by type on the basis of the value of products, the remaining farms were sorted into two groups: (1) farms producing products primarily for sale and (2) farms producing products primarily for use by farm households. If the value of farm products used by farm households exceeded the total value of all farm products sold, the farm was classified as a "farm producing products primarily for own household use." On the other hand, if the value of all farm products sold equaled or exceeded the value of farm products used by farm households, the farm was classified as a "farm producing products primarily for sale." Farms producing products primarily for sale were further classified into the following nine major types on the basis of source of income: fruit-and-nut farms, vegetable farms, horticultural-specialty farms, all-other-crop (field crop) farms, dairy farms, poultry farms, livestock farms, forest-products farms, and general farms. If the value of products sold from one source of income was more than 50 percent of the total value of all farm products sold, the farm was classified as the type corresponding to that source of income. Farms for which the value of products from any one of the eight sources of income did not exceed 50 percent of the total value of all farm products sold were classified as "general" farms.

Farms not classified by type include two groups of farms. The first group consists of farms on which no farm products were sold or used during 1944. Farms included in this group represented (a) new farms being operated for the first time in 1945 and (b) farms having a complete crop failure in 1944 with no livestock or livestock products sold and no farm products used by farm households. The second group of farms includes a number of farms designated "unclassified farms" for which the information on value of products sold or used was incomplete or was not reported. In the tables giving data for farms classified by value of products, generally, unclassified farms have been included in the value-of-product group \$0-\$249.

Sampling reliability of estimates.—Approximate measures of the sampling reliability of estimates presented by size-of-farm groups, by States, are given below.

These measures indicate the general level of sampling reliability of the estimates, but they do not include any allowance for sources of error other than sampling variation—for example, underreporting or errors in the original data furnished by farmers. Adjustments made for underreporting, differences in reporting between the farms in the sample and other farms in the census, and other problems in reporting that affect both the sample and the complete census are discussed above, in connection with the definitions of the items, as they apply. It should be borne in mind that for estimates for the United States, and for geographic regions and the larger States, sources of error other than sampling may become relatively more important than sampling variation.

It will be noted in the tables below that estimated numbers

of farms and estimated item totals are subject to relatively large sampling errors when the number of farms reporting is small. Nevertheless, the complete detail for all size-of-farm groups in each State is presented for every item in this report. This method of presentation insures maximum flexibility for obtaining estimates for desired combinations of States or size groups. Moreover, percentage figures derived from the tables will have greater reliability than the estimated totals involved, and significant patterns of relationships may sometimes be observed even though the individual data are subject to relatively large sampling errors. Also, it is for this latter purpose, that is, to facilitate the study of relationships, that many items are shown for the sample farms in this report, even though complete totals based on all farms in the census have previously been published.

In general, the measures of sampling reliability presented tend to overestimate the variation in the sample estimates. This is true for several reasons: (1) Maximum figures intended to serve for all size groups were used for the sampling errors in setting the limits of reliability (2) The predicted limits of error presented ignore the complete enumeration of large farms. When large farms account for a substantial proportion of the item total in a class, the data on sampling reliability may overstate considerably the sampling variation. For example, in Arizona and Nevada about 80 percent of all sheep reported were on large farms. Consequently the sampling error of this item for the largest size group of farms in these States is only about one-fifth of the value indicated in the tables below. This factor, of course, affects only the larger size-of-farm groups and is progressively less important as the size of farm decreases.

The estimated sampling reliability of the number of farms in any size group given as reporting a specified item is shown in the following table. This table shows percentage limits, such that the chances are about 95 in 100 that the difference between the sample estimate and the number of farms reporting that would have been obtained from a tabulation for all farms would be less than the limit specified. However, most of the items would be expected to show a difference of less than one-half the percentage limit given in the table below:

If the estimated number of farms reporting in the size class is—		Then the chances are about 95 in 100 that the estimated number would differ from the results of a complete tabulation by less than ¹ —
		Percent
100.....	500.....	110
1,000.....	2,500.....	51
5,000.....	10,000.....	36
25,000.....	50,000.....	23
100,000.....	500,000.....	16
		11
		7.2
		5.2
		3.6
		1.6

¹ For estimated number of resident operators reporting kitchen sink with drain, mechanical refrigeration, and power-driven washing machine in the following States, the percent differences given should be multiplied by 7/4:

California Iowa North Carolina Pennsylvania
Indiana Kansas Ohio

² In the case of items for which the estimated number of farms reporting constitutes more than 50 percent of all farms in the class, more precise limits may be obtained by multiplying the percent difference given in the table by an appropriate factor as follows:

When farms reporting constitute (percent)—	Multiply given limit by—
50.....	0.75
75.....	.50
90.....	.30
95.....	.20

The magnitude of sampling errors in the estimated farm population figures by age group, for size-of-farm groups, by States, may be determined from the following table:

If the estimated farm population in the age group—size of farm class is—		Then the chances are about 95 in 100 that the estimated farm population in the age group—size of farm class would differ from the results of a complete tabulation by less than—
		Percent
100.....	500.....	100
1,000.....	2,500.....	45
5,000.....	10,000.....	32
25,000.....	50,000.....	20
100,000.....	500,000.....	14
		10
		6.4
		4.5
		3.2
		1.4

A majority of the estimated population figures would be expected to show a difference of less than one-half the percentage limit given in the table. Estimates of total population by size of farm have somewhat greater sampling reliability than the estimates by age group, and similarly for percentages derived from the data presented by age group.

Two tables are given below to assist in determining the general level of sampling reliability of estimated totals by size of farm for other items presented in this report. In table A, a list of the items is given, and the level of sampling reliability as shown in table B is indicated. By referring to table B, in the column for the level of sampling reliability designated in table A, percent limits according to the number of farms reporting may be obtained. As pointed out above, the percent limits indicated represent maximum figures intended to serve for all groups, and a majority of the estimates would be expected to show differences of less than one-half the stated limits. In using tables A and B, it should be noted that, in general, for States in which an item is reported relatively frequently the level of reliability in table B will tend to overestimate the sampling variation to a greater extent than when the item is reported relatively infrequently.

Table A.—INDICATED LEVEL OF SAMPLING RELIABILITY OF ESTIMATED STATE TOTALS BY SIZE OF FARM FOR SPECIFIED ITEMS

Item	Level of sampling reliability (refer to corresponding numbered column in table B)
Value of implements and machinery, dollars.....	2
Work off farm, days.....	3
Cash wages paid, dollars.....	4
Expenditures, dollars:	
Purchase of livestock and poultry.....	5
Commercial fertilizer.....	4
Lime and other liming materials.....	3
Seeds, plants, bulbs, and trees.....	4
Feed bought for livestock, including dairy and poultry feed.....	4
Combines, number (harvester-thresher).....	2
Motortrucks, number.....	2
Tractors, number:	
Total.....	2
Garden.....	17
Crawler.....	17
Other:	
With rubber tires on all wheels.....	2
With rubber tires on rear wheels only.....	7
With no rubber tires.....	4

Table A.—INDICATED LEVEL OF SAMPLING RELIABILITY OF ESTIMATED STATE TOTALS BY SIZE OF FARM FOR SPECIFIED ITEMS—Con.

Item	Level of sampling reliability (refer to corresponding numbered column in table B)
Automobiles, number.....	2
Electric motors, number:	
Total.....	2
1 horsepower and over.....	2
Under 1 horsepower but at least $\frac{1}{2}$ horsepower.....	2
Stationary gasoline engines, number.....	2
All mules and mule colts, number.....	2
All horses and colts, including ponies, number.....	2
All cattle and calves, number.....	2
Cows and heifers, 2 years old and over, number.....	2
All hogs and pigs, number.....	3
Sows and gilts for spring farrowing, number.....	2
All sheep and lambs, number.....	2
All goats and kids, number.....	2
Cows and heifers milked, number.....	2
Milk produced, gallons.....	3
Whole milk sold, gallons.....	3
Cream sold, pounds of butterfat.....	3
Butter sold, pounds.....	3
Number of animals sold alive:	
Cattle.....	3
Hogs.....	3
Sheep.....	3
Number of animals butchered:	
Cattle.....	2
Calves.....	2
Hogs.....	1
Chickens on hand, number.....	3
Eggs produced, dozens.....	3
Chickens raised, number.....	3
Turkeys raised, number.....	3
Corn for all purposes, acres.....	2
Corn harvested for grain:	
Acres.....	2
Bushels.....	2
Oats threshed:	
Acres.....	2
Bushels.....	2
Barley threshed:	
Acres.....	2
Bushels.....	2
All wheat threshed:	
Acres.....	2
Bushels.....	2
All hay cut:	
Acres.....	2
Tons.....	2
Tobacco:	
Acres.....	3
Production (pounds).....	3
Cotton:	
Acres.....	3
Production (running square bales).....	3
Irish potatoes:	
Acres.....	3
Production (bushels).....	3
Sweetpotatoes and yams:	
Acres.....	3
Production (bushels).....	3
Value of vegetables grown for farm household (s) use, dollars.....	1
Vegetables harvested for sale, acres:	
Fresh beans.....	3
Cabbage.....	3
Tomatoes.....	3
Green peas.....	3
All other vegetables and melons.....	3
Land in fruit orchards, vineyards, and planted nut trees, acres.....	6
Apples:	
Trees of all ages, number.....	5
Quantity harvested (bushels).....	5
Peaches:	
Trees of all ages, number.....	4
Quantity harvested (bushels).....	4
Pears:	
Trees of all ages, number.....	4
Quantity harvested (bushels).....	4

¹ Five for New England States.

² Five for Pacific States.

³ Five for size groups of less than 100 acres.

⁴ Five for size groups of 100 acres and over.

⁵ Six for size groups of less than 100 acres.

Table B.—SAMPLING RELIABILITY OF ESTIMATED ITEM TOTALS FOR STATES BY SIZE OF FARM FOR SPECIFIED NUMBERS OF FARMS REPORTING, BY LEVELS

[See table A for designation of level for any item]

If the estimated total number of farms reporting in the size-of-farm group is—	Then the chances are about 95 in 100 that the estimated item total would differ from the results of a complete tabulation of the item for all farms by less than—						
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
100.....	82	117	143	165	200	260	450
500.....	37	52	64	73	90	117	200
1,000.....	26	37	45	52	64	82	143
2,500.....	16	23	28	33	40	52	90
5,000.....	12	16	20	23	29	37	64
10,000.....	8.2	12	14	16	20	26	45
25,000.....	5.2	7.4	9.0	10	13	17	29
50,000.....	3.7	5.2	6.4	7.4	9.0	12	20
100,000.....	2.6	3.7	4.5	5.2	6.4	8.2	14
500,000.....	1.2	1.6	2.0	2.3	2.9	3.7	6.4

Presentation of data.—A State is the smallest geographic area for which the data given in this special report are available. Table C presents summary statistics for the United States and gives many of the significant averages and percentages needed for an appraisal and analysis of the data. Maps and charts showing some of the important characteristics and relationships for various size-of-farm groups are presented on pages XIX to XXXI. Data by States are given in tables 1 to 17, inclusive. The States have been arranged in groups, by geographic divisions, in order to facilitate comparisons among States in the same general area.

The discussion which follows relates only to the United States. Since the farms in various States differ from those of the United States, the conclusions for the United States would not apply to an individual State. The characteristics of farms in each size-of-farm group and the relative contribution of farms in each size group differ from State to State.

Classification of farms by size.—Farms have been classified by size according to the total land area of each farm. In establishing groupings for farms classified according to their total land area, consideration has been given to the natural groupings which have resulted from the use of our land survey system. Accordingly, the limits for the several size groups, with the exception of the extremely small and the extremely large farms, have been selected so that each would include a common multiple or fraction of a quarter-section.

In analyzing size-of-farm statistics, consideration should be given to the definition of a farm for Census purposes. Census farms are essentially operational units—not ownership tracts. Each farm includes all the land owned and operated by an individual farm operator plus land rented by him from others. Land rented to others or managed by others is excluded. Thus, if each of two farmers owns a 160-acre tract and one rents a 40-acre field from the other, there are a 200-acre farm and a 120-acre farm, and not two 160-acre farms. If a person has croppers or other tenants, the land assigned each cropper or tenant is a separate farm even though the landlord may handle the entire holding essentially as one farm in respect to supervision, equipment, rotation practices, purchase of supplies, or sale of products. In such a multiple-unit operation, the tenant's farm is often much smaller than single-unit farms having a similar number of acres of cash crops. The pasture

land, woodland, wasteland, etc., which normally would be associated with the cash-crop land is retained by the landlord. Thus, the "home farm" of multiple-unit operations has a relatively smaller proportion of cropland than do farms of smaller size in the area that are not handled as multiple units. The expenditures, work power, and implements and machinery for the entire multiple unit are also frequently included in the report for the "home farm."

Consideration should also be given to the minimum requirements of a farm for Census purposes. The Census includes as farms numerous places having limited agricultural production. Many of these are rural homes with their agricultural production limited to items which are used by the households. Quite often the households are primarily dependent upon other sources of income. Though such farms are proportionately greatest in the smaller size groups, they are found in all size groups and range from small low-income places to pretentious country estates. Many of these places, whether small or large, may not locally be considered as farms.

Specialized agricultural operations, such as nurseries, green-houses, mushroom cellars, chick hatcheries, apiaries, and the like, are also farms for Census purposes.

Size of farm as a measure of size of enterprise.—In general, the farm averages for both inventory and production items increase with an increase in size of farm. Although each size-of-farm group includes farms representing a variety of types and characteristics, the extent of the agricultural operations for each particular pattern is largely dependent upon the land area in the farm.

In each area most of the farms tend to group around that size of farm representing the area of land which can be handled by, and which will provide a living for, the average farm family when used for the dominant type of agriculture developed in the area. Obviously this modal size group varies from area to area according to the type of agriculture and farm practices followed. For areas in which two or more distinct major types of agriculture have developed, there is a modal size for each major type. In the South much of the agriculture centers around such cash crops as cotton and tobacco. These intensive crops require a large amount of hand labor. Consequently the modal size of farm is small. In the Corn Belt the agriculture centers around the production of livestock from feed produced on the farm. With less dependence on hand labor and more on machinery and equipment the modal size of farm is much larger than in the South. Similarly, the dry land farms of the Great Plains are larger than farms in the Corn Belt and they, in turn, are exceeded by the cattle and sheep ranches in the Mountain and Pacific States. However, in many of these States the modal size of farm represents irrigated or dry land crop farms.

For any one area representing similar land and similar farming practices, the size of farm varies with the resources of the farm family, the number of available workers in the family, the personality and the age of the operator, the utilization of machinery, etc. On the one extreme are places which represent primarily rural homes with limited agricultural operations which often merely supply supplementary income. On the other, there are strictly commercial farms depending in part or wholly on hired employees.

Grouping of farms solely on the basis of land area often brings together into a single size group farms representing numerous types of agriculture and various sizes of operations. This is especially true when different geographic areas are brought together, such as in State, regional, or United States totals.

It should be kept in mind that the rate of change with size of farm is much greater for some items than for others and that a few items are more or less independent of the total

land area and consequently do not vary with the size of farm or else fail to show consistent increases with increases in the total acreage in the farm.

The following paragraphs summarize some of the important facts regarding the contribution and relation to total agricultural production and resources of farms of various size groups.

Farms under 50 acres.—Nearly two-fifths of the farms in the United States are under 50 acres in size. A high proportion of these have very low agricultural income. Almost one-half of these small farms have a value of products of less than \$600. On three-eighths, the agricultural production consists primarily of items for use by the household. Nearly two-thirds of all such subsistence farms are under 50 acres in size.

A number of these small farms represent rural homes. Approximately one-third of the operators report working 100 or more days in 1944 at jobs, businesses, or professions not connected with their agricultural operations. An additional number very likely depend primarily on investments, pensions, or other sources of income for their living expenses, but no statistics on such other income were collected in the 1945 Census.

Many of the farms in this group represent marginal or submarginal operations. The very low standard of living of the families on these small farms is indicated by the small proportion of such farms having specified facilities. Less than one-third of these farm homes have kitchen sinks with drain or power-driven washing machines, as compared with three-sevenths and one-half, respectively, of the farms of 50 acres and over. Although approximately one-half of the farms under 50 acres have automobiles, most of these report older models, only 5.6 percent reporting models less than 5 years of age as compared with 11.4 percent for farms of 50 acres and over.

For the most part, sales from these farms under 50 acres are small. Farm products sold often result from limited agricultural operations undertaken to supplement other sources of income, recreational or hobby activities, or represent surplus production of products raised primarily for use in the household. Farms in these size groups account for only one-seventh of the total value of all farm products sold. However, as these farms include some with highly specialized operations, they account for four-sevenths of the total receipts from green-houses and nursery products, more than one-third of the cotton and tobacco harvested, and more than three-tenths of the fruit and nuts and poultry and poultry products sold. They have 6.8 percent of the cropland harvested, 9.0 percent of the corn acreage, 4.6 percent of the hay acreage, and 12.3 percent of the Irish potato acreage. More than 6.5 percent of all cattle, 10.8 percent of all hogs, 14.6 percent of all horses and mules, and 24.7 percent of all chickens are on these farms.

Slightly more than 10 percent of the farms in the United States are under 10 acres. A large proportion of these represent rural homes with very limited agricultural operations and production. On four out of seven of these farms the value of products produced primarily for use in the household exceeds the value of farm products sold. On nearly one-half of the farms the operator works off his farm 100 or more days during the year. The high proportion of the operators who are 65 years old or over, amounting to nearly one-fifth of all operators in this size-of-farm group or about one and two-fifths of the proportion in this age group for farms of 50 acres and over, indicates that many of these small farms are operated by retired or semi-retired persons. A high proportion of these rural homes are owned by their occupants, more than three-fourths of the farms under 10 acres being owner-operated. Approximately three-sevenths of the tenant-operated farms in this size group are rented on a cash basis, and undoubtedly

many of these cash-tenant-operated places represent places rented primarily for the residence. Of the farms under 10 acres in size reporting sales in excess of the estimated value of products used in the household, nearly one-half represent farms producing specialty crops such as cotton, tobacco, fruit, vegetables, and horticultural specialties, and the remainder represent, for the most part, farms with livestock enterprises such as poultry, dairy, and feed lot operations. On the basis of type of farm, field crop farms comprise the largest group, accounting for 12.1 percent of the total farms under 10 acres. Most of the 72,088 field crop farms are apparently cotton and tobacco farms operated by share croppers. Of the farms under 10 acres, 40,121 report cotton and 28,980 report tobacco. Poultry farms are the next largest group, accounting for 11.5 percent of all farms under 10 acres. These include highly specialized operations such as hatcheries, production of broilers, and commercial egg farms, as well as comparatively small poultry farms. Poultry farms under 10 acres account for one-fourth of all poultry farms. Fruit, livestock, dairy, vegetable, and horticultural-specialty farms are next in order of importance, comprising from 4.3 to 1.4 percent of all farms under 10 acres. Fruit and nut farms under 10 acres account for nearly one-fifth of all fruit and nut farms. Many of the livestock farms under 10 acres represent feed lot operations. The dairy farms are mostly dry lot dairies which purchase a large proportion of the feed required. One in six vegetable farms and over one-half of the horticultural-specialty farms are in this size group.

As in the case of the size group under 10 acres, farms of 10 to 29 acres include a large proportion of subsistence farms with most of the remainder comprising farms with the more intensive types of agriculture. Three-fifths of the farms of 10 to 29 acres have a value of products of less than \$1,000. Over 28 percent of the operators work off their farms 100 or more days. This percentage is lower than for farms under 10 acres, and it appears that a somewhat higher proportion of the operators of farms of 10 to 29 acres are wholly dependent upon their agricultural activities as their principal source of income. More than 2 out of 5 farms in this size group are tenant-operated. The proportion of tenants is higher for this than for any other size group. Nearly one-half of the farms operated by share croppers are 10 to 29 acres in size. These share cropper farms comprise 22.8 percent of all the farms in this size group. Two out of five farms are classified as field crop farms on the basis of income. Most of these field crop farms are cotton or tobacco farms. This group includes one-fourth of all farms growing cotton and more than one-fifth of all tobacco farms. While less than one-sixth of all farms are in this size group, it contains one-third of all fruit and nut farms, more than one-fourth of all vegetable farms, and approximately one-fifth of all horticultural-specialty farms. Poultry, livestock, and dairy farms together account for about one-eighth of all farms in this group.

Farms of 30 to 49 acres are similar to those of 10 to 29 acres in that approximately two out of five of these farms are classified as field crop farms. Also, as in the preceding group, most of these field crop farms are either cotton or tobacco farms. One-third of the farms of 30 to 49 acres grow cotton and 11.4 percent, tobacco.

Farms of 50 to 499 acres.—Farms in these size groups represent 56.8 percent of all farms. For the most part, they are operated by the farm operator with the assistance of members of his family. Wages paid for hired labor amount to approximately 10 percent, or less, of the total value of products sold except for the 260-to-499-acre group. However, the proportion of farms reporting cash wages ranges from two-fifths in the 50-to-99-acre group to three-fourths in the 260-to-499-acre group, with the average wage expenditure ranging from \$370

to \$966 per farm reporting. Farms in these size groups have a greater variety of sources of income than either the smaller or the larger farms. Field crops, livestock, dairy, and poultry are the principal sources of income of farms of 50 to 499 acres. The number of general farms included in these groups is an indication of the diversification of the sources of income. The proportion of farms that are classified as general ranges from 9.9 percent for farms in the 50-to-69-acre group to 20.9 percent for farms in the 220-to-259-acre group. Cotton and tobacco are the predominating field crop farms in the three size groups, 50 to 139 acres, but their importance decreases with size of farm. Cash-grain farms, particularly corn and wheat, are the most important field crop farms in the four size groups, 140 to 499 acres. In like manner, dairy and general farms, which are next in importance to field crop farms in the three size groups, 50 to 139 acres, are less important than livestock farms in the four size groups, 140 to 499 acres. More than four-fifths of all dairy farms are included in the farms of 50 to 499 acres.

The proportion of farms producing products primarily for use by farm households decreases rapidly as the size of farm increases, dropping from 25.3 percent for farms of 50 to 69 acres to 4.5 percent for farms of 260 to 499 acres. Work off the farm is not so important in these as in the smaller size groups. The proportion of operators working 100 days or more off their farms ranges from 19.3 percent for operators of farms in the 50-to-69-acre group to 6.3 and 6.5 percent, respectively, for farms in the 220-to-259- and 260-to-499-acre groups.

Farms in these size groups account for 63.7 percent of the total value of farm products sold. Two-thirds of the cropland harvested is in these farms. They account for more than three-fourths of all the corn acreage, more than two-thirds of the hay, seven-tenths of the Irish potatoes, and nearly three-fifths of the acreage of cotton, tobacco, and vegetables harvested for sale. Approximately three-fourths of the tractors are on these farms. They also have more than three-fourths of the hogs, three-fifths of the cattle, approximately two-thirds of the chickens and the horses and mules, and four-fifths of the cows milked.

Farms of 500 acres and over.—Although farms of 500 acres and over represent only one-twentieth of all farms, they have more than one-half of all land in farms. They have more than one-fifth of the investment in farm lands and buildings and nearly as large a proportion of the investment in implements and machinery. They have over three-tenths of all cattle; three-fifths of all sheep; over one-half of all wheat acreage; almost one-fourth of the acreage of vegetables harvested for sale; nearly one-fifth of the total land in orchards, vineyards, and planted nut trees; more than one-sixth of the Irish potato acreage; and nearly one-seventh of the cotton acreage. They produce 21.4 percent of all farm products sold, 18.6 percent of all fruits and nuts sold, 25.4 percent of all vegetables sold, 11.8 percent of all horticultural-specialty products sold, 25.4 percent of all other crops sold, 8.8 percent of all dairy products sold, 5.8 percent of all poultry and poultry products sold, 29.7 percent of all livestock and livestock products (other than dairy and poultry) sold, and 19.6 percent of all forest products sold. They account for over one-half of the farms with a value of products of \$40,000 and over and 3 out of 10 of the farms with a value of products of \$10,000 to \$39,999.

All other crop farms comprise the largest group for any type of farm in the size group 500 to 999 acres. There are more livestock farms than farms of any other type in the size group 1,000 acres and over. All other crop farms and livestock farms account for 80 percent of all farms of 500 acres and over.

Out of the total of 287,354 farms of 500 acres and over, 33.0 percent have combines, 64.9 percent have motortrucks,

77.3 percent have tractors, 82.6 percent have automobiles, 23.0 percent have electric motors, and 36.8 percent have stationary gasoline engines. The proportion of these farms having running water, radio, kitchen sink with drain, mechanical refrigeration, and power-driven washing machines is greater than for the farms under 500 acres in size.

Farm population.—Except for the very large farms, most farms are of family size. Hence there is very little difference in the number of persons per farm in the size groups 10 acres to 179 acres. Persons living on farms total 8,550,513 for farms under 50 acres, 13,846,004 for farms of 50 to 499 acres, and 1,605,180 for farms of 500 acres and over.

Land in farms and land use.—While farms under 50 acres represent 38.3 percent of all farms, they contain only 4.1 percent of all land in farms. On the other hand, farms of 500 acres and over in size, representing only 4.9 percent of all farms, contain 51.0 percent of all land in farms.

For most size groups the proportion of the total land area used for crops varies from approximately two-fifths to one-half. For farms over 1,000 acres in size the proportion is only slightly more than 10 percent. For farms of 10 to 29 acres nearly three-fifths of the land is in crops because this size group includes many of the cropper and tenant farms in multiple units. On many of the multiple units cropland only is assigned the cropper or tenant. In the North the proportion of land represented by cropland harvested tends to increase with size of farm through the 220-to-259-acre group. In the South and West the proportion of land in crops for farms in the size groups of 10 acres and over tends to decrease with an increase in size of farm.

A high proportion of the farms in nearly all size groups report cropland harvested with 95 percent or more of the farms of 70 to 999 acres having crops. However, 3 out of 10 farms under 10 acres report no crops harvested and 1 out of 8 farms of over 1,000 acres has no crops.

Both the proportion of land in farms represented by pasture and the proportion of farms reporting pasture increase with size of farm. The proportion of the land pastured ranges from approximately one-fifth to two-fifths for the size groups up to 1,000 acres and to more than four-fifths for farms of 1,000 acres and over. The proportion of farms having pasture varies from about one-third to two-thirds for the size groups up to 50 acres and from four-fifths to nearly 97 percent for the size groups over 50 acres.

Acreage and production of selected crops.—Corn accounts for roughly one-third of the total cropland harvested in each size group from 10 to 259 acres. Hay is also an important crop in all size groups, accounting for from one-tenth to one-fourth of the cropland, the highest proportions being in the two size groups represented by farms of 70 to 139 acres. Farms in these size groups predominate in States where dairy farms are numerous. For farms of 1,000 acres and over hay represents a high proportion of the cropland, accounting for nearly one-fourth of the total cropland harvested in this size group. More than one-half of these large farms are livestock farms, principally cattle and sheep ranches.

The proportion of the cropland harvested that is represented by small grain crops is small for the very small farms, amounting to only 2.9 percent for farms under 10 acres. However, the proportion of cropland in small grain crops increases with size of farm and the acreage in small grain comprises nearly one-half of the cropland harvested for farms of 500 acres and over. Farms over 500 acres in size account for over one-half of the total wheat and barley acreage and with the next smaller size group, 260 to 499 acres, account for more than three-fourths of the total acreage of each of these two crops.

Cotton is an important crop on the smaller farms, accounting for more than one-fourth of the cropland harvested on farms

of 10 to 29 acres and nearly one-fifth on farms of 30 to 49 acres. On farms under 10 acres cotton accounts for one-seventh of the cropland harvested. For farms of 50 acres and over the proportion of the cropland in cotton decreases with each increase in size of farm and accounts for only one-fortieth of the cropland harvested for farms of 1,000 acres and over. However, the large farms account for a large part of the total cotton acreage, with more than one-fourth of the cotton being reported on farms of 260 acres and over. These large farms represent only about one-fifteenth of the total farms growing cotton. Nearly one-half of the farms reporting cotton are under 50 acres in size.

Tobacco, like cotton, is an important crop on the small farms. On large farms with tobacco, the acreage of tobacco is not much larger than for the smaller farms. The average acreage of tobacco by size of farm varies from 2.1 to 14.1 acres per farm reporting, the average increasing with the size of farm. Farms of 10 to 219 acres account for approximately seven-eighths of all farms reporting tobacco, the remaining farms with tobacco being about equally divided between those under 10 acres and those of 220 acres and over.

Land in orchards, vineyards, and planted nut trees and in vegetables harvested for sale accounts for about one-fifth of the acreage of cropland harvested in farms under 10 acres and about one-tenth of such acreage in farms of 10 to 29 acres. As the size of farm increases the proportion of cropland harvested in these crops decreases. The small group of farms representing large-scale specialized fruit and vegetable operations accounts for a large part of the total production of these crops. Approximately two-sevenths of the total fruit sales and about three-eighths of the total vegetable sales are from farms of 260 acres and over.

Vegetables for use by the farm family occur on 80 to 89 percent of the farms in all size groups except the two largest sizes, where the proportion is somewhat smaller. Three-fourths of the farms in the 500-to-999-acre group and nearly two-thirds of the farms in the 1,000-and-over group report vegetables for home use. Land in fruit orchards, vineyards, and planted nut trees occur on more than one-fifth of the farms, with the larger size groups having relatively fewer farms with fruit orchards, approximately one-tenth of those of 1,000 acres and over reporting land in fruit orchards. The proportion in each size group having any fruits or nuts would be considerably higher if land in fruit orchards were always reported when only a few trees were represented and if this item included land in strawberries and other small fruits.

The average size of fruit operations does not vary to any great extent by size of farm except for the largest farms because of the large number of farms on which these items represent a secondary or minor source of income or an item for family consumption only. Likewise, for vegetables for sale, the average does not vary greatly with size of farm except for the largest farms. Only for the larger size groups in which more of the farms producing these items represent specialized operations are there any appreciable increases in the average size of operations with increases in the total acres in the farm.

The distribution of Irish and sweet potatoes by size of farm is similar to that for vegetables and fruit.

Livestock and livestock products.—In general, the proportion of farms reporting horses, cattle, hogs, cows and heifers 2 years old and over, sheep, and goats increases from the smallest to the largest size-of-farm group. Usually the number per farm reporting for horses, cattle, cows and heifers 2 years old and over, hogs, sows, sheep, and goats is larger for each succeeding size-of-farm group from the smallest to the largest. Farms of 1,000 acres or more, while comprising less than 2 percent of all farms, have approximately one-eighth of all horses, one-fifth of all cattle, one-fifth of all cows and heifers

2 years and over, one-half of all sheep, and three-fifths of all goats. On the other hand, farms of less than 30 acres, comprising 26.3 percent of all farms, have only about one-twentieth of all horses, one-thirtieth of all cattle, one-twenty-fifth of all cows and heifers 2 years old and over, one-sixteenth of all hogs and pigs, one-twentieth of all sows and gilts, one-sixtieth of all sheep, and one-thirtieth of all goats.

The production of a large part of all livestock products occurs on farms of 220 acres or more which group comprises one-sixth of all farms. These farms account for 29.6 percent of all whole milk sold, 57.8 percent of all cattle and calves sold, 44.9 percent of all hogs and pigs sold alive, and 78.0 percent of all sheep and lambs sold alive.

Farms reporting sales of livestock and livestock products (other than dairy and poultry) increase from approximately one-fourth for farms under 10 acres to approximately seven-eighths for farms in the size groups over 220 acres. The average sales per farm increase consistently with size of farm from \$285 for farms under 10 acres to \$8,664 for farms of 1,000 acres and over.

In general, the proportion of farms reporting sales of poultry and poultry products increases from about two-fifths for the two size groups under 30 acres to nearly four-fifths for farms in the 220-to-259-acre group. Poultry farms account for 11.5 percent of the farms under 10 acres, but the proportion of farms classified as poultry farms drops to 5.9 percent for farms 10 to 29 acres in size. This proportion is less for each succeeding size-of-farm group, poultry farms accounting for only 0.5 percent of the farms of 1,000 acres and over.

Farm expenditures.—Cash wages for hired labor are paid on almost one-half of all farms. However, the proportion of farms with cash wages paid increases from 24.9 percent for farms under 10 acres to 85.0 percent for farms of 1,000 acres and over. More than one-fifth of the farms reporting cash wages paid are in the size-of-farm groups 260 acres and over. However, the proportion of cash wages on farms of 260 acres and over is much greater than the proportion of farms reporting, as farms of this size account for almost one-half of all cash wages paid. The average amount of cash wages paid increases with the increase in the size of farm. Cash wages paid per farm reporting for the smallest size-of-farm group are \$325 and for the largest, \$3,670.

In general, the average expenditure per farm reporting for feed, purchase of livestock and poultry, commercial fertilizer, and lime and other liming materials increases significantly as the size of farm increases.

In relation to sales of livestock and poultry and their products, the smaller farms are more dependent on purchased feeds than larger farms. Feed costs represent over one-half of the total sales of livestock, livestock products, poultry and poultry products for farms under 30 acres, as compared with one-seventh for farms of 1,000 acres and over.

Farm equipment and work power.—The proportion of farms reporting items of farm equipment, such as motortrucks, tractors, combines, electric motors, and stationary gasoline engines, is larger for the larger size-of-farm groups than for the smaller. For example, the percentage of farms with combines is 0.1 for farms under 10 acres. This percentage increases as the size of farm increases, the percentage for each larger size-of-farm group being higher than for the preceding group. The proportion of farms reporting automobiles and motortrucks under 5 years of age is greater for the larger than for the smaller farms. Also, the percentage of farms reporting such vehicles 10 years old and over is smaller for the farms in the larger size groups.

More than three-fourths of all farms under 10 acres do not have horses, mules, or a tractor. Three-fourths of all farms that do not have work animals or a tractor are under 50 acres

in size. The proportion of farms without work power decreases with the increase in the size of farm. Likewise, the percentage of farms with only one horse or mule and no tractor decreases as the size of farm increases. More than 75 percent of the farms with only one horse or mule and no tractor are less than 70 acres in size. More than one-third of all the farms having a tractor, but no horses or mules, are in the three size-of-farm groups from 70 to 179 acres.

Characteristics of the farm operator.—There is a higher proportion of farm operators 65 years old and over on small farms than on large farms. Except for this, there are no outstanding differences in the age distribution of farm operators by size of farm.

Twenty-eight out of every 100 farm operators report work off their farms for pay or profit. The proportion of farm operators working off their farms decreases as the size of farm increases. For example, over 54 percent of the farm operators on farms under 10 acres work off their farms, while only 12.1 percent of the operators of farms of 1,000 acres and over report work off their farms. Also, the average number of days worked off the farm varies with the size of farm. In general, as the size of farm increases, the average number of days of off-farm work reported by farm operators decreases.

The smallest farms and the largest farms have the lowest percentage of tenancy. For the United States as a whole, less than one-fourth of the farms under 10 acres and less than one-seventh of those farms of 1,000 acres and over are operated by tenants. Farms in the three size-of-farm groups 50 to 69 acres, 70 to 99 acres, and 100 to 139 acres also have a low percentage of tenancy, but this is primarily the result of the inclusion in these size groups of a high proportion of farms located in the New England and the Great Lakes States for which the percentage of tenancy is very low. The highest percentage of tenancy is 42.8 percent for farms 10 to 29 acres as this group includes a large proportion of cotton and tobacco farms many of which are operated by croppers.

The proportion of owner operators renting additional land increases with size of farm. Two-thirds of the owner operators of farms of 1,000 acres and over rent additional land. These part owners represent over one-half of all operators of farms in this size-of-farm group. The proportion of managed farms also increases with size of farm and, although managers represent only 0.8 percent of all operators, they comprise 7.3 percent of the operators of farms of 1,000 acres and over. Nearly one-half of all managed farms are in the three largest size groups, farms of 260 acres and over.

Less than one-half of the operators of the farms in the two smallest size groups have been operating their farms 5 years or more and only about 1 in 5 has been on his farm 15 years or more. In general, with each increase in the size of farm the proportion of operators who have been operating their farms 5 years or longer increases. Nearly three-fourths of the operators of farms of 1,000 acres and over have been on their farms 5 years or more and two-fifths, 15 years or more.

Source of income and type of farm.—The larger the size of farm the greater is the percentage of the total value obtained from the sale of farm products. For farms under 10 acres, the value of products sold represents 76.8 percent of the total value of farm products, while for farms of 1,000 acres and over farm products sold comprise over 97 percent of the value of all farm products.

Farms of 260 acres and over represent 13.0 percent of all farms. These farms account for 36.3 percent of the value of all farm products, 38.5 percent of all farm products sold, 29.2 percent of all fruit and nuts sold, 37.1 percent of all vegetables sold, 17.7 percent of all horticultural-specialty products sold, 43.4 percent of all other crops sold, 25.6 percent of all dairy products sold, 17.1 percent of all poultry and poultry products

sold, 50.7 percent of all livestock and livestock products (other than dairy and poultry) sold, and 36.6 percent of all forest products sold.

The distribution of farms by type varies for each size-of-farm group. Over 55 percent of the farms under 10 acres are subsistence farms. Approximately two-fifths of the farms of 10 to 69 acres are all other crop farms and three-tenths are subsistence farms.

All other crop farms comprise at least one-fourth of all farms in all size groups above the under-10-acre group. Dairy farms make up at least one-seventh of the farms in the size groups from 70 to 219 acres. Two out of three of the farms of 260 acres and over are either all other crop farms or livestock farms. Livestock farms comprise 52.4 percent of all farms of 1,000 acres and over and all other crop farms, 33.1 percent.

Facilities in farm dwelling.—Because of the correlation of income with size of farm, there is a very definite relation

between size of farm and the proportion of farms reporting specified facilities. An exception is the smaller farms, many of which are primarily rural residences. These smaller places not only include many operators with other sources of income, but also are frequently located near cities and towns where facilities are available. Only 1 in 7 of the farms under 10 acres and 1 in 4 of the farms 10 to 29 acres are more than one-quarter mile from an all-weather road compared with 1 in 3 for all other farms. Consequently these two size groups have a higher proportion of farms reporting such facilities as running water, electricity, telephone, radio, kitchen sink with drain, mechanical refrigeration, and power-driven washing machine in the farm dwelling than farms larger in size. In general, beginning with the size-of-farm group 30 to 49 acres, with each increase in size there was an increase in the proportion of farms reporting running water, electricity, telephone, radio, kitchen sink with drain, mechanical refrigeration, and power-driven washing machine.