

GENERAL REPORT

(v)

VOLUME II

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INTRODUCTION

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INTRODUCTION

The purpose of this Introduction is to present general information relating to the 1954 Census of Agriculture, to describe the general procedures by which the statistics presented in the various reports were collected, compiled, and published, and to discuss factors affecting the accuracy and reliability of the data.

History and legal basis.—The current Census extends the number of nationwide agricultural Censuses to 16. Initially, an agricultural enumeration was taken in conjunction with the Decennial Census of Population in 1840. Congress first provided for a mid-decennial Census for the year 1915; however, abnormalities created by World War I prevented the taking of this Census. Since 1920, a national agricultural Census has been taken every 5 years.

The 1954 Census of Agriculture was authorized by an Act of Congress approved June 18, 1929, and amended July 16, 1952. Section 16 of the Act, as amended, reads as follows: "That there shall be taken, beginning in the month of October 1954, and in the same month of every tenth year thereafter, a census of agriculture. The census herein provided for shall include each State but shall not include the District of Columbia, Alaska, Hawaii, Puerto Rico, or such other areas or territories over which the United States exercises sovereignty or jurisdiction: Provided, however, that as to the areas excluded from such census it is directed that data available from various Government sources shall be included as an appendix to the report of such census. The Secretary of Commerce is authorized to collect such preliminary or supplementary statistics, either in advance of, or after the taking of such census, as are necessary to the initiation, taking, or completion thereof. The inquiries, and the number, and subdivisions thereof for the census provided for in this section shall be determined by the Secretary of Commerce."

Plan of presentation of statistics.—The reports for the 1954 Census of Agriculture follow the same general plan of presentation as that used for 1950, the last complete Census of Agriculture. This report, Volume II, is a general report, presenting statistics by subjects, with summary data and analysis of the data for States, for geographic divisions, and for the United States (see accompanying map). For comparative purposes, data are included for a varying number of prior Censuses, depending upon the availability of comparable statistics and the significance of historical comparison for the various items of data compiled for the 1954 Census.

A listing of the various reports, with brief descriptions of their contents, precedes this Introduction. A more detailed description of the material in the other volumes is given in the Introductions to those volumes.

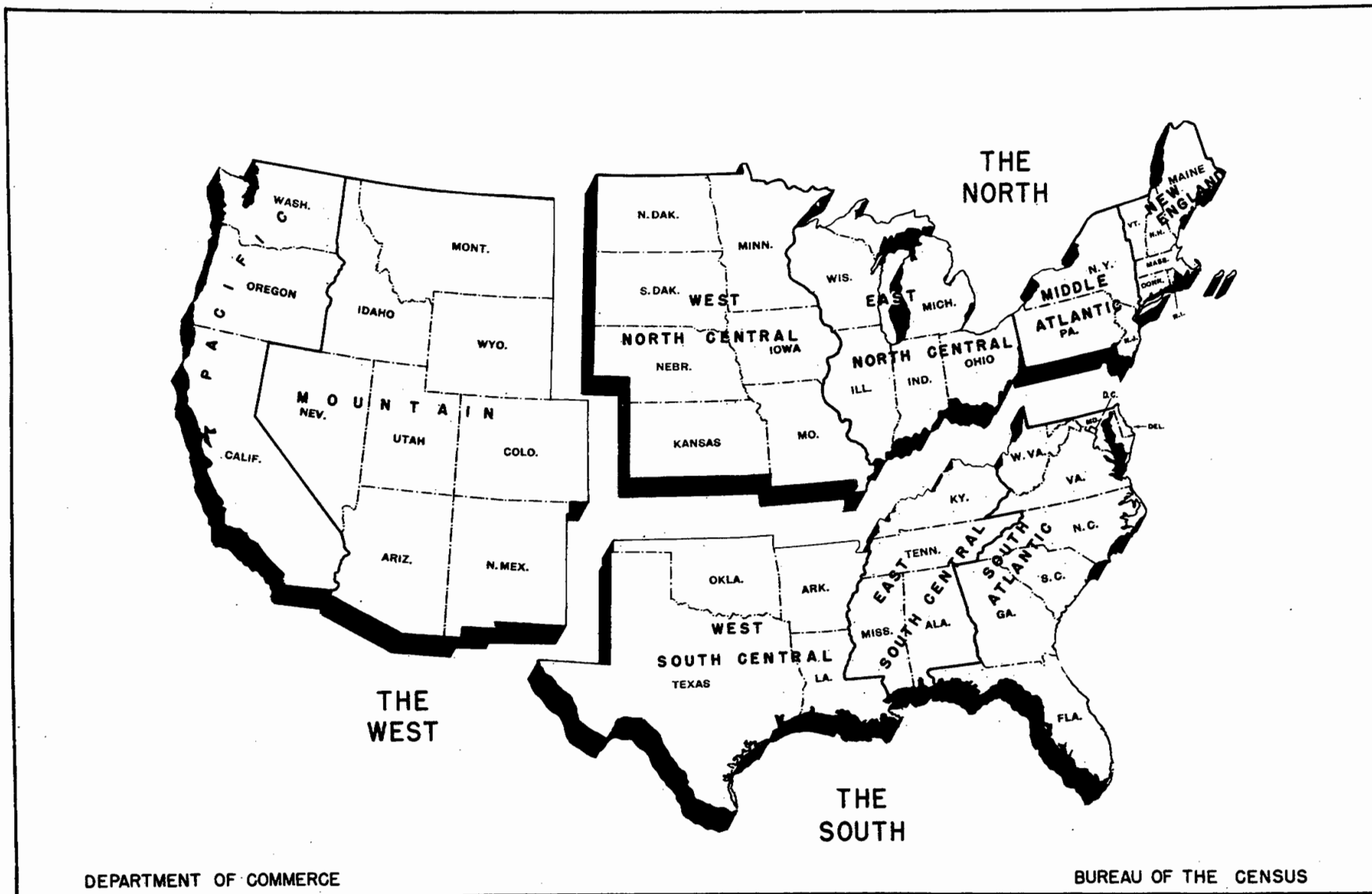
Preparation of questionnaires used for the 1954 Census of Agriculture.—The Act providing for the 1954 Census of Agriculture states that "the inquiries, and the number, form, and subdivisions thereof—shall be determined by the Secretary of Commerce." The staff of the Bureau of the Census prepared the questionnaire for the 1954 Census of Agriculture on the basis of experience obtained in prior Censuses, on the basis of an analysis of the sample survey for the States of Utah and Virginia for the calendar year 1953, and on the basis of the advice of a Special Advisory Committee for the 1954 Census of Agriculture appointed by the Director of the Bureau of the Census. The membership of this committee was as follows:

<i>Name and title</i>	<i>Organization</i>
Dr. M. R. Benedict..... Professor of Agricultural Economics.	Association of Land Grant Colleges and Universities.
Hon. Park C. Brinkley..... Commissioner of Agriculture, State of Virginia.	National Association of Commissioners, Secretaries and Directors of Agriculture.
Mr. W. E. Hamilton..... Director of Research.	American Farm Bureau Federation.
Mr. Victor Hawkins..... Director of Research, Capper's Publications, Inc.	Agricultural Publishers Association.
Mr. J. Albert Hopkins..... Secretary-Manager, Farmers Educational and Co-operative Union of America.	Farmers Educational and Co-operative Union of America.
Dr. Lester S. Kellogg..... Director of Economic Research Deere & Co.	Farm Equipment Institute.
Mr. James L. Moore..... State Master of the Arkansas Grange.	National Grange.
Dr. John F. Timmons..... Professor of Agricultural Economics, Iowa State College.	The American Farm Economics Association.
Dr. Frank J. Welch..... Dean and Director of College of Agriculture and Home Economics, University of Kentucky.	Census Advisory Committee American Statistical Association.
Mr. Sterling R. Newell..... Director, Agricultural Estimates Division, Agricultural Marketing Service.	United States Department of Agriculture.
Mr. John J. Riggle..... Secretary of National Council of Farmer Cooperatives.	National Council of Farmer Cooperatives.

The Special Advisory Committee had also assisted in deciding the inquiries to be included on the questionnaire for the 1953 Sample Census for Utah and Virginia. During the planning, State Agricultural Colleges, the U. S. Department of Agriculture, and other major users of data from the Census of Agriculture were asked to submit suggested inquiries for the Census. The number of inquiries recommended greatly exceeded the number that could be included in the Census. The Special Advisory Committee and the staff of the Bureau recommended the inclusion or exclusion of these inquiries after giving consideration to the possibilities of obtaining satisfactory information in some other way than through the Census of Agriculture, to the adequacy of the information that might be secured in the Census, to the availability of data from other sources, and to the usefulness of the data. This committee reviewed the plans and questionnaires for the 1953 Sample Census in Utah and Virginia and the 1954 Census of Agriculture as they were developed, and submitted recommendations regarding these plans and questionnaires.

Questionnaires used.—Three different questionnaires were used in connection with the 1954 Census of Agriculture. Facsimiles of the Agriculture Questionnaire and the A2 Listing Form are shown

MAP OF THE UNITED STATES, SHOWING GEOGRAPHIC REGIONS AND DIVISIONS



in the Appendix to this volume. A facsimile of the Landlord-Tenant Questionnaire is contained in the Appendix to Part I, Volume III.

The Agriculture Questionnaire, Form A1, was used for the enumeration of all farms. The content of this questionnaire was varied by State in order to make the inquiries as applicable as possible to each State or group of States. There were 21 versions (one for each State or group of adjacent States) of the questionnaire. The map below indicates the adjacent States for which the same questionnaire was used. There were variations in the content of the questionnaires by States to provide for differences in the crops grown, in livestock production, and in farm practices. A composite Agriculture Questionnaire, showing, by States, the items included in the 1954 Agriculture Questionnaire, is contained in the Appendix to this volume. Separate agricultural questionnaires for States or groups of States were used also for the 1950, 1945, and 1940 Censuses of Agriculture. The accompanying maps show the States or group of States for which separate questionnaires were used for these three prior Censuses of Agriculture.

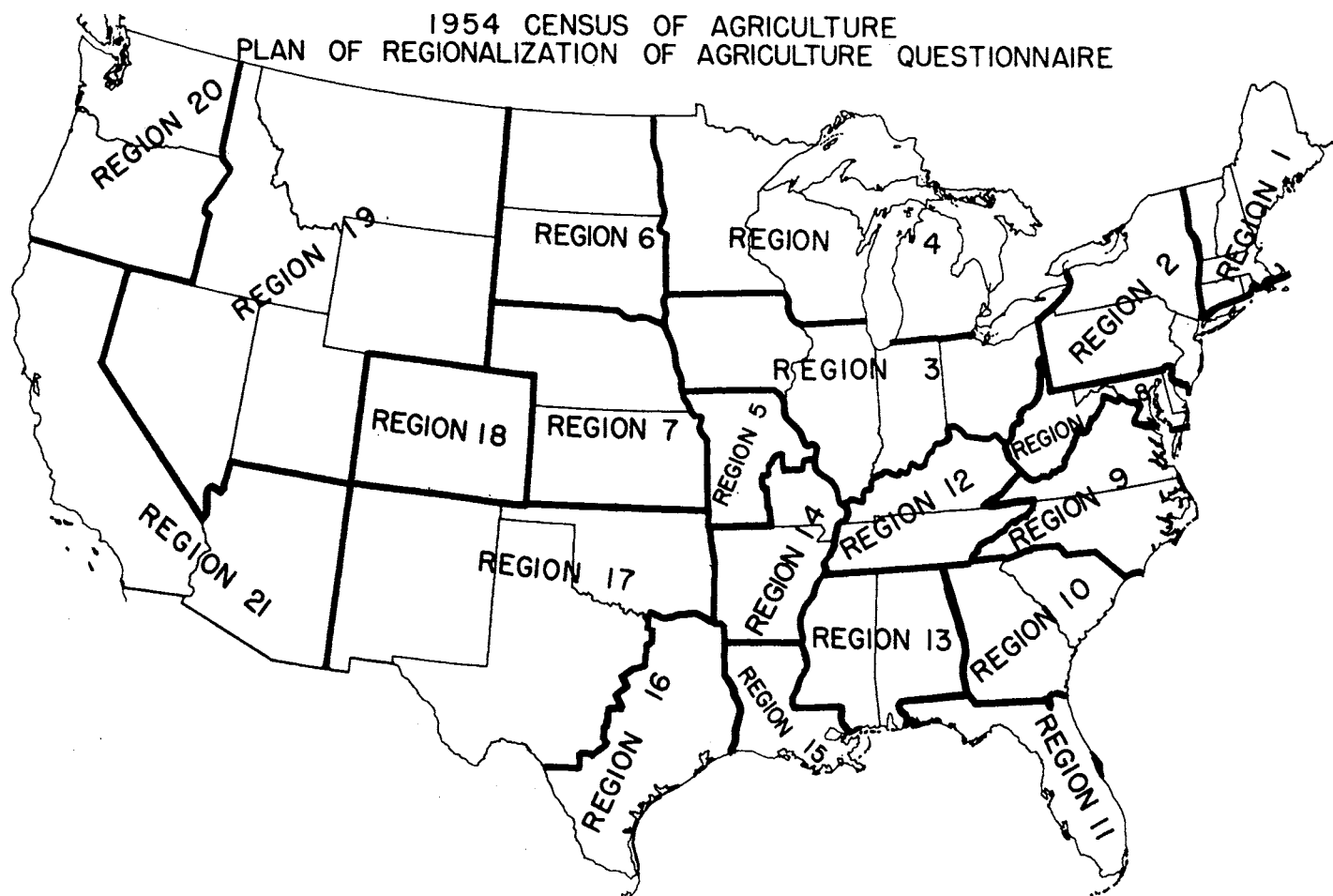
The questionnaires used in the 1954 and 1950 Censuses were of the interview type. Most of the questions were stated completely and exactly as the enumerator was expected to ask them. The questionnaire contained the essential instructions needed for filling it out. The inquiries were grouped so that a general question could be asked regarding the presence of a group of items on the farm and if none of these items were present, then it was possible for the enumerator and the farmer to skip the detailed inquiries pertaining to that group.

Form A2 was contained in the Enumerator's Record Book. Two versions of Form A2 were used—one was used in 1,003

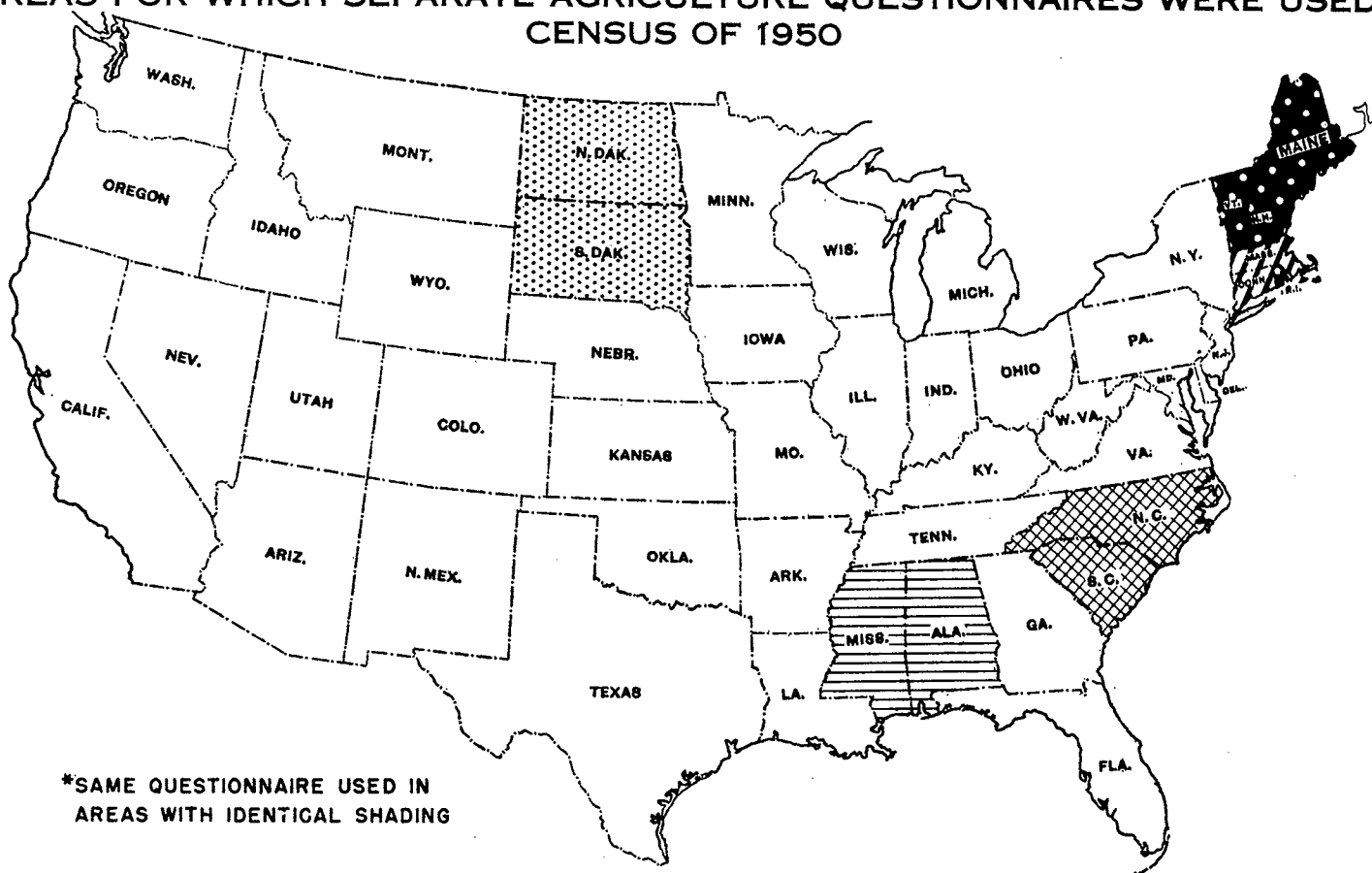
counties in the South, where the filling of the Landlord-Tenant Questionnaire (Form A3), was required. (The questions for column 11 for the Form A2 did not appear in the Form A2 outside the South.)

This questionnaire served two purposes. First, it provided a basis for determining for the Census enumerator whether an Agriculture Questionnaire and a Landlord-Tenant Questionnaire were required and, hence, assisted in obtaining a complete Census. Second, it provided a method for selecting farms to be included in the Sample (see Sampling, page XIX, for a detailed description of the Sample, etc.). Form A2 was used by the Census enumerator to list dwellings and places in his enumeration district. For dwelling or place listed on Form A2, the enumerator was required to enter answers to questions, the purpose of which were to determine (1) whether the place listed was a farm, or a place with agricultural operations (separate inquiries were listed for 5 groups of agricultural operations—(a) hogs, cattle, sheep, or goats kept on the place; (b) any crops grown, such as corn, oats, hay, or tobacco; (c) 20 or more chickens, turkeys, or geese kept on the place; (d) 20 or more fruit trees, grapevines or planted nut trees on the place; (e) any vegetables, berries, nursery, or greenhouse products grown for sale); (2) which enumerator was to obtain Agriculture Questionnaire in case the person having agricultural operations lived in another enumerator's district; (3) in 1,003 counties in the South, when a Landlord-Tenant Questionnaire was to be filled; and (4) that all the required information had been obtained.

The Landlord-Tenant Questionnaire, Form A3, was used in 1,003 counties in the South. This questionnaire was used in the enumeration of landlord-tenant operations. This additional form was

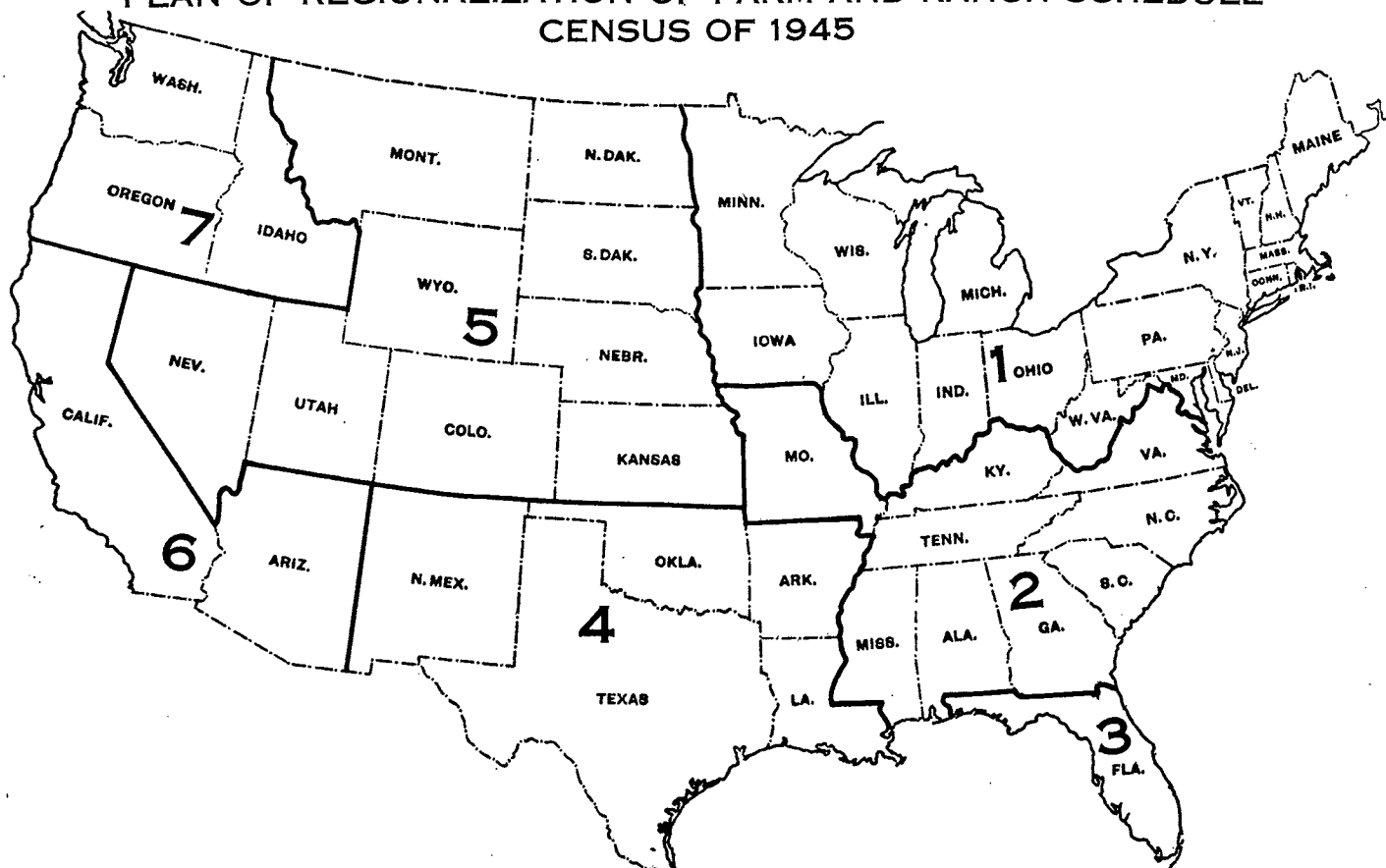


AREAS* FOR WHICH SEPARATE AGRICULTURE QUESTIONNAIRES WERE USED: CENSUS OF 1950

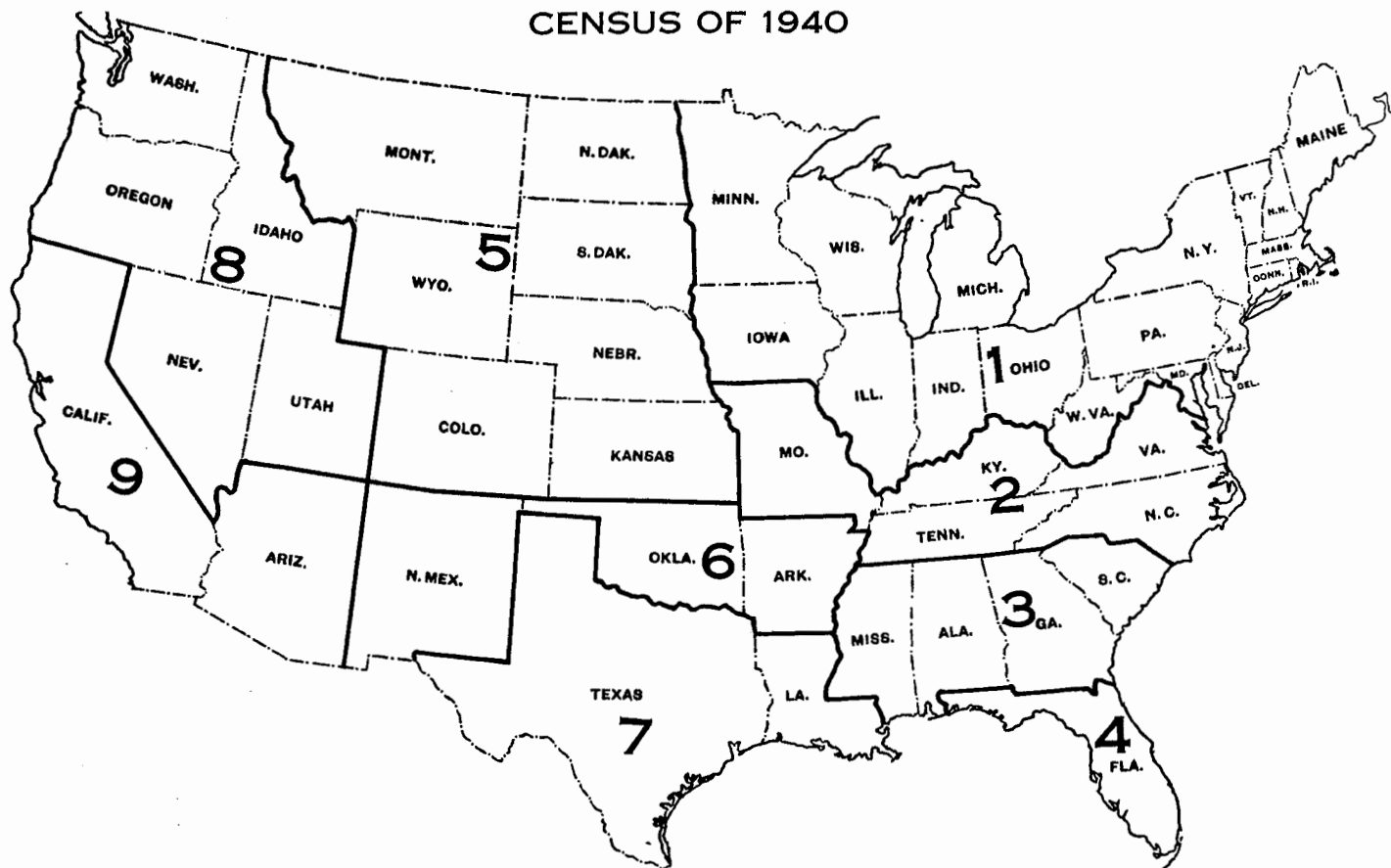


41 SEPARATE QUESTIONNAIRES WERE USED, ONE FOR EACH STATE OR GROUP OF NEARBY STATES. STATES FOR WHICH THE SAME QUESTIONNAIRE WAS USED ARE INDICATED BY PATTERNS.

PLAN OF REGIONALIZATION OF FARM AND RANCH SCHEDULE CENSUS OF 1945



PLAN OF REGIONALIZATION OF FARM AND RANCH SCHEDULE CENSUS OF 1940



required when two or more agriculture questionnaires were needed for a landholding. Since it called for the name and agricultural operations of each tenant on the landholding, the procedure enabled the enumerator to determine that all operations were reported completely and only once. A more detailed description of this questionnaire and of statistics compiled through its use appears in Part 1 of Volume III of the reports of the 1954 Census of Agriculture.

ENUMERATION PROCEDURES

Enumeration.—The enumeration was performed by farm operators and Census enumerators.

About 2 weeks before the Census starting date a copy of the agriculture questionnaire was distributed to 7,897,000 boxholders on the rural postal routes in all States except Alabama, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and 53 of the 75 counties in Arkansas. The questionnaire was accompanied by a letter asking the farm operator to examine the questionnaire and to answer as many of the questions as possible prior to the visit of the Census enumerator. When the questionnaire was filled out by the farm operator, the Census enumerator was required to examine the questionnaire for the purpose of insuring that all necessary entries had been made. The procedure, mailing agriculture questionnaires in advance of the enumeration, was expected to improve the quality of the information given by the farmers and to expedite the work of the enumerator. By reading the questionnaire, farmers learned what information was desired and were able to compile their records in advance of the enumerator's visit.

In general, Census enumerators were assigned areas for which they could complete the enumeration within 4 weeks. The

number of farms enumerated by an enumerator averaged approximately 160. Census enumerators began their enumeration on the starting date for their area, and continued until the completion of the enumeration of their assigned areas. The starting dates of the enumeration varied for various parts of the country. The following map indicates the starting date for most areas. Generally, the starting date was in October for those areas in which most of the crops had been harvested by early October and in which travel by enumerators would be difficult during the last half of November and in December.

The following table indicates by geographic divisions and States the proportion of farms enumerated by 2-week periods and the average date of enumeration for the farms in each State. When the enumeration of an enumeration district was completed, the enumerator gave the agriculture questionnaires to his crew leader who checked them for completeness before recommending the payment of the enumerator for his work.

In approximately 26,000 enumeration districts, enumerators were paid a fixed fee for each agriculture questionnaire and each line filled on Form A2 plus 11 cents per mile for the use of their automobiles plus a wage of approximately \$1.25 per hour for the time spent in training sessions. In 15,000 enumeration districts including approximately 4,300 rural enumeration districts, where farms were widely scattered or travel conditions were difficult, or where farms were in urban areas, enumerators were paid \$1.25 per hour for enumeration work and training plus 7 cents per mile for the use of their automobiles.

Measures for insuring completeness of coverage.—Plans for the 1954 Census of Agriculture included several provisions for insuring that the Census would be a complete coverage of all agricultural operations in the United States.

TABLE 1.—AVERAGE DATE OF ENUMERATION, BY REGIONS AND STATES: 1954 CENSUS OF AGRICULTURE

[Data for shorter periods are shown for States in Volume I]

Region and State	Approximate average date of enumeration	Percent of farms enumerated during—					
		Oct. 1 to 16	Oct. 17 to 31	Nov. 1 to 13	Nov. 14 to 27	Nov. 28 to Dec. 11	Dec. 12 and later
United States.....	Nov. 7—Nov. 13.....	3	13	37	32	13	3
The North.....	Nov. 7—Nov. 13.....	5	19	33	29	12	2
The South.....	Nov. 14—Nov. 20.....	1	7	41	35	13	3
The West.....	Nov. 7—Nov. 13.....	7	21	30	28	12	3
NEW ENGLAND:							
Maine.....	Oct. 24—Oct. 31.....	12	59	23	5	(Z)	(Z)
New Hampshire.....	Oct. 24—Oct. 31.....	12	49	27	12	(Z)	(Z)
Vermont.....	Oct. 24—Oct. 31.....	12	59	25	4	(Z)	(Z)
Massachusetts.....	Nov. 1—Nov. 6.....	9	48	25	13	4	(Z)
Rhode Island.....	Oct. 24—Oct. 31.....	11	48	27	11	2	(Z)
Connecticut.....	Nov. 1—Nov. 6.....	10	44	23	17	5	1
MIDDLE ATLANTIC:							
New York.....	Nov. 1—Nov. 6.....	1	38	35	19	7	(Z)
New Jersey.....	Nov. 21—Nov. 27.....	(Z)	(Z)	29	46	22	3
Pennsylvania.....	Nov. 21—Nov. 27.....	(Z)	(Z)	32	44	18	5
EAST NORTH CENTRAL:							
Ohio.....	Nov. 21—Nov. 27.....	(Z)	(Z)	29	40	25	7
Indiana.....	Nov. 21—Nov. 27.....	(Z)	(Z)	30	41	24	5
Illinois.....	Nov. 14—Nov. 20.....	(Z)	12	40	32	14	1
Michigan.....	Nov. 1—Nov. 6.....	4	37	33	17	7	1
Wisconsin.....	Nov. 1—Nov. 6.....	(Z)	42	36	17	5	(Z)
WEST NORTH CENTRAL:							
Minnesota.....	Nov. 1—Nov. 6.....	8	44	30	14	2	(Z)
Iowa.....	Nov. 14—Nov. 20.....	(Z)	(Z)	36	45	18	1
Missouri.....	Nov. 14—Nov. 20.....	(Z)	11	43	32	13	1
North Dakota.....	Oct. 17—Oct. 23.....	58	30	9	3	(Z)	(Z)
South Dakota.....	Nov. 1—Nov. 6.....	7	37	31	18	6	1
Nebraska.....	Nov. 7—Nov. 13.....	(Z)	12	47	32	9	(Z)
Kansas.....	Nov. 7—Nov. 13.....	22	12	21	30	13	2
SOUTH ATLANTIC:							
Delaware.....	Nov. 21—Nov. 27.....	(Z)	(Z)	26	37	25	12
Maryland.....	Nov. 21—Nov. 27.....	(Z)	(Z)	26	39	24	9
District of Columbia.....	(¹).....	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
Virginia.....	Nov. 21—Nov. 27.....	(Z)	(Z)	20	38	30	12
West Virginia.....	Nov. 14—Nov. 20.....	(Z)	7	41	35	13	2
North Carolina.....	Nov. 14—Nov. 20.....	(Z)	4	44	37	13	2
South Carolina.....	Nov. 14—Nov. 20.....	(Z)	4	45	35	14	1
Georgia.....	Nov. 14—Nov. 20.....	(Z)	5	47	36	11	(Z)
Florida.....	Nov. 7—Nov. 13.....	21	16	21	27	12	3
EAST SOUTH CENTRAL:							
Kentucky.....	Nov. 14—Nov. 20.....	(Z)	4	37	38	18	4
Tennessee.....	Nov. 7—Nov. 13.....	1	16	45	27	9	1
Alabama.....	Nov. 21—Nov. 27.....	(Z)	(Z)	26	53	19	2
Mississippi.....	Nov. 7—Nov. 13.....	(Z)	5	52	34	9	(Z)
WEST SOUTH CENTRAL:							
Arkansas.....	Nov. 7—Nov. 13.....	(Z)	7	53	31	8	1
Louisiana.....	Nov. 7—Nov. 13.....	(Z)	20	44	25	9	1
Oklahoma.....	Nov. 14—Nov. 20.....	5	4	29	39	18	4
Texas.....	Nov. 7—Nov. 13.....	2	14	45	27	9	1
MOUNTAIN:							
Montana.....	Oct. 24—Oct. 31.....	30	35	24	9	2	(Z)
Idaho.....	Nov. 1—Nov. 6.....	9	36	33	19	4	(Z)
Wyoming.....	Oct. 17—Oct. 23.....	51	29	14	4	1	(Z)
Colorado.....	Nov. 1—Nov. 6.....	12	38	28	15	6	1
New Mexico.....	Nov. 7—Nov. 13.....	4	32	34	23	5	2
Arizona.....	Nov. 14—Nov. 20.....	11	10	23	34	17	5
Utah.....	Nov. 21—Nov. 27.....	(Z)	(Z)	27	48	23	1
Nevada.....	Oct. 17—Oct. 23.....	38	41	18	3	(Z)	(Z)
PACIFIC:							
Washington.....	Nov. 7—Nov. 13.....	(Z)	34	35	23	6	(Z)
Oregon.....	Nov. 7—Nov. 13.....	5	17	42	28	9	1
California.....	Nov. 21—Nov. 27.....	(Z)	2	25	41	25	6

Z 0.5 percent or less.

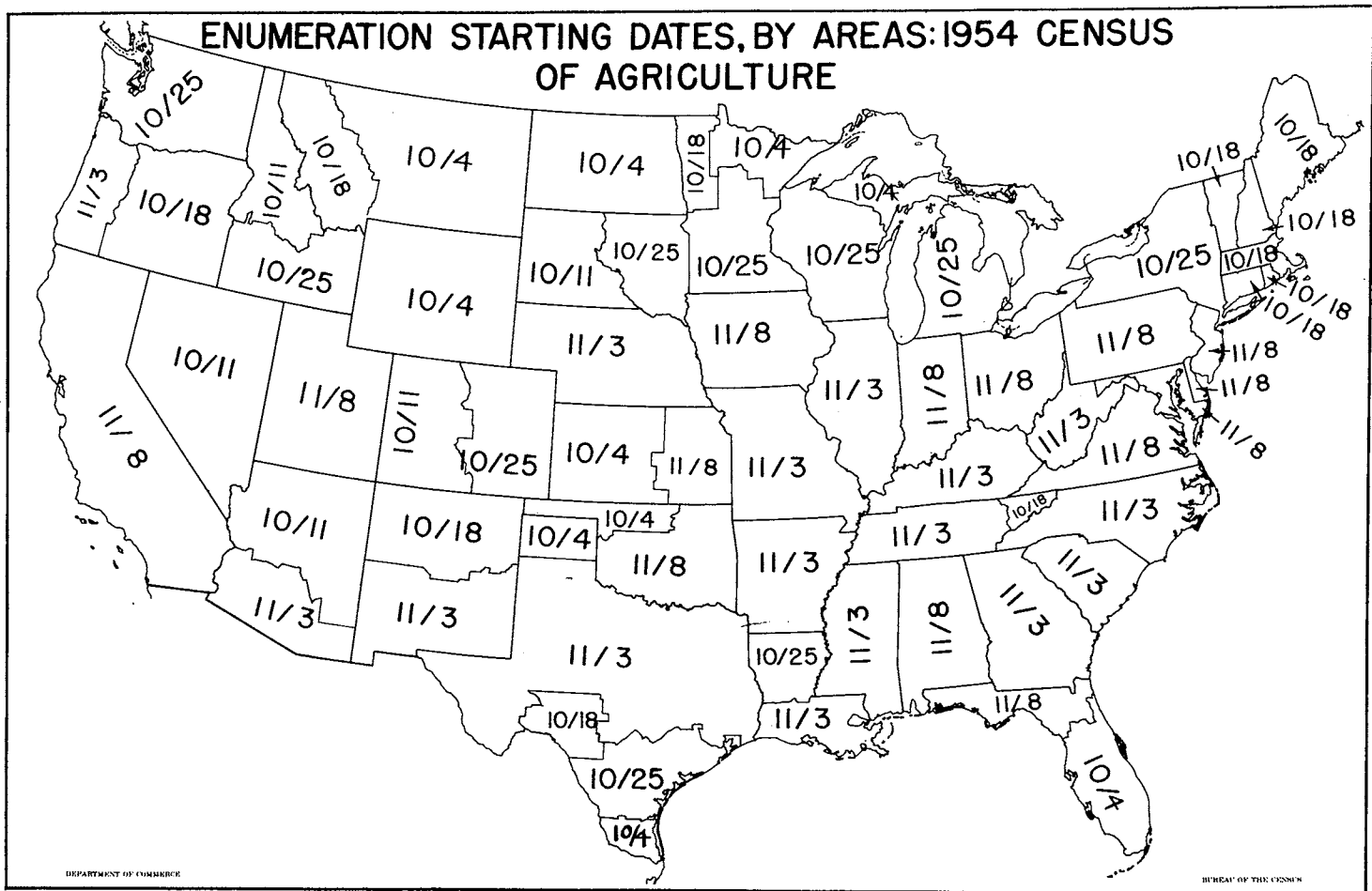
¹ Not included in the enumeration.

1. Census enumerators and their supervisors received special training prior to the actual beginning of their Census work. There was 1 local supervisor or crew leader for approximately every 14 enumerators. These crew leaders were given 16 hours of special training by means of film strips, recordings, tests, etc. In addition, before the enumeration started they were employed for 7 to 12 days for the purpose of checking the boundaries of enumeration districts, recruiting enumerators, and getting acquainted with the area to be enumerated under their supervision. Each crew leader gave 8 hours of instruction to the enumerators whom he supervised. This special training was given by the use of film strips, the practice filling of agriculture questionnaires, the conduct of a trial interview, and some actual enumeration before the completion of the training session. During the actual enumeration, crew leaders were required to visit each of the enumerators to check a sample of the work that had been completed, and to give any additional instructions needed.

2. Instructions covering Census procedures were designed in such a manner that objective criteria were supplied, and enumerators were not expected to rely on their own opinions or judgments concerning entries on the questionnaire. For example, an enumerator was requested to complete an agricul-

ture questionnaire for every place locally considered a farm and every place on which there were agricultural operations. The enumerator was not required to make a decision as to whether a place was a farm.

3. To help in insuring the completeness of the enumeration, enumerators were provided with a specially designed Enumerator's Record Book in which to list heads of households for the dwellings in their enumeration districts and names of the tenants or owners for places on which no one lived. The Enumerator's Record Book contained questions about the agricultural operations on the place. The answers to these questions determined whether an agriculture questionnaire was required for the place and, also, what enumerator was required to fill out the questionnaire. In order to minimize the cost of enumeration, the enumeration districts were classified on the basis of the ratio of dwelling units to the number of farms into 3 groups. In the first group, the average number of dwelling units was less than 2 per farm. Enumerators were instructed to visit and list all dwellings and other places in these enumeration districts. There were 15,296 of these enumeration districts. Enumerators listed approximately 3,800,000 places and obtained 2,650,000 agriculture questionnaires in these enumeration districts. In the second group of enumeration districts, there were



built up areas, in which, the enumerator was not required to list all dwelling places, provided he secured the approval of his crew leader. There were 14,798 enumeration districts in this group. Enumerators listed 5,300,000 dwellings and places and obtained 2,410,000 agriculture questionnaires for these enumeration districts. The third group of enumeration districts comprised urban areas, incorporated places, cities, and unincorporated places having 150 dwellings or more. There were 11,127 of these enumeration districts. Enumerators listed approximately 175,000 places and obtained 170,000 agriculture questionnaires for these enumeration districts. Enumerators were furnished lists of the 161,000 farms in these enumeration districts according to the 1950 Census. They were instructed to visit each of these farms and to ask about and enumerate any other farms in these enumeration districts.

4. The method prescribed for canvassing an enumeration district helped to insure complete coverage. The enumerator was instructed to proceed in a systematic manner from a logical starting point. He listed each place and each dwelling on successive lines on the Form A2 in the Enumerator's Record Book. In addition, he was required to identify these places on his enumerator's map with a cross reference to Form A2. This procedure helped him to determine, by looking at his map, the extent of coverage of places in his Enumeration District at any time. It also helped the crew leader in checking to see that the enumerator had visited all parts of his district.

5. Farms having unusually large agricultural operations were given special attention to insure their inclusion in the enumeration. Prior to the enumeration, a list of these "specified farms" was prepared from the records of the 1950 Census of Agriculture, showing, for each listed farm, (1) the name and address of the farm operator, (2) location of farm headquarters, (3) total acres, (4) acres owned, (5) acres rented, (6) acres managed, and (7) names and addresses of landlords. This list of "specified farms" was established by preparing three 5" x 8" cards for each designated farm. One copy of the list was given

to the enumerator with instructions to make sure that the farm was enumerated. If the operator of the farm had changed, the enumerator was asked to enter on the card the name of the new operator. If the farm had been divided, he was asked to explain under "Remarks" on the specified farm card.

The second copy of the card list was given to the Crew Leader with instructions to be sure that the specified farms were accounted for during his check of the enumerator's work for completeness of coverage. The third copy of specified farm list was retained in the 26 field processing offices. This set was used by the Supervisors of field processing offices as a master list against which the Crew Leader and enumerator copies of the cards were matched as a part of the Field Office check for completeness of coverage. In the Detroit, Michigan, and Pittsburgh, Kansas, Operations Offices, the three copies of the specified farm cards were reviewed, and when it was found that the farms and farm acreage were not satisfactorily accounted for, the missing information was obtained by correspondence. (See Specified Farms for the criteria used to select specified farms.)

6. Some farm units other than specified farms also received special attention to insure complete coverage. Prior to the field enumeration, lists were obtained of places known to be specializing in specific types of agricultural production, such as hog garbage-feeding operations, broiler operations, large turkey farms, livestock feed lots, cranberry bogs, and citrus groves. For some of these operations, the list represented a nationwide effort to insure coverage, while for others, only some of the intensive areas of production were given this special attention. These lists were prepared, in part, with the cooperation of the State Agricultural Statisticians and the Agricultural Marketing Service of the U. S. Department of Agriculture. During the enumeration, the enumerator was required to obtain a questionnaire for each place or otherwise satisfactorily account for each place contained on these special lists.

Special attention was given to the preparation of lists of citrus groves in California, Florida, and Texas for the counties listed on page XVI.

GENERAL REPORT

California:

Fresno
Imperial
Los Angeles
Orange
Riverside
San Bernardino
San Diego
Santa Barbara
Tulare
Ventura

Florida:

Brevard
De Soto
Hardee
Highlands
Hillsborough
Indian River
Lake
Manatee
Marion
Orange
Pasco
Pinellas
Polk
Sarasota
Seminole
St. Lucie
Volusia

Texas:

Cameron
Hidalgo
Willacy

In each of the three States the Crew Leaders who would later supervise the enumeration were employed to assist in preparing the lists of citrus groves under the direction of a member of the staff of the Washington office. In California the lists were prepared from the files of either the State Agricultural Statistician or the County Agricultural Commissioners. In Florida the principal source of information was the county tax assessor's records; and in Texas the lists were obtained from the local office of the U. S. D. A., Bureau of Entomology and Plant Quarantine.

For each citrus grove the following information was obtained:

Name and address of operator
Name and address of owner
Location of ranch or grove
Total acres
Acres in citrus

The list of citrus groves were sorted by enumeration districts, and placed in the enumerator's portfolios, along with special instructions for using the cards to insure completeness of coverage. The list of citrus groves was checked against the agriculture questionnaires during the checking of enumerator's work in the field processing offices.

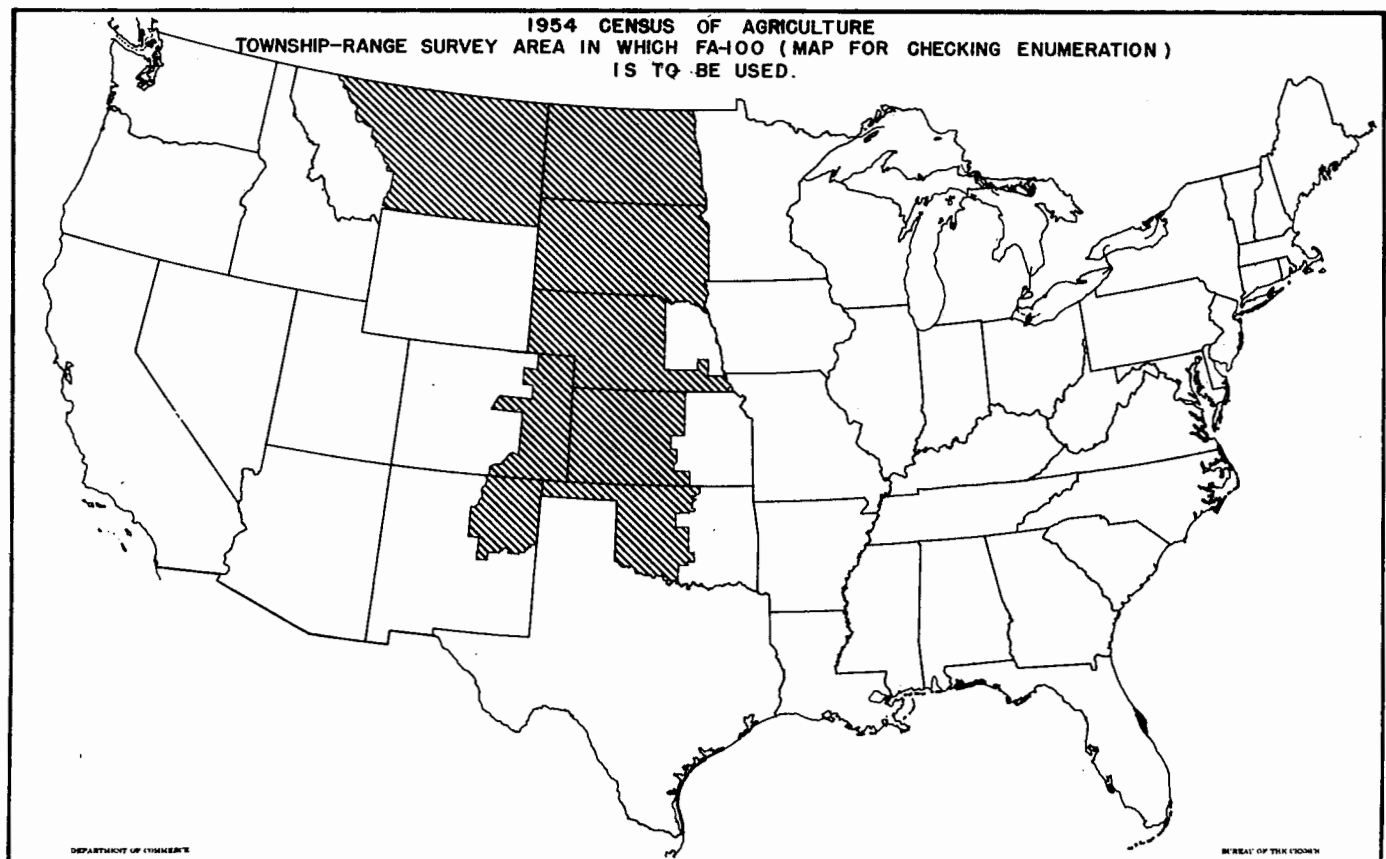
7. In the areas indicated by the following map, enumerators were required to enter on special maps, the location of the land

in each farm enumerated in order to insure complete coverage. The location of the land included in each farm was indicated in a special form by section, township, and range when the farm was enumerated. This special map, designed for plotting sections within a township, was subdivided into 16 parts, each of which was to represent 40 acres. Enumerators were required to indicate on this map the questionnaire number for each 40-acre part represented by the farms they enumerated. The special map helped the enumerator and, subsequently, the crew leader and other personnel reviewing the enumerator's work to determine whether all the land in the enumeration district had been enumerated.

8. A special supplementary questionnaire was used in 1,003 counties in the South. This questionnaire, designated the Landlord-Tenant Questionnaire, aided in the enumeration of cropper and other tenant operated farms which were parts of larger landholdings. This additional form was completed when two or more agriculture questionnaires were required for a landholding. Since this questionnaire called for the name and agricultural operations of each tenant on the landholding, the procedure enabled an enumerator to determine that all operations were reported completely and only once. The Enumerator's Record Book used in these Southern counties helped the enumerator to identify the landholdings for which this supplementary Landlord-Tenant Questionnaire was required.

9. Crew Leaders were required to check the completeness of the coverage of each Enumeration District. Prior to the starting of the enumeration, the crew leader made a list of 15 places in that part of the Enumeration District, in which it was expected that the enumerator would start his enumeration. During his first and his subsequent visits to the enumerator, the crew leader was asked to check to see that the enumerator had enumerated the places listed by the crew leader. If the enumerator had not enumerated all these places, he was given additional instructions and required to enumerate any places that he had not enumerated. When the enumerator turned in the work for a completed Enumeration District, the crew leader was required to check the work and the map of the enumerator before certifying payment for the enumerator's work.

10. The final checking on the completeness of the enumeration was performed in the 26 field processing offices, during the checking on the work of each enumerator for the purpose of approving payment to enumerators. This checking consisted of the examination of the enumerator's records to see that



callbacks had been completed, the mailing of letters and questionnaires to nonresident and other farm operators for whom agriculture questionnaires had not been obtained, the checking of the list of specified farms to insure the complete enumeration of such places, and the preparation of a special summary by enumeration districts for the number of agriculture questionnaires, land in farms and, in some areas, for the county, the acreage of selected crops—corn, wheat, cotton, tobacco, or rice. The special summary contained comparative data by enumeration districts from the 1950 Census of Agriculture for the number of farms and land in farms and, also, check data for the acres in 1954 for the county for selected crops. The check data on the acreage of selected crops in 1954 for wheat, corn, cotton, tobacco, or rice were obtained from the Commodity Stabilization Service of the U. S. Department of Agriculture and represented the measured acreage before harvest.

The special summary for all the enumeration districts in each county was reviewed by the field processing office supervisor and then sent to Washington for approval before the Census in a county was considered acceptable. Whenever the review of this special summary indicated that the enumeration was incomplete, then a complete check was made of the map and other materials submitted by the enumerator and in case there was evidence of underenumeration, another enumerator was employed to check and complete the enumeration. On the basis of the review of this survey, further checking was required in 799 counties.

OFFICE PROCESSING

In order to compile the statistics contained in the various reports for the 1954 Census of Agriculture, it was necessary to perform a series of processing operations. Part of these processing operations were performed in the operations offices established for this purpose in Detroit, Michigan, and Pittsburg, Kansas, and the remaining processing operations were performed in the Washington, D. C., office. A brief description of these processing operations follows. A more detailed description will be found in Part 12 of Volume III of the reports for the 1954 Census of Agriculture.

Receiving and packaging of questionnaires.—Before being transferred from the 26 Field Processing Offices to the two Census Operations Offices, the agriculture questionnaires were arranged by counties and enumeration districts within counties. At the Operations Offices the questionnaires in each county were arranged by minor civil divisions within the county, counted, and placed in labeled portfolios containing approximately 400 questionnaires each. Questionnaires were kept in this arrangement during office processing.

Checking, editing, and coding.—Each individual questionnaire was checked, edited, and coded by clerks. The checking consisted of seeing (1) that the questionnaires were completely filled out; (2) that the acreage of individual crops harvested was in reasonable agreement with the acreage of cropland harvested when 100 or more acres of cropland harvested were reported; (3) that the acres of land classified according to use accounted for the entire farm acreage for farms having 200 acres or more; (4) that the total of the acreage for the various uses of corn, sorghum, soybeans, cowpeas, and peanuts was in reasonable agreement with the total acreage reported for all purposes for each of these crops; (5) that the age and sex breakdown for cattle, hogs, and sheep added to approximately the total number of such animals of all ages; and (6) that all entries for related items were reasonably consistent.

Editing consisted of the identification and withdrawal of questionnaires filled for places not qualifying as farms; the selection of questionnaires with entries of unusually large size for review by the technical staff; the selection of groups of questionnaires with common reporting errors in an individual enumeration district for referral to technical personnel for review; and the correction of obvious inconsistencies, such as reporting in an incorrect unit, or reporting in an improper place on the questionnaire. Entries determined to be in error were referred to the technical staff and corrected on the basis of relationships existing on nearby farms, or, if the entries were large, on the basis of correspondence with the farm operator. In case of information missing for a group of questions, estimates were prepared on the basis of adjacent questionnaires for farms with similar operations

and, in some cases, on the basis of information obtained by mail from the farm operators. When estimates were made, letters were mailed to the farm operators to verify the information and, if the estimates were not in reasonable agreement with the information contained in the replies, the entries were corrected before the tabulations were made.

Coding consisted of entering code numbers for crops for which there were no separate inquiries on the agriculture questionnaire, for color and tenure of operator, and for irrigation; and, for a sample of farms, of entering codes for economic class of farm and type of farm.

Punching.—The information for the 1954 Census of Agriculture required a total of 10 punchcards. The column headings are shown in the accompanying chart, and the number of punched cards is given in Table 2. All cards were punched in the two operations offices.

The verification of card punching consisted of a complete verification of the work of each punching machine operator until the work was of acceptable quality. Thereafter, verification was on a sample basis unless the sample indicated that the quality of the punching was not acceptable. The punching of approximately 15 percent of the cards for Census was verified. After verification, the punchcards, together with all records containing the corresponding basic data, were forwarded to the Washington office for tabulation.

TABLE 2.—NUMBER OF CARDS PUNCHED AND NUMBER OF PUNCHED CARDS SELECTED BY MECHANICAL EDIT FOR FURTHER VERIFICATION, BY CARD TYPE, FOR THE UNITED STATES: 1954 CENSUS OF AGRICULTURE

Card type	Total number of cards	Cards selected by mechanical edit	
		Number	Percent of total cards
All cards.....	38,410,859	3,143,893	8.2
A.....	4,856,169	274,508	5.7
C-1 (corn).....	2,961,609	215,494	7.3
C-2 (sorghums).....	372,657	62,883	16.9
C-3.....	14,828,890	1,188,824	8.0
G.....	1,141,986	52,013	4.6
H.....	3,673,804	452,188	12.3
I.....	3,831,383	160,862	4.2
J.....	397,529	58,473	14.7
K.....	3,521,887	101,619	2.9
L.....	1,100,542	205,288	18.7
M.....	1,081,911	202,209	18.7
N.....	642,492	169,532	26.4

Mechanical editing.—Once on punchcards, the data were sorted, listed, or otherwise handled by electric tabulating equipment to facilitate making final checks and to obtain totals. The initial, and a primary step in the machine handling of the punchcards was to separate, by means of electric statistical machines, those punched cards which lacked necessary information, those on which the relationships of the data punched on the cards were inconsistent or unreasonable, and those on which the relationships were possible, but of such magnitude that a further review of the individual questionnaires was warranted. Specifications for the selection of these questioned cards varied according to the item being examined (for example, a crop production of more than 100 units per acre for crops such as wheat, oats, etc.). The number of cards selected by mechanical editing for each type of card is shown in Table 2. The selected cards were listed and the listings were examined, checked to the agriculture questionnaires, and corrected, if necessary, before the tabulations were made.

Tabulation.—The tabulation was performed by means of electric tabulating machines. The tabulations were divided into three series, one series to provide data by counties, another series to provide data for 361 State Economic Areas, and the third to

GENERAL REPORT

PUNCH CARDS USED FOR THE 1954 CENSUS OF AGRICULTURE

A	CARD NUMBER	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	RESIDENCE	AGE OF OPERATOR	YEAR	HOME GARDEN	TOTAL LAND IN FARMS	CROPLAND	WOODLAND	OTHER LAND	IRRIGATED LAND	CONSERVATION	EXCESS RELEASE

C	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	CORN OR SORGHUMS														
										FOR GRAIN				FOR SILAGE				SORGHUM FORAGE						
										ACRES	PRODUCTION	AMOUNT SOLD	AMOUNT	ITEM	ACRES	PRODUCTION	AMOUNT SOLD	AMOUNT	ITEM	ACRES	PRODUCTION	AMOUNT SOLD	AMOUNT	ITEM

G	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	FOREST PRODUCTS CUT IN 1954												HORTICULTURAL SPECIALTIES											
										FIREWOOD	FENCE POSTS	SANDWICHES	PULPWOOD	VALUE OF (SILAGE)	TREES TAPPED	GALLONS OF SYRUP	POUNDS OF SYRUP	NURSERY PRODUCTS	FLOWERS AND FLOWERING PLANTS, ETC.	VEGETABLES	SEEDS, PLANTS, ETC.	EXCESS RELEASE											

H	CARD NUMBER	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	CATTLE AND CALVES												WHOLE MILK SOLD												CREAM SOLD											
										TOTAL	COWS	HEIFERS AND REIFER CALVES	BULLS, STEERS, AND STEER CALVES	COWS MILKED YESTERDAY	MILK COWS ON HAND	MILK PRODUCED YESTERDAY	BUTTER CHURNED LAST WEEK	QUANTITY	VALUE OF SALES	POUNDS OF BUTTERFAT	VALUE OF SALES	EXCESS RELEASE																								

I	CARD NUMBER	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	HORSES AND MULES												HOGS AND PIGS												ANIMALS SOLD ALIVE											
										TOTAL	MULES	HORSES	TOTAL	BORN SINCE JUNE	BORN BEFORE JUNE	BORN SINCE JUNE	BORN BEFORE JUNE	HOGS AND PIGS	NUMBER	VALUE OF SALES	CALVES	NUMBER	VALUE OF SALES	CATTLE	NUMBER	VALUE OF SALES	SHEEP AND LAMBS	NUMBER	VALUE OF SALES	HORSES AND MULES	NUMBER	VALUE OF SALES														

J	CARD NUMBER	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	SHEEP AND LAMBS												GOATS AND KIDS												SHEEP SHORN											
										TOTAL	UNDER 1 YEAR	1 YEAR AND OVER	EWES	RAMS AND WETHERS	TOTAL	ANGOA	OTHER	NUMBER	POUNDS OF WOOL	EXCESS RELEASE																										

K	CARD NUMBER	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	CHICKENS ON HAND												CHICKENS SOLD												CHICKEN EGGS SOLD												TURKEYS RAISED												OTHER POULTRY RAISED												VALUE OF SALES OF OTHER POULTRY AND POULTRY PRODUCTS											
										CHICKENS ON HAND	BROILERS	OTHERS	NUMBER	VALUE OF SALES	NUMBER	VALUE OF SALES	DOZEN	VALUE OF SALES	LIGHT BREEDS	HEAVY BREEDS	LIGHT BREEDS	HEAVY BREEDS	NUMBER	VALUE OF SALES	NUMBER	VALUE OF SALES	NUMBER	VALUE OF SALES	NUMBER	VALUE OF SALES																																																				

L	CARD NUMBER	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	FACILITIES												EQUIPMENT - NUMBER												LAND OWNED												LAND RENTED FROM OR MANAGED FOR OTHERS												LAND RENTED TO OTHERS												CASH RENT											
										TELEPHONE	ELECTRICITY	TELEVISION	WATER	WINDMILL	MILKING MACHINE	WELDER	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING	WELDING																																																			

M	CARD NUMBER	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	CASH EXPENDITURES - 1954												HIRED WORKERS											
										MACHINE HIRE	HIRED LABOR	FEED FOR LIVESTOCK AND POULTRY	GASOLINE OIL, ETC.	TOTAL	MONTHLY BASIS	WEEKLY BASIS	DAILY BASIS	HOURLY BASIS	PICTURE WORK BASIS	OPERATOR	FAMILY	OTHER INCOME	EXCESS RELEASE											

N	CARD NUMBER	STATE	COUNTY	E. D.	CERT.	QUESTIONNAIRE NUMBER	COLOR	TENURE	CLASS	TYPE	COMMERCIAL FERTILIZER PURCHASED												COMMERCIAL FERTILIZER USED												LIME PURCHASED											
										TONS	TOTAL COST	ACRES ON WHICH USED	HAY CROPS	PASTURE	CROP 3	CROP 4	FRUITS VEGETABLES	OTHER CROPS	TONS	TOTAL COST	ACRES LIME	EXCESS RELEASE																								

furnish data for 119 economic subregions. In most cases, the tabulations were made for the purpose of obtaining totals and counts for all items for each area. Nearly all the tabulations made for counties included data for all farms in the county. However, most of the tabulations for State Economic Areas, States, and for economic subregions were made only for a sample of farms. Estimates were prepared on the basis of these tabulations to obtain a total of all farms for State Economic Areas, States, and economic subregions.

Review of tabulations.—All tabulations were examined to insure that the data were reasonable and consistent. This review included comparisons with data for prior Censuses or with data from other sources; a checking of data for one item against those for another item (for example, acres against quantity harvested for a crop); the comparison of totals and averages for an area with those for nearby areas; the checking of the totals for one tabulation with the totals for other tabulations for the same item; etc. This review required the judgment of specialists and was the primary responsibility of senior Census staff members. However, qualified State personnel of the Agricultural Marketing Service, U. S. Department of Agriculture, assisted in examining the data, especially those for crops and livestock, evaluating the results, and calling attention to the situations for which further checking seemed necessary.

SAMPLING

There were two major uses of sampling in connection with the 1954 Census of Agriculture. First about one-fourth of all information on the agriculture questionnaire was obtained by Census enumerators for only a sample of farms. This information, collected for only a sample of farms, comprised Sections VIII through XIII on the agriculture questionnaire (see the Appendix for a copy of the agriculture questionnaire) and related to such items as use of fertilizer and lime, principal farm expenditures, farm labor, farm facilities, farm equipment, value of farm land and buildings, etc. Second, the sample of farms was used to tabulate data as a basis for making estimates for Census tabulations by tenure of farm operator, economic class of farm, type of farm, etc. Nearly all the data published for State Economic Areas, and for subregions, represent estimates based upon tabulations of data for the sample of farms.

Description of the sample for the 1954 Census.—The sample used for the 1954 Census of Agriculture consisted of specified farms and one-fifth of the remaining farms. Thus, the sample for most areas comprised somewhat more than 20 percent of all farms. Farms comprising the sample represented 22.5 percent of all farms in the United States. Farms in the sample comprised a larger proportion of all farms in the Western States than in other geographic areas.

The actual selection of farms in the sample was made by Census enumerators as part of the enumeration procedure. The enumerator listed the head of each household on a single line on Form A2 and determined whether an agriculture questionnaire was to be obtained. If he filled an agriculture questionnaire, he was required to indicate in which one of the 5 size-of-farm groups the farm belonged. Each line on the Form A2 contained squares listing 5 size-of-farm groups. The enumerator was required to indicate for each farm or place enumerated in which of these 5 size-of-farm groups, the farm or place belonged. A random fifth of the squares for each of four of these 5 size groups was lightly shaded. (See Appendix for a facsimile of a page of Form A2.) If the farm was indicated as belonging in a shaded square, the farm was included in the sample. The fifth square, always shaded, was provided for indicating all farms of 1,000 acres or more; thus all farms of 1,000 or more acres were included in the sample.

In some States, all farms with more than a given acreage of cropland harvested, or irrigated cropland harvested, or more than a given number of total cattle and calves on hand, milk cows on

hand, or chickens sold also were included in the sample regardless of the size of farm. (See "Specified Farms" for a list of the items and the States in which used.)

The work of each enumerator was checked by the crew leader and again in the 26 field processing offices to see that the sampling procedure had been followed and that all the necessary information for items to be obtained for only the farms in the sample had been obtained. The proportion of the farms in the sample was determined before the enumeration for a county was accepted, and if this proportion was not within acceptable limits special instructions were issued by the Washington office for additional enumeration to provide a satisfactory sample.

Adjustment of the sample.—For the 1954 Census of Agriculture, as for the 1950 Census, it was considered desirable to make adjustments in the sample in order to improve the accuracy of estimates based upon tabulation of data for the sample.

An adjustment in the 20 percent part of the sample was made by a process essentially equivalent to stratifying the farms in the sample by size, for the purpose of (1) improving the reliability of the estimates from the sample on an economic area level, and (2) for the purpose of reducing the effects of possible biases introduced because some Census enumerators did not follow perfectly the method devised for selecting the farms in the sample. In order to adjust the sample for each State economic area, counts were obtained of all farms and of sample farms for each of ten size-of-farm groups based on "acres in this place." The 10 size-of-farm groups were as follows: Under 10 acres, 10–29 acres, 30–49 acres, 50–69 acres, 70–99 acres, 100–139 acres, 140–179 acres, 180–259 acres, 260–499 acres, and 500–999 acres. In determining the extent of the adjustment, the difference between the number of farms in the sample and the total number of farms divided by 5 was obtained for each size group. The actual adjustment for each size group was made by eliminating farms when too many were included in a size group and by duplicating all the information for one or more farms when too few were included in the sample size group. The farms for which all the information was eliminated or duplicated were selected at random from counties over or under represented in each size group in the State economic area. Although adjustments were made in 98 percent of the counties in the United States, the gross adjustments involved were small, averaging 3.2 percent for farms eliminated and 4.0 percent for farms duplicated for all areas in the United States. These adjustments are summarized in Tables 3 and 4.

Method of estimation.—Estimates based on tabulation of data for a sample of farms were obtained by multiplying by 5 the tabulated total for the item for the farms in the 20 percent part of the sample and adding to this total the total for the specified farms.

Reliability of estimates based on the sample.—The estimates based on the tabulation of data for a sample of farms are subject

TABLE 3.—SUMMARY OF SAMPLE ADJUSTMENT BY GEOGRAPHIC DIVISION: 1954 CENSUS OF AGRICULTURE

Geographic division	Number of farms	Adjustment in number of farms		Total adjustment	
		Farms duplicated	Farms eliminated	Farms duplicated plus farms eliminated	Net adjustment (number of farms)
Total.....	4,782,416	37,181	29,938	67,119	+7,243
New England.....	81,878	721	951	1,672	-230
Middle Atlantic.....	257,276	1,617	2,375	3,992	-758
East North Central.....	798,690	5,421	5,260	10,681	+161
West North Central.....	905,248	4,050	6,684	10,734	-2,634
South Atlantic.....	858,971	10,860	3,480	14,340	+7,380
East South Central.....	789,507	6,150	2,817	8,967	+3,333
West South Central.....	668,129	4,570	5,300	9,870	-730
Mountain.....	180,026	1,786	1,585	3,371	+201
Pacific.....	242,691	2,006	1,486	3,492	+520

TABLE 4.—SUMMARY OF SAMPLE ADJUSTMENT BY SIZE OF FARM FOR THE UNITED STATES: 1954 CENSUS OF AGRICULTURE

Size of farm	Number of farms	Adjustment in number of farms		Total adjustment	
		Farms duplicated	Farms eliminated	Farms duplicated plus farms eliminated	Net adjustment (number of farms)
Total.....	4,782,416	37,181	29,938	67,119	+7,243
Under 10 acres.....	484,291	7,676	977	8,653	+6,699
10-29 acres.....	713,335	7,468	1,903	9,371	+5,565
30-49 acres.....	499,496	5,048	1,886	6,934	+3,162
50-69 acres.....	346,323	3,204	1,768	4,972	+1,436
70-99 acres.....	517,740	3,661	2,919	6,580	+742
100-139 acres.....	491,458	3,076	3,205	6,281	-129
140-179 acres.....	461,651	2,562	3,253	5,815	-691
180-259 acres.....	463,698	1,974	4,220	6,194	-2,246
260-499 acres.....	482,246	1,886	5,109	6,995	-3,223
500-999 acres.....	191,697	626	4,698	5,324	-4,072
1,000 acres or more.....	130,481				

to sampling errors. When data based on a sample of farms are shown in the same table with data for all farms, the data based on a sample are shown in italics or headnotes on the table indicate that the data represent estimates based on data for a sample of farms. Approximate measures of the sampling reliability of estimates are given in Tables 5 and 6 for farms reporting and for totals for selected items. These measures indicate the general level of sampling reliability of the estimates, but do not include allowances for sources of error other than sampling variation such as, for example, errors in original data furnished by farmers.

In order to compute the sampling errors for item totals, a random selection of 5 percent of the nonspecified sample farms was made. The data for these farms were used to compute estimated sampling errors for a large variety of items, thus providing a basis of estimates of the level of sampling errors. Estimates of sampling errors have been made separately for the North, the South, the West, and for the United States, by weighting the sampling error by the corresponding item total for each State or geographic region.

In general, the measures of sampling reliability presented are conservative in that they tend to overestimate the variations in sample estimates, because (1) the predicted limits of error do not always take fully into consideration that complete data were tabulated for all specified farms, and (2) that the figures were selected so as to apply to all States in the region. Consequently, the sampling errors tend to overestimate the variations in the sample, especially for groups with large numbers of farms or for groups for which the totals for specified farms represent a high proportion of the totals for the item.

Data in Tables 5 and 6 are given to indicate the general level of sampling reliability of estimated totals. In Table 6 a list of the items is given and the level of sampling reliability as shown in Table 5 is indicated. By referring to Table 5 in the column for the level of sampling reliability designated in Table 6, the sampling error according to the number of farms reporting may be obtained. For farms reporting, the indicated level of sampling is level 1. Table 5 shows percentage limits such that the chances are about 68 in 100 that the difference between the estimates based on the sample and the figure that would have been obtained from a tabulation for all farms would be approximately within the limit specified. However, the chances are 99 in 100 that the difference between the estimate and the tabulation for all farms would be less than two and one-half times the percentage given in the table.

The data in Table 5 indicate that when the number of farms reporting a specified item is small, the item totals are subject to relatively large sampling errors. Nevertheless, the considerable detail for every classification for each item is presented to insure maximum usefulness for appraising estimates for any combination of items that may be desired.

Percentage figures and averages derived from the tables will generally have greater reliability than the estimated totals; also, significant patterns of relationships may sometimes be observed even though the individual data are subject to relatively large sampling errors.

DEFINITIONS AND EXPLANATIONS

Definitions are presented only for those items for which the table descriptions are considered inadequate. The descriptive terms refer principally to the 1954 Census of Agriculture, although, with very few exceptions they are equally applicable to the 1950 Census, and, in general, to earlier Censuses as well. The definitions consist primarily of a résumé of the questionnaire wording, occasionally supplemented by the more essential parts of instructions given to the enumerators. Definitions and explanations which are of primary interest in respect to the data presented in a given chapter are included in the text accompanying that chapter. For the exact phrasing of the inquiries and of the instructions included on the questionnaire, reference should be made to the facsimile of the 1954 Agriculture Questionnaire shown in the Appendix to this volume.

Date of enumeration.—The enumeration of the 1954 Census of Agriculture was made largely during October and November 1954. The 1954 Census beginning dates were varied by areas or States, ranging from October 4 to November 8. In general, the varied starting dates were based upon the following considerations: (1) selecting dates late enough for the enumeration to follow the harvesting of the bulk of important crops, (2) setting the dates early enough to avoid undesirable weather and travel conditions during the enumeration, and (3) arranging for the enumeration to be substantially completed prior to customary dates when farm operators move from one farm to another. The average date of enumeration for the 1954 Census for each State is given in Table 1.

Information for inventory items is based on the situation as of the actual day of enumeration. Data on acreage and quantity of crops harvested are for the crop year 1954. Data on sales of crops relate to crops harvested in the year 1954 regardless of when sold; data on sales of livestock products relate to the production and sales during the calendar year 1954. Since the period to be included had not yet ended for some items at the time of enumeration, special emphasis was placed upon including accurate estimates for such items for the remainder of the period. For example, the question relating to dairy products stated, "Be sure to include dairy products which you will sell before January 1, 1955."

A farm.—For the 1954 and the 1950 Censuses of Agriculture, places of 3 or more acres were counted as farms if the annual value of agricultural products, exclusive of home-garden products, amounted to \$150 or more. The agricultural products could have been either for home use or for sale. Places of less than 3 acres were counted as farms only if the annual value of sales of agricultural products amounted to \$150 or more. Places for which the value of agricultural products for the Census year were less than these minima because of crop failure or other unusual conditions, and places operated at the time of the Census for the first time were counted as farms if normally they could be expected to produce these minimum quantities of agricultural products.

All the land under the control of one person or partnership was included as one farm. Control may have been through ownership, or through lease, rental, or cropping arrangement.

For the 1954 Census, enumerators were instructed to obtain agriculture questionnaires for all places that the operator considered a farm and for all places having during 1954 (1) any hogs, cattle, sheep, or goats; (2) any crops such as corn, oats, hay, or tobacco; (3) 20 or more chickens, turkeys, and geese; (4) 20 or more fruit trees, grapevines, and planted nut trees; or (5) any

vegetables, berries, or nursery or greenhouse products grown for sale.

For the 1950 Census, the enumerator was instructed to obtain an agriculture questionnaire for every place that the operator considered a farm, for every place of 3 or more acres, whether the operator considered it a farm or not, and for certain specialized operations regardless of the size of the place. The specialized operations included greenhouses and nurseries, places having 100 or more poultry, or on which 300 or more dozens of eggs were produced in 1949, and places with 3 or more hives of bees.

Thus, for both the 1954 and 1950 Censuses, agriculture questionnaires were filled for more places than those that qualified as farms. (See "Places not counted as farms," page xxxii.) The determination as to which reports were to be included in the tabulations as representing farms was made during the office processing of questionnaires.

For the 1945 and earlier Censuses of Agriculture, the definition of a farm was somewhat more inclusive. Census enumerators were provided with the definition of a farm and were instructed to fill reports only for those places which met the criteria. From 1925 to 1945, farms for Census purposes included places of 3 or more acres on which there were agricultural operations, and places of less than 3 acres with agricultural products for home use or for sale with a value of \$250 or more. For places of 3 or more acres, no minimum quantity of agricultural production was required for purposes of enumeration; for places of under 3 acres, all the agricultural products valued at \$250 or more may have been for home use and not for sale. The only reports excluded from the tabulations were those taken in error and those with very limited agricultural production, such as only a small home garden, a few fruit trees, a very small flock of chickens, etc. In 1945, reports for places of 3 acres or more with limited agricultural operations were retained if there were 3 or more acres of cropland and pasture, or if the value of products in 1944 amounted to \$150 or more when there was less than 3 acres of cropland and pasture.

Because of changes in price level, the \$250 limit for value of products for farms under 3 acres resulted in the inclusion of varying numbers of farms in the several Censuses prior to 1950.

The change in the definition of a farm in 1950, and continued in 1954, resulted in a decrease in the number of farms as compared with earlier Censuses, especially in the number of farms of 3 or more acres in size. Places of 3 or more acres with a value of agricultural products of less than \$150 were not counted as farms in the 1954 and 1950 Censuses. In some cases, these places would have been counted as farms if the criteria used in 1954 and 1950 had been the same as those used in previous Censuses. The change in the definition of a farm had no appreciable effect on the totals for livestock or crops, for the places affected by this change ordinarily accounted for less than 1 percent of the total for a county or State.

Enumeration of land located in more than one county.—Land in an individual farm may be located in two or more counties. In each case, the entire farm was enumerated in only one county. If the farm operator lived on the farm, the farm was enumerated in the county in which the farm operator lived. If the farm operator did not live on the farm, the figures for the farm were included in the county in which the farm headquarters was located. If there was any question as to the location of the headquarters of the farm, the farm was included in the county in which most of the land was located.

Farm operator.—A "farm operator" is a person who operates a farm, either performing the labor himself or directly supervising it. He may be an owner, a hired manager, or a tenant, renter, or sharecropper. If he rents land to others or has land cropped for him by others, he is listed as the operator of only that land which he retains. In the case of a partnership, only one partner was included as the operator. The number of farm operators is considered the same as the number of farms.

Farms reporting or operators reporting.—Figures for farms reporting or operators reporting, based on a tabulation of all farms, represent the number of farms, or farm operators, for which the specified item was reported. For example, if there were 190,222 farms in a State and only 146,500 had chickens over 4 months old on hand, the number of farms reporting chickens would be 146,500. The difference between the total number of farms and the number of farms reporting an item represents the number of farms not having that item, provided the inquiry was answered completely for all farms.

For some of the items, such as the residence of the operator for which reports were to have been obtained for all farms, figures are given for the number of farms not reporting. The number of farms, or operators, not reporting indicates the extent of the incompleteness of the reporting for the item.

Figures for farms reporting or operators reporting, based on a tabulation for only a sample of farms, represent the total estimated from the sample, not the actual number of farms or operators reporting.

Land owned, rented, and managed.—The land to be included in each farm was determined by asking the number of acres owned, the acres rented from others or worked on shares for others, and the acres rented to others or worked on shares by others. The acres in the farm were obtained by adding the acres owned and acres rented from others or worked on shares for others, and subtracting the acres rented to others or worked on shares by others. In case of a managed farm, the person in charge was asked the total acreage managed for his employer. The acreage that was rented to others or cropped by others was subtracted from the total managed acreage.

For 1954 and 1950, the figures for land owned, land rented from others, and land managed for others include land rented to others by farm operators. In earlier Censuses, the enumerator was instructed to include all land rented from others and to exclude all land rented to others. Thus, he recorded only that portion of the acreage owned and the acreage rented from others which was retained by the farm operator. For prior Censuses, the land included in each farm was essentially the same as that included for the 1954 and 1950 Censuses.

Land owned.—Land owned includes all land that the operator or his wife, or both, hold under title, purchase contract, homestead law, or as one of the heirs, or as a trustee of an undivided estate.

Land rented from others.—Land rented from others includes land worked on shares for others, and land used rent free, as well as all land rented or leased under other arrangements. Grazing land used under Government permit was not included.

Land rented to others.—Many farm operators rent land to others. For the most part, the land rented to others represents agricultural land but it also includes tracts rented for residential or other purposes. When land is leased, rented, or cropped on shares, the tenant or cropper is considered the farm operator even though his landlord may exercise supervision over his operations. The landlord is considered as operating only that portion of the land not assigned to tenants or croppers.

Land area.—The approximate total land area reported for 1954 for States and counties is, in general, the same as that reported for the 1950, 1945, and 1940 Censuses. Changes since 1940 represent changes in boundary, actual changes in land area due to the construction of reservoirs, etc. The figures for 1940 represent a complete remeasurement of the United States and, therefore, may differ from the figures shown for earlier Censuses.

Land in farms.—The acreage designated "land in farms" includes considerable areas of land not actually under cultivation and some land not used for pasture or grazing. All woodland and waste-land owned by farm operators, or included in tracts rented from others, is included as land in farms unless such land was held for other than agricultural purposes, or unless the acreage of such land held by a farm operator was unusually large. If a place had 1,000 or more acres of land not being used for agricultural purposes

CLASSIFICATION OF FARMS

and less than 10 percent of the total acreage in the place was used for agricultural purposes, the acres of nonagricultural land were reduced to a number equal to the number of acres used for agricultural purposes. In applying this rule, land used for crops, for pasture, or grazing, and land rented to others were considered to be land for agricultural purposes. On the other hand, land was defined as nonagricultural when it was woodland not pastured, or in house and barn lots, roads, lanes, ditches, or wasteland. The procedure used in 1950 for excluding unusually large acreages of nonagricultural land differed slightly from the one used for the current Census. In 1950, adjustments were made in places of 1,000 acres or more (5,000 acres or more in the 17 Western States) if less than 10 percent of the total acreage was used for agricultural purposes.

Except for open range and grazing land used under government permit, all grazing land was to be included as land in farms. Land used rent free was to be included as land rented from others. Grazing lands operated by grazing associations were to be reported in the name of the manager in charge. All land in Indian reservations used for growing crops or grazing livestock was to be included. Land in Indian reservations not reported by individual Indians or not rented to non-Indians was to be reported in the name of the cooperative group using the land. Thus, in some instances, the entire Indian reservation was reported as one farm.

Land in farms according to use.—Land in farms was classified according to the use made of it in 1954. The classes of land are mutually exclusive, i. e., each acre of land was included only once even though it may have had more than one use during the year. A detailed description of each of the classes of land is given in Chapter 1.

Specified farms.—"Specified farms" refers to the larger farms that were selected for special handling during the enumeration and during the office processing of the agriculture questionnaires. Although the criteria for their selection have varied since special attention was first given to such farms in the 1945 Census of Agriculture, the basic purposes for checking these selected farms have not changed. These specified farms account for at least a third of the total production of agricultural products. Because of their importance, special efforts were taken to insure their enumeration and inclusion in the Census.

The criteria for selecting specified farms were kept as simple as possible in order to facilitate the work of Census enumerators. In most States, only one item was considered in classifying farms as "specified." The following are the criteria used for the 1954 Census:

Criteria	Area for which criterion was used
Land in the farm—1,000 acres or more.....	All States.
Cropland harvested in 1954:	
200 acres or more.....	Florida.
500 acres or more.....	Michigan, Minnesota, North-west Missouri, Wisconsin.
Irrigated cropland harvested in 1954: 200 acres or more.....	Arizona, California, Louisiana.
Cattle and calves on hand:	
100 or more.....	Alabama, Mississippi, North-west Missouri.
200 or more.....	Louisiana.
Milk cows on hand: 100 or more.....	Arizona, California, Florida.
Chickens sold: 70,000 or more.....	Delaware, Maryland, West Virginia.

Special attention was given to the handling of specified or large farms in the 1945 and 1950 Censuses. The criteria for specified or large farms have varied considerably from Census to Census.

Tabulations based upon the sample of farms include data for all specified farms.

The classifications of farms by color and tenure of operator, economic class of farm, and type of farm were made on the basis of visual inspection of each questionnaire during the office processing.

The classification for color and tenure of operator was made for all farms, while the classifications by economic class and by type of farm were made for only a sample of farms. The classification of farms by size was made for all farms by means of electric tabulating equipment.

Farms by size.—Farms were classified by size according to the total land area of each farm. The same classification was used for all States.

In analyzing size-of-farm statistics, consideration should be given to the definition of a farm for Census purposes. Census farms are essentially operating units, not ownership tracts. If a landlord has croppers or other tenants, the land assigned each cropper or tenant is a separate farm even though the landlord may operate the entire holding essentially as one farm in respect to supervision, equipment, rotation practices, purchase of supplies, or sale of products.

In some parts of the South a special questionnaire, the Landlord-Tenant Questionnaire, was used to obtain statistics for such multiple units. The statistics for multiple units are published in Part 1 of Volume III.

Farms by tenure of operator.—Farm operators are classified according to the tenure under which they hold their land on the basis of the replies to the inquiries on total land owned, total land rented from others, total land managed for others, land rented to others and rental arrangements. The basis of classification by tenure is, in general, the same for the 1954 as for the 1950 Census.

Full owners own land but do not retain any land rented from others.

Part owners own land and rent land from others.

Managers operate farms for others and are paid a wage or salary for their services. Persons acting merely as caretakers or hired as laborers are not classified as managers. If a farm operator managed land for others and also operated land on his own account, the land operated on his own account was considered as one farm and the land managed for others as a second farm. If a farm operator managed land for two or more employers, all the land managed was considered one farm.

Tenants rent from others or work on shares for others all the land they operate. Tenants are further classified on the basis of their rental arrangement as follows:

Cash tenants pay cash as rent, such as \$10 an acre or \$1,000 for the use of the farm.

Share-cash tenants pay a part of the rent in cash and a part as a share of the crops or of the livestock or livestock products.

Share tenants pay a share of either the crops or livestock or livestock products, or a share of both.

Crop-share tenants pay only a share of the crops.

Livestock-share tenants pay a share of the livestock or livestock products. They may or may not also pay a share of the crops.

Croppers are crop-share tenants whose landlords furnish all work power. The landlords either furnish all the work animals or furnish tractor power in lieu of work animals. Croppers usually work under the close supervision of the landowners, or their agents, or another farm operator, and the land assigned them is often merely a part of a larger enterprise operated as a single unit.

Other tenants include those who pay a fixed quantity of any product; those who pay taxes, keep up the land and buildings, or keep the landlord in exchange for the use of

the land; those who have the use of the land rent free; and others who could not be included in one of the other specified subclasses.

Unspecified tenants include those tenants for whom the rental arrangement was not reported.

A more complete description of the various tenure classifications, and a discussion of comparability of the data with that for earlier Censuses, are given in Chapter X.

Farms by color or race of operator.—Farm operators are classified by color as "white" and "nonwhite". Nonwhite includes Negroes, Indians, Chinese, Japanese, and all other nonwhite races.

Farms by economic class.—A classification of farms by economic class was made for the purpose of segregating groups of farms that are somewhat alike in their characteristics and size of operation. This classification was made in order to present an accurate description of the farms in each class and in order to provide basic data for an analysis of the organization of agriculture. Only the farms in the sample were classified by economic class. The totals given in the tables represent estimates for all farms based on tabulations of the data for the farms included in the sample.

The basis for the classification of farms by economic class is the same for the 1954 and 1950 Censuses of Agriculture. A description of the factors considered and the methods used is given in Chapter XI. Briefly, farms were divided into two major groups—commercial farms and other farms—and each group was subdivided as follows:

Commercial farms were divided into six groups on the basis of the total value of all farm products sold, as follows:

Class of farm	Value of farm products sold
I.....	\$25,000 or more.
II.....	\$10,000 to \$24,999.
III.....	\$5,000 to \$9,999.
IV.....	\$2,500 to \$4,999.
V.....	\$1,200 to \$2,499.
VI.....	\$250 to \$1,199.

¹ Farms were classified as Class VI only when the farm operator reported that he worked off the farm less than 100 days, and that the income the farm operator and members of his family received from nonfarm sources was less than the total value of all farm products sold.

Other farms have been grouped into three classes as follows:

Part-time farms.—Farms with a value of sales of farm products of \$250 to \$1,199 were classified as part time if the farm operator reported (a) 100 or more days of work off the farm in 1954, or (b) the other income received by him and members of his family was greater than the value of farm products sold.

Residential farms.—Residential farms include all farms except abnormal farms with a total value of farm products sold of less than \$250. Some of these represent farms on which the operator worked off the farm more than 100 days in 1954. Some represent farms on which the income from nonfarm sources was greater than the value of sales of agricultural products. Others represent subsistence and marginal farms of various kinds. Some farms are included here which, if the classification were based on farm production for more than 1 year, might have qualified as commercial farms.

Abnormal farms.—Insofar as it was possible to identify them, abnormal farms include public and private institutional farms, community enterprises, experiment-station farms, grazing associations, etc.

Farms by type.—The classification of farms by type was made on the basis of the relationship of the value of sales from a particular source or sources to the total value of all farm products sold from the farm. In some cases, the type of farm was determined on the basis of the sale of an individual farm product, such as cotton, or on the basis of closely related products, such as dairy products. In other cases, the type was determined on the basis of sales of a broader group of products such as corn, sorghums, all small grains, field peas, field beans, cowpeas, and soybeans. Part-time, residential, and abnormal farms were not classified by type. In order to be classified as a particular type, sales or anticipated sales of a product or a group of products had to represent 50 percent or more of the total value of products sold.

Only the farms in the sample were classified by type. The data given in this report by type of farm relate only to commercial farms.

The types of farms for which data are shown, together with the product or group of products on which the classification is based, are:

Type of farm	Product or group of products amounting to 50 percent or more of the value of all farm products sold
Cotton.....	Cotton (lint and seed).
Cash-grain.....	Corn, sorghum, small grains, field peas, field beans, cowpeas, and soybeans.
Other field-crop.....	Peanuts, Irish potatoes, sweetpotatoes, tobacco, sugarcane, sugar beets for sugar, and other miscellaneous crops.
Vegetable.....	Vegetables.
Fruit-and-nut.....	Berries and other small fruits, and tree fruits, nuts, and grapes.
Dairy.....	Milk and other dairy products. The criterion of 50 percent of the total sales was modified in the case of dairy farms. A farm for which the value of sales of dairy products represented less than 50 percent of the total value of farm products sold was classified as a dairy farm if— (a) Milk and other dairy products accounted for 30 percent or more of the total value of products sold, and (b) Milk cows represented 50 percent or more of all cows, and (c) Sales of dairy products, together with the sales of cattle and calves, amounted to 50 percent or more of the total value of farm products sold.
Poultry.....	Chickens, eggs, turkeys, and other poultry products.
Livestock farms other than dairy and poultry.	Cattle, calves, hogs, sheep, goats, wool, and mohair, provided the farm did not qualify as a dairy farm.
General.....	Farms were classified as general when the value of products from one source or group of sources did not represent as much as 50 percent of the total value of all farm products sold. Separate figures are given for three kinds of general farms: (a) Primarily crop. (b) Primarily livestock. (c) Crop and livestock. <i>Primarily crop</i> farms are those for which the sale of one of the following crops or groups of crops—vegetables, fruits and nuts, cotton, cash grains, or other field crops—did not amount to 50 percent or more of the value of all farm products sold, but for which the value of sales for all these groups of crops represented 70 percent or more of the value of all farm products sold. <i>Primarily livestock</i> farms are those which could not qualify as dairy farms, poultry farms, or livestock farms other than dairy and poultry, but on which the sale of livestock and poultry and livestock and poultry products amounted to 70 percent or more of the value of all farm products sold. <i>General crop and livestock</i> farms are those which could not be classified as either crop farms or livestock farms, but on which the sale of all crops amounted to at least 30 percent but less than 70 percent of the total value of all farm products sold.
Miscellaneous.....	This group of farms includes those that had 50 percent or more of the total value of products accounted for by sale of horticultural products, or sale of horses, or sale of forest products.

Farms by class of work power.—Farms have been grouped by class of work power on the basis of whether horses, mules, or tractors were reported. This classification does not present an entirely accurate picture of the work power used on all farms. For some farms, all or part of the work power may be furnished by the landlord and for some farms all or part of the work power may be hired. Thus, farms hiring all the work power from others and those having it furnished may be shown as having no work power.

Value of farm products sold.—Data on the value of farm products sold were obtained for 1954 by either of two methods. First, the values of livestock sold alive, poultry, poultry products, vegetables harvested for sale, nursery and greenhouse products, forest products, and all livestock products, except wool and mohair, were obtained during the enumeration by asking each farm operator the value of sales.

Second, the values of all other agricultural products sold were estimated. During the enumeration, the quantity sold was obtained for each farm, for corn for grain, sorghums for grain or forage, small grains, hays, and for all small fruits and berries. For all other crops, the quantity sold was estimated.

In estimating quantities sold, for the purpose of computing value of farm products sold, various methods were used. These methods, and the names of the crops for which the quantity sold was estimated by each method, are given in Chapter IX.

The estimated value of all crops sold, except vegetables harvested for sale, nursery and greenhouse products, and forest products, was obtained by multiplying the reported or estimated quantity sold by the State average price. The State average prices were obtained cooperatively by the Bureau of the Census and the Agricultural Marketing Service of the U. S. Department of Agriculture.

For the 1950 Census, the value of all farm products sold was obtained by inquiry of each farm operator. In that Census, inquiries were made regarding the value of farm products sold for a maximum of 46 individual farm products or groups of farm products. In most cases, the quantity sold for the individual farm products was obtained together with the value of sales. The total value of farm products sold for 1950 includes the value of several farm products not included in the figures for 1954—butter, cheese, skim milk, bees, honey, corn fodder, corn silage, and grain straw, and receipts from the rental of pasture.

Data for the sales of farm products represent total gross sales for the entire farm, regardless of who shared in the receipts. The landlord's share of crops and livestock sold and also the livestock which the landlord took from the tenant farm to his own place were considered as sales from the tenant farm. Sales of crops grown on a contract basis, of livestock fed on a contract basis, or of poultry raised under a contract with a feed dealer or others, were included as sales from the farm.

The data on sales cover 1 year's operation. The sales of crops represent the sales of crops before the enumeration as well as those yet to be sold at the time of the enumeration. Corn, cotton, and other commodities under loan were to be considered as sold at loan prices. Livestock sales are for the calendar year regardless of when the livestock were raised or produced. Most livestock products are sold at the time they are produced. It was assumed that all wool and mohair shorn or clipped in 1954 was sold.

The value of farm products sold does not include Government payments for soil conservation, lime and fertilizer furnished, and subsidy payments.

Differences in published data.—Many of the data shown in the various tables, represent estimates based on tabulation of data for a sample of farms. Some of these tabulations for a sample of farms were made for counties, others were made for State Economic Areas, and some were made for States. In some cases

the estimates obtained from tabulations by counties, State Economic Areas, and States will differ slightly because, as a matter of economy, adjustments were not made in the tabulations when the differences were not great enough to affect the usefulness of the data.

COMPLETENESS OF THE CENSUS

Places not counted as farms.—For the 1954 as for the 1950 Census of Agriculture, special procedures were developed to help insure a reasonably complete Census of farms and agricultural production. For the 1954 Census, the enumeration procedure required that enumerators visit and list all dwellings and places in rural areas. (See Enumeration Procedures for a more detailed description.) Enumerators were required to obtain agriculture questionnaires for all places locally considered as farms and also all places having agricultural operations. Thus, the procedure called for the enumeration of all places that might qualify as farms. Many of the places for which agriculture questionnaires were obtained during the enumeration did not qualify as farms in accordance with the Census definition.

Places enumerated and not counted as farms totaled approximately 461,000 and contained about 7,000,000 acres of land, and about 300,000 acres of cropland harvested. The acreage in these places was equal to 0.6 percent of all land in farms and the cropland harvested for these places was equal to less than 0.1 percent of the cropland harvested in farms. (See Table 7.)

TABLE 7.—NUMBER AND ACREAGE OF PLACES ENUMERATED AND NOT COUNTED AS FARMS, BY GEOGRAPHIC DIVISIONS: 1954 CENSUS OF AGRICULTURE¹

Division and State	Number of places	Acres of land	Acres of cropland harvested
United States.....	460,862	7,072,508	299,122
Geographic Divisions:			
New England.....	6,960	110,880	33,240
Middle Atlantic.....	21,840	231,200	11,460
East North Central.....	42,920	318,500	33,840
West North Central.....	29,960	600,540	31,360
South Atlantic.....	136,620	1,936,820	42,540
East South Central.....	83,140	1,588,720	32,500
West South Central.....	93,760	767,640	23,540
Mountain.....	12,301	1,001,580	73,062
Pacific.....	33,361	516,688	17,580

¹ The data are estimates based on the tabulation of data for a sample of 5 percent of the places.

Completeness of coverage of the Census.—It is difficult to obtain a complete enumeration of farms and farm land. The difficulties are related to the large number of farms to be enumerated, the variety of arrangements under which farms are operated, the employment of a large number of temporary personnel to take and to supervise the taking of a Nationwide Census, the reluctance of some farm operators to provide information to Census enumerators, the problems of locating and identifying places that might be farms, the unavailability of information locally for some agricultural operations, the absence from their farms during the period of enumeration of some farm operators and their families, the failure of some Census enumerators to perform a thorough job, the opinion of operators of part time and marginal farms that their operations should not be included in a Census of Agriculture, etc.

In general, reliable data have not been available to indicate the completeness of the Censuses of Agriculture. Therefore, as part of the 1954 and 1950 Censuses of Agriculture, detailed special surveys were undertaken to provide estimates of the completeness of coverage of the Census and to provide measures of reporting errors for a few important items.

The special survey for the 1954 Census of Agriculture was conducted in about 319 counties in the United States. The survey

provided for a detailed reenumeration of farms and land in 772 rural segments containing approximately 2,800 farms, and 700 additional farms located in the same enumeration districts as the 772 segments. The survey also entailed checking on places having agricultural operation in 3,000 segments in urban areas and the verification of the census reports of land in farms, cropland harvested and acreage in corn, wheat, and cotton harvested for 120 farms of 1,000 to 9,999 acres and 365 farms of 10,000 acres and over.

The re-enumeration was performed as soon as possible after the completion of the Census enumeration by approximately 60 specially selected and trained enumerators. These enumerators were provided with very detailed procedures and questionnaires and with aerial photographs of the segments to be re-enumerated. They were required to prepare maps showing the location of all dwellings and the location, area and land and crop use of all fields within the segment. For farms located outside the segment and covered by the special survey, the enumerators were required to fill a detailed questionnaire providing information on land in the farm and land use. The questionnaires obtained during the re-enumeration were matched at the central office with agriculture questionnaires obtained by the Census enumerators. When the information obtained during the re-enumeration differed appreciably from that obtained by the first Census enumerator, another

special survey enumerator was sent to determine the reasons for the differences. A description of the special survey and procedures for measuring the completeness of the 1950 Census of Agriculture follow.

The estimates of underenumeration prepared on the basis of the special survey are given in Tables 8 to 11. Comparable data of the 1950 Census are given in Tables 8 and 9. The estimates of underenumeration represent net underenumeration as some farms and farm land were included more than once in the Census while other farms and farm land were not included in the Census. Underenumeration resulted from the farm not being enumerated, two or more farms being enumerated as one farm, and the erroneous exclusion of farms from the tabulations because the information reported by the Census enumerators indicated that the place did not qualify as a farm according to the Census definition. On the other hand, overenumeration resulted from the same farm or the farm land being included in the Census tabulations more than once, or being erroneously included in the Census tabulations. (In such cases the reenumeration indicated that the place did not qualify as a farm in accordance with the Census definition.)

The estimates for underenumeration, include estimates for farms not included in the Census, and also for differences in the reported data for farms included both in the Census and the special survey.

TABLE 8.—ESTIMATES OF UNDERENUMERATION FOR NUMBER OF FARMS AND SELECTED ITEMS FOR THE UNITED STATES: 1954 AND 1950 CENSUSES OF AGRICULTURE

Census and item	Estimated total (000)	Reported in the Census		Estimated underenumeration				
		Amount (000)	Percent of estimated total	Amount (000)	Percent of estimated total	Sampling error of estimate		
						Amount (000)	Percent of estimated total	Percent of estimated underenu- meration
1954								
Farms.....number..	5,201	4,782	91.9	419	8.1	49	0.9	11.7
Land in farms.....acres..	1,223,891	1,158,192	94.6	65,699	5.4	22,798	1.9	34.7
Cropland harvested.....acres..	346,580	332,870	96.0	13,710	4.0	3,907	1.1	28.5
Corn harvested.....acres..	80,886	78,123	96.6	2,763	3.4	950	1.2	34.4
Wheat harvested.....acres..	54,263	51,362	94.7	2,901	5.3	2,248	4.1	77.5
Cotton harvested.....acres..	19,026	18,854	99.1	172	0.9	286	1.5	166.0
1950 ¹								
Farms.....number..	5,656	5,382	95.2	274	4.8	36	0.6	13.1
Land in farms.....acres..	1,209,601	1,159,789	95.9	49,812	4.1	13,917	1.2	27.9
Cropland harvested.....acres..	363,022	345,628	95.2	17,494	4.8	3,801	1.0	21.7
Corn harvested.....acres..	83,632	83,351	99.7	281	0.3	750	0.9	267.0
Wheat harvested.....acres..	74,219	71,161	95.9	3,058	4.1	1,850	2.5	60.5
Cotton harvested.....acres..	28,646	26,599	92.9	2,047	7.1	1,037	3.6	50.7

¹ These estimates of net underenumeration in 1950 are not fully comparable to the estimates presented in Table 11 of the Introduction to Vol. II of the Reports of the 1950 Census of Agriculture. The estimates in Table 11 reflect only coverage errors in the count of farms and do not reflect errors in reporting.

TABLE 9.—ESTIMATES OF UNDERENUMERATION FOR NUMBER OF FARMS BY SIZE OF FARM FOR THE UNITED STATES: 1954 AND 1950 CENSUSES OF AGRICULTURE

Census and size of farm (total acres in farm)	Estimated total (000)	Reported in the Census		Estimated under enumeration				
		Amount (000)	Percent of estimated total	Amount (000)	Percent of estimated total	Sampling error of estimate		
						Amount (000)	Percent of estimated total	Percent of estimated under enumeration
1954								
All farms.....number.....	5,201	4,782	91.9	419	8.1	49	0.9	11.7
Under 10 acres.....number of farms.....	588	484	82.3	104	17.7	24	4.1	23.1
10-49 acres.....number of farms.....	1,364	1,213	88.9	151	11.1	30	2.2	19.9
50-99 acres.....number of farms.....	925	864	93.4	61	6.6	18	1.9	29.5
100-219 acres.....number of farms.....	1,271	1,210	95.2	61	4.8	11	0.9	18.0
220 acres and over.....number of farms.....	1,053	1,011	96.0	42	4.0	10	0.9	23.8
1950								
All farms.....number.....	5,656	5,382	95.2	274	4.8	36	0.6	13.1
Under 10 acres.....number of farms.....	565	485	85.8	80	14.2	22	3.9	27.5
10-49 acres.....number of farms.....	1,679	1,478	93.6	101	6.4	19	1.2	18.8
50-99 acres.....number of farms.....	1,090	1,048	96.1	42	3.9	17	1.6	40.5
100-219 acres.....number of farms.....	1,419	1,377	97.0	42	3.0	15	1.1	35.7
220 acres and over.....number of farms.....	1,003	994	99.1	9	0.9	4	0.4	44.4

GENERAL REPORT

TABLE 10.—ESTIMATES OF UNDERENUMERATION FOR NUMBER OF FARMS CLASSIFIED BY ACRES OF CROPLAND HARVESTED FOR THE UNITED STATES: 1954 CENSUS OF AGRICULTURE

Acres of cropland harvested	Estimated total (000)	Reported in the Census		Estimated underenumeration				
		Amount (000)	Percent of estimated total	Amount (000)	Percent of estimated total	Sampling error of estimate		
						Amount (000)	Percent of estimated total	Percent of estimated underenumeration
All farms.....number.....	5,201	4,782	91.9	419	8.1	49	0.9	11.7
No cropland harvested.....number of farms.....	753	678	90.0	75	10.0	20	2.7	28.7
1-9 acres of cropland harvested.....number of farms.....	933	806	86.4	127	13.6	28	3.0	22.0
10-19 acres of cropland harvested.....number of farms.....	703	620	88.2	83	11.8	13	1.8	15.7
20-49 acres of cropland harvested.....number of farms.....	1,026	961	93.7	65	6.3	16	1.6	24.6
50-99 acres of cropland harvested.....number of farms.....	743	710	95.6	33	4.4	15	2.0	45.5
100 acres and over of cropland harvested.....number of farms.....	1,043	1,007	96.5	36	3.5	8	0.8	22.2

TABLE 11.—ESTIMATES OF UNDERENUMERATION FOR NUMBER OF FARMS CLASSIFIED BY ECONOMIC CLASS FOR THE UNITED STATES: 1954 CENSUS OF AGRICULTURE

Economic class	Estimated total (000)	Reported in the Census ¹		Estimated underenumeration				
		Amount (000)	Percent of estimated total	Amount (000)	Percent of estimated total	Sampling error of estimate		
						Amount (000)	Percent of estimated total	Percent of estimated underenumeration
All farms.....number.....	5,202	4,783	91.9	419	8.1	49	0.9	11.7
Class I, II, and III farms.....number.....	1,323	1,290	97.5	33	2.5	11	0.8	33.3
Class IV and V farms.....number.....	1,686	1,575	93.4	111	6.6	21	1.2	18.9
Class VI and other farms.....number.....	2,193	1,918	87.5	275	12.5	46	2.1	16.7

¹ These data are estimates based upon a sample of approximately 20 percent of the farms.

The special survey was made for a probability sample and estimates of sampling reliability have been computed and are given in each table. The sampling errors are given both in amounts and also as the percentage of the estimated total (this total comprises the total for the farms included in the Census plus estimates for underenumeration) for the United States as well as the percentage of the estimated underenumeration.

The estimates in Table 8 indicate that the underenumeration of farms in 1954 was 419,000 farms or 8.1 percent of the estimated number of farms. On the basis of the data given in Table 8, the chances are 2 out of 3 that the estimate of 419,000 for the underenumeration of farms would differ from that obtained by a complete re-enumeration of farms, using the detailed procedures like those for the special survey, by less than 49,000. Likewise, the chances are 99 out of 100 that the estimate of 419,000 for the underenumeration of farms would differ from that obtained by a complete reenumeration by less than 122,000 farms.

About one-fourth of the underenumeration of farms was accounted for by farms of 100 acres or more, and farms having 50 acres or more of cropland represented only 16 percent of the underenumerated farms. Only 33,000 or less than 8 percent of the estimated underenumerated farms had a value of farm products sold of \$5,000 or more in 1954, and farms with a value of farm products sold of less than \$1,200 accounted for almost two-thirds of the underenumerated farms. About one-third of the underenumerated farms, were farms on which the operator did not reside.

The estimated underenumeration for land in farms and cropland harvested was relatively less than for the number of farms. The underenumeration of land in farms totaled 65,699,000 acres or 5.4 percent of the estimated land in farms. This estimate for underenumerated land in farms is subject also to sampling error and may be interpreted as follows. The chances are 2 out of

3 that this estimate of 65,699,000 acres would differ from that obtained by a complete enumeration by less than 22,798,000 acres. Also, the chances are 99 out of 100 that this estimate of 65,699,000 acres would differ from that obtained by a complete reenumeration by less than 56,995,000 acres. The estimated underenumeration of cropland harvested was 13,710,000 acres or 4 percent of the estimated total cropland harvested for the United States. The estimated underenumeration of acreage harvested was 3.4 percent for corn, 5.3 percent for wheat, and 0.9 percent for cotton.

Tables 8 and 9 contain comparable data on underenumeration for the 1950 Census of Agriculture. The appraisal of data in these tables indicate that the relative underenumeration for the number of farms and acres of corn harvested was greater for the 1954 Census of Agriculture than for the 1950 Census of Agriculture. The difference in the relative underenumeration of land in farms, cropland harvested, and the acreage harvested for cotton and wheat is not statistically significant. (The criteria used for determining significance of the difference of relative underenumeration is based upon a probability level of 95 out of 100.)

AVAILABILITY OF DATA FOR GEOGRAPHIC AREAS

Five different geographic areas—minor civil divisions, counties, State economic areas, States, and major economic subregions—were used as geographic units for the tabulation of data for the 1954 Census of Agriculture.

Minor civil divisions.—Minor civil divisions are primary subdivisions of counties and include townships, towns, precincts, election districts, magisterial districts, school districts, civil districts, beats, etc. Generally, totals and the number of farms reporting for all items in Sections I through VII on the Agriculture Questionnaire were tabulated by minor civil divisions. However,

when the minor civil division did not contain approximately 100 farms, the data were usually combined with an adjacent minor civil division during the tabulating process. Data for Section VIII through XIII were enumerated for approximately 147,000 specified farms and for only a sample of 20 percent of all other farms. A sample of this size does not provide figures of sufficient reliability for most uses by minor civil divisions. None of the data tabulated by minor civil divisions have been published by the Bureau of the Census. Statistical tables containing data by minor civil divisions can be obtained by paying the cost of preparing the statistical tables, checking the data and making photoprint copies of the tables.

Counties.—Counties are the smallest areas for which data for the 1954 Census of Agriculture are published. There were 3,102 counties, including independent cities, in the United States. Totals and the number of farms reporting are available, and published in most cases, by counties for all items included in the 1954 Census of Agriculture, except age of operator, year began operation of present farm, mortgage debt, cash rent, off-farm income by farm operator, off-farm work by other members of operator's family, and basis of payment for, rate of pay for, and hours worked by hired workers. These data are given in Volume I of the reports for the 1954 Census of Agriculture. In some cases the figures, particularly for crops of minor importance, are not published by counties. However, totals for such items are published for States in the various State tables in Volume I. Data for hired labor, by basis of payment, rate of pay, and hours worked, are available in State Economic Area Table 12 and in State tables. Data for age of operator and year began operation of present farm are available in State Tables 4 and 5. Data for off-farm income by farm operator, and off-farm work by other members of operator's family are shown by States in Chapter II, and data for cash rent, by States, in Chapter IV, of this volume. Data on farm mortgage indebtedness are available only by States and will appear in Part 5 of Volume III.

State economic areas.—State economic areas represent groupings of counties within a State. A map showing the State economic areas in each State appears in Volume I of the reports for the 1954 Census of Agriculture. The counties comprising a State economic area have similar agricultural, demographic, climatic, physiographic, and cultural characteristics. Basically, State economic areas have been established for the purpose of presenting statistics not only for the Census of Agriculture, but also for the Cen-

suses of Population and Housing. State economic area statistics were first published for these three Censuses for the year 1950. In order to establish areas for all three of these Censuses, the 48 States were divided into 501 State economic areas. (A description of State economic areas and a map showing the State economic areas for all States appears in the Special Report of the 1950 Census entitled, "State Economic Areas: A Description of the Procedure Used in Making a Functional Grouping of the Counties in the United States.") For the purpose of presenting agricultural statistics, most metropolitan areas have been combined with adjacent economic areas when the number of farms and agricultural production of the metropolitan area are of small importance. On the other hand, in a few cases, because of significant differences in the characteristics of the agriculture within the State economic areas, some State economic areas have been subdivided in order to present statistics for the 1954 and 1950 Censuses of Agriculture. Outside the metropolitan areas, the State economic areas, in general, are the same as State type-of-farming areas. For the United States, detailed Agriculture Census statistics are shown for 361 State economic areas.

The data published by State economic areas, shown in Volume I of the reports for the 1954 Census of Agriculture, consist primarily of those relating to special counts or tabulations for farms or farm operators, classified by color and tenure of farm operator, economic class of farm, and type of farm. The data presented for these classifications of farms represent estimates based upon a sample of farms.

States.—Totals for all data tabulated for the 1954 Census of Agriculture are available and are published in nearly all cases for the 48 States. These totals are usually given in Volume I of the reports for the 1954 Census of Agriculture. These totals also appear in most cases in the analytical tables presented in this volume.

Subregions.—Major economic subregions represent groupings of counties into general type-of-farming areas, without regard to State boundary lines. With some exceptions, the 119 major economic subregions into which the United States is divided are each comprised of one or more State economic areas.

The data published by major economic subregions show the general characteristics for the principal types of commercial farms by economic class. These data, are shown in Part 8 of Volume III of the reports for the 1954 Census of Agriculture.