

Preparatory Operations

INTRODUCTION

After completing the pretests and initial planning operations, the Bureau began final preparations for the enumeration. This work can be broken into three main activities: (1) the compilation and unduplication of the census mailing list, (2) publicizing the census, and (3) printing and addressing the report forms for the initial mailout.

The construction of the mail list for the 1978 census included not only the acquisition, compilation, and unduplication of lists of addresses from many sources, but also a major screening operation—the Farm and Ranch Identification Survey—designed to reduce the number of out-of-scope addresses on the mailing list. Concurrent with the mail list work, the Bureau was carrying out an extensive public information campaign to inform the farmers and ranchers it would be enumerating of the need for the census data, how and when it would be collected, and why response was important. During the last 12 months prior to the initial mailout, the Bureau completed final versions of the report forms and private contractors printed the forms and other materials and, in some cases, assembled the mailing packages. Later, when the final mailing list was complete, other contractors prepared the mailing address labels (under supervision of Bureau personnel to insure confidentiality of census-related information). In total, approximately 4.2 million packages for the initial census mailout were labeled and readied for posting.

These operations are explained in greater detail below.

ADDRESS LIST COMPILATION

Introduction

General information—The 1978 enumeration was the third agriculture census to be carried out primarily by mail. In any data-collection effort using such a technique, it is essential that the address list used is as accurate and complete as possible. It must not only cover all, or nearly all, of the agricultural operations from which data are needed, but contain as few duplicates as possible, since repeated requests for information increase respondent burden.

Using administrative records from various sources, a preliminary address list was compiled and unduplicated by computer at the Bureau's headquarters in Suitland, Md., between

mid-March and mid-May 1978. Addresses on the resulting list identified with only one specified source or a combination of specified sources were selected for a Farm and Ranch Identification Survey, in order that their farm/nonfarm status could be confirmed one way or the other and the address list updated accordingly. (For details of this operation see p 20.) The results of this survey, and additions from administrative records that were not available until the late summer and early fall, were incorporated into the address list in a second compilation and record linkage process carried out between September and December 1978.

General procedures—The principal operations involved in the assembly and linkage of the census address lists were as follows:

1. Receipt of records from individual sources, assignment of unique identification numbers, and standardization of record format for computer processing.
2. Matching of employer identification numbers (EIN's) for records having them, and deletion of duplicates. Matching of social security numbers (SSN's) for records having them, and clerical review and deletion of duplicates.
3. Geographic coding (geocoding) for retained records. (Records checked for State and county codes, and accurate ZIP codes. Missing codes added to records.)
4. For all geocoded records, a match of names and addresses within each ZIP code, and clerical review and deletion of duplicate records.
5. Assignment of unique census file numbers (CFN's), final size codes, and source combination codes for each record.

These procedures are described in greater detail below.

Sources

Names and addresses for the preliminary (spring) address list were obtained from a number of sources, most of which were updated versions of those used to assemble the 1974 list, and were contained on about 200 computer tapes:

Source	Approximate number of addresses
Total	10,700,000
1974 Census of Agriculture in-scope file	2,000,000
Internal Revenue Service 1040F and 1040C file (1976) ¹	2,800,000

Source	Approximate number of addresses
Agricultural Stabilization and Conservation Service (ASCS) file (containing records for persons or organizations associated with the farm crop programs administered by ASCS at the county level)	4,900,000
Internal Revenue Service business master file (1120, 1120S, 1065, 941, and 943) (1976) ¹	600,000
1974 Census of Agriculture nonrespondents	400,000

¹ IRS records used were for forms:

- 1040F, Schedule of Farm Income and Expenses attached to form 1040, Individual Income Tax Return.
- 1040C, Profit (or Loss) from Business or Profession (coded SIC 01, 02, and 07 (Agriculture)), attachment to form 1040.
- 1065, Partnership Return of Income
- 1120/1120S, Corporation and Small Business Corporation Income Tax Return
- 941/943, Employer's Annual Tax Return for Employees (941 (coded SIC 01, 02, and 07 (Agriculture)) for nonagricultural workers, 943 for agricultural workers)

After unduplication of the preliminary list, the Bureau selected approximately 4 million addresses for the Farm and Ranch Identification Survey. (For details of the unduplication (or linkage) procedures and the survey, see below.) The results of this survey, added to those addresses that were not included in the survey and supplemented by lists from sources that became available to the Bureau only in the summer or early fall of 1978, were used to compile the address list for final unduplication. The address universe at this time was as follows:

Source	Approximate number of addresses
Total	12,550,000
Address file after spring record linkage.	6,000,000
ASCS adds	100,000
Internal Revenue Service 1040F and 1040C file (1977)	2,600,000
Internal Revenue Service business master file (1020, 1020S, 1065, 941 and 943) (1977)	600,000
Tenants and successors from the Farm and Ranch Identification Survey	1,000,000
Multiunits and special lists	100,000
Statistical Reporting Service (SRS) ¹	2,150,000

¹ The SRS list was a compilation of addresses of persons or organizations that had some dealings with the U.S. Department of Agriculture's SRS. The portion available for use by the Bureau covered 27 States (SRS will ultimately compile and unduplicate a list for all 50 States), the list for only 7 of which had been subjected to any duplication checks. The Bureau therefore assumed a comparatively high degree of duplication in the list from this source.

The procedures used in formatting and unduplicating the mail list after both the spring and fall compilations were virtually identical and are described below.

Format and Standardization

The purpose of the format and standardization program was to turn the individual records making up the address list into

uniformly organized data records that could be linked by the Bureau's computer programs. Each computerized record was assigned a unique identification number (the source file number (SFN)), names and addresses were modified (including the supplying of standard State abbreviations), and each record was organized in a uniform layout. The principal phases of the format and standardization process were as follows:

1. **Edit.** Commas, periods, and special symbols (@ and #) were removed, spaces were inserted between alphabetic and numeric characters (e.g., 123Main#201 became 123 Main 201), and standard State abbreviations were added.
2. **Name control.** The name control was used as part of the record linkage procedures and usually consisted of the first four characters of the surname. To create the name control, the computer read the primary name field of each record from *right to left* until a nonnumeric word of three or more characters was found. This word was matched against a dictionary of words to be ignored (Bros., Inc., Dairy, etc.), and if it did not appear on this "skip" list, the first three or four characters (if it had more than three) were used to set the name control and were inserted into the name control field of the record. (Name controls were not the same as the name recode, which is discussed on p. 17.)
3. **Insert surname locator.** The surname locator was an indicator identifying the field position of the first letter of the last name within the record. (This was used in the name and address linkage to identify name parts for recoding.) If no name control existed for a record, the surname locator was set at zero.
4. **Extract numerics from address field.** Box numbers, rural route numbers, and street address numbers were identified in the address field and placed in separate record locations for use in name and address linkage.
5. **Assign possible partnership-corporation (PPC) flags.** Possible partnership-corporation records were identified and flagged. (It was important to do this since some members of partnerships might also have separate individual operations, in which case the name and social security number (SSN) unduplication would find a match and would delete a record that might, or might not, represent another farm.
6. **Assign large flags.** "Large" flags were assigned to allow a manual review of possible duplicate cases that might represent large operations. (The definition of what constituted a "large" case varied from source to source: IRS 1040F, 1040C, 1065, and 1120/1120S designated operations with sales of \$200,000 or more as "large" cases, while IRS 941/943 lists required \$40,000 or more in cash wages; census in-scope lists generally included minimum sales (\$200,000) or minimum acreage (2,000 to 10,000 acres, depending on which area of the country was involved).)

The format and standardization program assigned size codes (derived from those sources that included such information in the original records), inserted an address priority code (see the sections on linkage below), and identified agricultural services records and places them in another file for separate processing. Records with ZIP codes for areas outside the 50 States and the

District of Columbia were deleted from the file. (Puerto Rico, Guam, and the Virgin Islands were included in the 1978 census, but were enumerated by field interview; the other outlying areas, such as American Samoa and the Commonwealth of the Northern Mariana Islands, were enumerated for agricultural data as part of the 1980 Census of Population and Housing.) Finally, the following files were established:

1. Agricultural services record (to be processed separately).
2. Records with ZIP codes outside the 50 States and the District of Columbia (to be deleted).
3. Trace sample (see p. 19.).
4. Records with no employer identification number (EIN) or social security number (SSN).
5. Records with EIN's or SSN's.
6. "Short" records¹ with EIN's, with or without SSN's.
7. "Short" records with SSN's only.
8. "Short" post office name records for cases lacking EIN's or SSN's.
9. Tally file (by size and geographic codes).
10. Microfilm record of all serialized records.

EIN Unduplication

All records containing an EIN went into an EIN linkage process. The records were sorted by EIN, by PPC flag, name control, and address priority code. The priorities for the name and address and EIN (the same set of priority assignments applied to SSN's) for the spring and fall unduplication operations were as follows:

Name and Address Priority

Spring unduplication	Fall unduplication
Priority:	Priority:
1. Multiunits	1. Multiunits and abnormals
2. IRS 1040F and 1040C	2. Farm and Ranch Identification Survey respondent list, in-scope and out-of-scope
3. IRS 1065	3. IRS 1040F and 1040C (1977)
4. IRS 1120 and 1120S	4. Business Master File (1978)
5. IRS 941 and 942	5. Nonscreening records* from spring survey (IRS 1040F and 1040C, Business Master File, 1974 census)
6. Special lists	6. Farm and Ranch Identification Survey nonrespond-
7. 1974 Census of Agriculture in-scope list, respondents	
8. 1974 Census of Agriculture nonrespondents	
9. ASCS list	

¹"Short" records were the formatted complete records minus the names and addresses. Use of these shortened records saved computer time (and hence, money) in the sorting and linkage operations. After EIN and SSN linkage, the "short" records were matched to the complete records using the source file number (SFN).

Spring unduplication

Priority—Con.

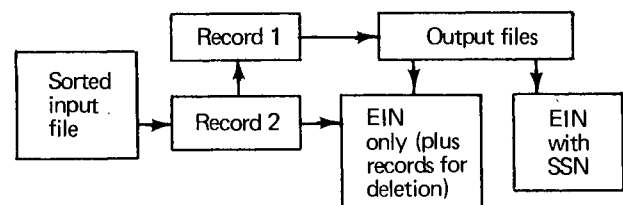
Fall unduplication

Priority—Con.

- ents (from IRS 1040F and 1040C, Business Master File, and 1974 Census of Agriculture records)
- 7. Special lists
- 8. SRS lists
- 9. Nonscreening records* (sources other than in item 5)
- 10. Farm and Ranch Identification Survey nonrespondents (sources other than in item 6)
- 11. Farm and Ranch Identification Survey postmaster returns (PMR's)

*"Nonscreening" means records *not* mailed to in the Farm and Ranch Identification Survey.

After sorting, the records were read from the input file into two temporary storage areas (1 and 2) for matching, as diagrammed below.



When it was determined that two records were duplicates (EIN's and name controls matched and neither a PPC) the record stored in "Record 2" (i.e., the record with lower priority assigned to its data sources) was deleted, its codes were transferred to "Record 1" and the next record was read from the input file into "Record 2" for a new comparison. Possible duplicates (EIN's matched but name controls did not, or one or both records were PPC's) were assigned a *pair number* that would tie them together so they could be displayed for clerical review. "Record 1" was then read into the appropriate output file, "Record 2" was then moved into the vacated "Record 1" position, and the next record was read from the input file, to "Record 2," to "Record 1," then to the appropriate output file.

SSN Unduplication

The "EIN with SSN" output file from the EIN unduplication was merged with the "SSN only" file and this combined file became the input for the SSN unduplication procedure. The file was sorted by SSN, PPC flag, name control, and address priority code, and was submitted to a linking program that was in most respects the same as was used for the EIN unduplication procedure. The only significant changes in the procedures

concerned the use of "dummy records" and a modification in the assignment of pair numbers for possible duplicate records.

"Dummy records" were established for IRS 1040 records that contained two SSN's. (These SSN's were usually those of husbands and wives.) The dummy record contained the same information as the "master" record, except the SSN's were reversed. After unduplication was completed, the dummy records were matched back to their masters, any codes picked up during unduplication were transferred to the master, and the dummy records were dropped.

Pair number assignment differed from the procedure used in EIN linkage in that there could be a situation in which two records were possible SSN duplicates, and both records had already been assigned different pair numbers in EIN linkage. In such a case, the original numbers were retained and a *collision* pair number was inserted into both records to identify the possible SSN duplication. This combined the records of two different possible duplicate sets, which could be reviewed as a single set.

Name and Address Unduplication

General—The third phase of the unduplication of the source lists, in both the spring and fall operations, matched names and addresses. All of the records not deleted from the list in the EIN/SSN phases of the operation passed through the name and address linkage, which, essentially, used a modified Soundex² system similar to the one employed in processing the 1974 list, to sequence and match names and addresses. Modifications were made to the 1974 system to improve its performance with regard to (1) identification of name parts, (2) linkage using first and middle initials, and (3) use of numeric address characters. The general sequence of the name and address unduplication procedure in both the spring and fall operations was as follows: (1) geocoding, (2) name recode, and (3) sort, linkage, and identification of duplicates.

Geocoding—Before any linkage of the files by name and address was possible, the files had to be geographically coded. The principal tool of the geocoding program was a geographic reference file containing a complete list of ZIP codes for the 50 States, with correct and variant post office names and county and State codes for each ZIP code. Once the address files (approximately 6.5 million records for the spring operation and 9.7 million for the fall) were merged and sorted by ZIP code, the geocoding process did the following:

1. Verified ZIP codes, post office names, county and State codes. The ZIP code for each record was compared to the post office name given in the record, then against the geographic reference file. If the post office name was correct, but the ZIP code did not match the one in the reference file, a corrected ZIP code was inserted. The same procedure was applied to the other items verified: the item in disagreement with the other geographic information in each record was corrected by the program.
2. Assigned missing ZIP codes or post office names by com-

paring available information to the geographic reference file.

3. Standardized specified post office names within ZIP codes.
4. Assigned census State and county codes, county abbreviations, and telephone area codes to each record, after verification.

Once the geographic items for each record in the file was verified, the file was ready to be sorted and sequenced (i.e., placed in numeric order) by ZIP code, then sorted by name control. In processing the returns from the Farm and Ranch Identification Survey, the Bureau had discovered a number of duplicate records with differing ZIP codes. The problem generally occurred in urbanized areas, and this led to the creation of a system of ZIP groups in the fall unduplication. In most instances, each ZIP group contained all of the individual records with a single ZIP code, but for certain urban areas served by multiple ZIP codes, the ZIP group included all the records for the area and was identified as a group by the lowest ZIP code serving the area. It was hoped that grouping these records would make discovery of duplicates with varying local ZIP codes more certain.

Name and address recode—Prior to recoding the names and address on each record, it was necessary to identify the parts of the name in the first and second name fields of the records. As an aid in this procedure, a dictionary of common words to be skipped (i.e., words such as "Farm," "Inc.," "Bros.," etc.) was compiled and used as a reference by the computer program. In the recode, each character string (i.e., each single letter, or group of letters, within a specific data field in the computer record) in the name fields was processed and "skip words" were deleted. The character strings then were classified as either a surname, single letter, nickname or "other," or as a conjunction, and were given a number code, as follows:

Character string type	Code
Nickname	1
Single letter	2
Surname	3
Conjunction	4
All others	1

The resulting codes, in the same order as encountered from left to right as the record was read, became the pattern number. Each word or letter was then identified, according to the pattern number, as a first name, middle initial, or last name. There were 103 possible patterns used for name-part identification. Only 0.7 percent of the input records were rejected by the program because of unacceptable pattern arrangements.

Some examples of acceptable and nonacceptable patterns are as follows:

Name string	Pattern	Status
John A Doe	123	Acceptable
Mrs Mary Smith	13 ("Mrs." on skip list)	Acceptable
Ben Hill Turpentine Co.	13 ("Turpentine" and "Co." on skip list)	Acceptable
A B C Farms Inc.	222 ("Farms" and "Inc." on skip list)	Unacceptable
Cattle Feeders Inc.	None (all words skipped)	Unacceptable

²The Soundex system is an index of personal census records, for selected censuses, based on the sound of the surname rather than the spelling. In a Soundex file, records for "Smith," "Smythe," etc., would be indexed together to facilitate checking variant spellings of a name.

Once the name parts were identified, the records were processed through the name recode to produce four-character alphabetic codes for each name. The recording retained the initial letter of each name, the second of all double consonants, and deleted all vowels (including Y). The program then left-justified the name, and deleted any characters that extended beyond the four-character data cell available for the name. For example, the name DILLINGER would be recoded by deleting the second L and all the vowels reducing the name to D_L_NG_R. Moving and truncating resulted in the deletion of the R and the coding of Dillinger as DLNG. Nicknames (Bill, Dick, Becky, etc.) had the proper names (William, Richard, Rebecca) recorded instead so that the versions of a name used in the different source lists were standardized. (Shortened versions of names, such as Ed, Geo., and Wm., were recoded as proper names (Edward, George, William) as well.)

When multiple name patterns were encountered, additional output records (dummy records) were created. Multiple names were identified as following conjunctions (words matching a conjunction dictionary list) such as "&," "and," "or," etc. Dummy records were created for wife names (if other than source IRS 1040F and 1040C), names in the second name field, and partnership names. If the character following the middle names was a conjunction, and the name pattern was (for example) "John Jones & Frank Small" (Pattern No. 22-11413), then three names were recoded: John Jones Small, John Jones, and Frank Small. If the character following the middle name was a conjunction, and the new pattern was "Jones Kelly & Smith (pattern No. 21-1143)," then three names were recoded: Jones, Kelly, and Smith. This was an attempt to identify partnerships that could change name order in different source file records.

Sort, linkage, and unduplication—After recoding the master and dummy records, the next step was to sort them so as to facilitate the comparison of adjoining records. Prior to this sort, each record was assigned a ZIP serial number (ZSN) consisting of the record's ZIP code plus a five-digit serial number within the ZIP code (e.g., 55555-00001). Dummy records carried the ZSN of their master records. Once the ZSN's had been assigned, the file was sorted, each ZIP group being sorted successively by last name recode, first initial, PPC flag, dummy record flag, box number, route number, first name recode, and source priority code. The linkage program then compared records with the same ZIP code, recoded last name, and first initial. Records that had only a last name with no first initial or name were compared to all records with that last name in the ZIP group containing the record.

This comparison, or match, operation produced the following files:

1. Duplicates. Records that matched both name and address information.
2. Possible duplicates. Records that matched on first or last name but did not match address information, and records that had matching last names and addresses but had only first initials.

3. Nonduplicates. Records that did not match on last name recode, or that had matching last name recodes but differing first names or initials.

Duplicate records were deleted by the computer after the data from the record with lowest address priority has been transferred to the record with the higher priority. When possible duplicates were identified, a pair number was assigned and no data were transferred. All possible duplicate records were sorted by pair number and displayed for clerical review. Clerks compared the linked pairs of records, determined whether there was in fact a match, and, if so, which record(s) to delete from the file. Nonduplicate records were retained in the file. The records processed in the name and address phase of the spring and fall unduplications were as follows:

Process step	Spring unduplication, No. of records	Fall unduplication, No. of records
Input to name and address unduplication	6,433,193	9,680,872
Unable to process	44,419	¹ 429,245
Deleted by computer	216,863	1,619,052
Clerical review from name and address phase	979,077	2,119,004
Clerical deletes	277,347	649,336
Out-of-scope, PMR, and ASCS deletes	NA	2,325,829
Final file	² 5,921,600	² 4,240,733

¹These records required special processing and were part of the supplemental mailings made in February 1979.

²The counts are not balanced because SRS lists available to the Bureau only for fall unduplication were more extensive than were available for the spring operation.

Controls

General information—During both the spring and fall unduplication processes, a system of checks and controls was imposed on the address file as it moved through the various phases of the operations. These included the establishment of records of changes in the file, such as the source-file microfilm and the control counts, as well as samples of addresses from the file used to test the procedures. The specific measures taken are described below.

ZIP-code sample for testing—Prior to the actual production runs for the unduplication phase of the address list compilation a sample of the records in the input file was selected to test each phase of the computer programs and procedures. Chosen on the basis of the first three digits of their ZIP code, all the records for each source file for specified areas within various States became part of the sample. Once these test samples had been processed and any problems the tests revealed had been corrected, final tests were carried out using parts of the "live" production file. All test runs were subjected to detailed reviews, and corrections to the program specifications and/or procedures were made as needed.

Source-file microfilm and audit trail—The source-file microfilm and the audit trail were general reference tools. The former was

a microfilm listing of all records received as part of the address list compilation for both the spring and fall operations, some 18 million in all, and was sorted and arranged by source file number. After all the relevant data on each record had been received from the various sources, the resultant files were merged, sorted, and microfilmed.

The audit trail was a microfilmed record of each case dropped (sorted by source file number) and of the case to which the deleted record had been matched.

Trace sample—The trace sample was selected by flagging every 1,000th record during the formatting and standardization phase of the fall compilation operation. As the records were selected, they were displayed and reviewed by the research staff at each processing step. Thereafter, the sample was used as a quality-control tool for following the progress of the records as they went through the various phases of the processing cycle. The display and review of the records proved especially useful as it enabled reviewers to discover various processing errors. For example, the formatting program had been assigning incorrect ZIP codes to records. The early detection of this problem permitted its correction before it had progressed so far as to require extensive reprocessing.

The trace sample was also available for other research projects concerned with the processing of the address file.

Control counts—During each production run of the address list processing, the computer generated control counts of records in the file and of all deletions for each phase of the unduplication. These provided numerical checkpoints at each phase of the processing.

Census File Numbers

As part of the final preparations of the address lists used in the spring Farm and Ranch Identification Survey and the census mailing itself, a unique identification number, the census file number (CFN), was assigned to each address. The CFN was composed of 11 digits (counting the check digit) arranged in two groups. The first five digits were the State and county codes for the operation to be enumerated, while the second six digits consisted of a five-digit serial number identifying each operation within each county, and a check digit. The serial numbers for each State-code area were assigned beginning with 00001 and continuing in sequence (00001, 00002, 00003, etc.). It was felt that the five-digit system, permitting specific identification for up to 99,999 farms, provided more than adequate space for any additions to the list for a given county made after the census was underway. The check digit provided a mathematical check for quality control during the data keying of the returns. (See ch. 4, p. 46, for details.)

Must and Certainty Cases

Following the fall record linkage, the final mailing list was subjected to a computer procedure that selected "must" and "certainty" cases. Using lists of multiunits and size codes from the 1974 census farm list, and other size indicators on the mail

file, the computer program identified as "must" cases those operations the Bureau believed (1) were so large that some data must be obtained in all cases, rather than imputed in cases of nonresponse to the mailout, (2) an explanation of *why* the addressee was not engaged in agricultural operations was needed, or (3) a special analyst's review of the census return had to be made.

Records for the following operations were selected:

1. **Multiunits.** Multiunits were companies or organizations that had substantial agricultural or agriculture-related operations at more than one location. In general, two or more report forms were required for each such organization since each establishment was considered a separate operation.³
2. **Abnormal farms.** Abnormal farms were farms operated by institutions, such as State agricultural research establishments, Indian reservations, etc.
3. **Other records.** The TVP's required for inclusion as either a "must" or the generally smaller (in TVP) "certainty" group varied among the States. The minimum criterion for assignment as a "must" case in California and Iowa was an expected TVP of \$500,000 or more; in the New England States, Alaska, and Hawaii, the minimum was \$100,000; while for the remaining States the minimum TVP was \$200,000.

The "certainty" stratum contained all addresses on the small list that were expected to meet specified size criteria in terms of indicated acreage and/or total value of annual sales. These criteria differed from State to State, depending on local conditions. The minimum indicated acreage ranged from 1,000 to 5,000 acres, while the minimum sales (based on historic or mail-list source data) varied from \$40,000 to \$200,000. Further, all addresses in counties that had fewer than 100 farms enumerated in the 1974 census were included.

Mail List Sampling

In order to reduce overall respondent burden, all the records in the mailing file were split into two groups, a "sample file" of approximately 1 million addresses, and a "nonsample file" containing the remaining 3.2 million addresses. The addresses in the sample file would be mailed the sample form 78-A1(S), the "long" form, while the nonsample addresses were to receive

³ Separate mail files were maintained for each master (company or organization) and each associated establishment. Multiunits identified before the initial census mailing had multiunit identification numbers assigned in the alpha/plant field of the mailing label that indicated whether the report form was for the master or an associated establishment. The numeric "alpha" code identifying the company was six digits in the alpha field of each of the various establishment's records. The "plant" code was a 4-digit establishment identifier. The master record for a multiunit would have the company identifier in the alpha field, with four zeros in the plant field, while each associated establishment had an identifying number in the plant field as well as the company identifier in the alpha field. Each report form for a master or an associated establishment was assigned a unique serial number, the associated establishments being assigned numbers in immediate sequence following the master.

the form 78-A1(N). (See app. G for facsimiles.) Aside from the shading used on the two forms (green on the A1(S), yellow on the A1(N)), the A1(S) differed from the A1(N) in that it included a number of additional data items. All "must" and "certainty" cases were part of the sample file.

The sampling of the "noncertainty" cases was done on a county-by-county basis, the sampling rate determined by the expected number of farms in the county involved. In counties with 100 to 199 farms counted in the 1974 census, one out of every two addresses on the mailing list was selected for the sample, while counties with 200 farms or more in 1974 were sampled at a rate of one in every five addresses. Taken together, the certainty stratum (including the must cases) and the sampling of the noncertainty strata yielded an initial sample that included about 26 percent of all the addresses on the Bureau's census mailing list. This was considered a sufficiently large sample to provide reliable county-level estimates for the sample data items included on the A1(S).

FARM AND RANCH IDENTIFICATION SURVEY

Introduction

The name and address file for the 1978 Census of Agriculture was compiled using lists from a variety of sources. In most instances, the addresses on the lists represented individuals or places that had some association with agricultural production that qualified them for inclusion in the program or activity of the agency compiling the list. Naturally, none of these source lists was, by itself, a complete list of agricultural operations in the United States, but by combining them and deleting duplicate addresses, the Bureau tried to compile as nearly complete a list as possible.

Since the purpose of the various agencies in assembling these individual source lists vary from monitoring and assisting production of a specific commodity to collecting taxes, the type of name and address included on any individual list varies as well. The Bureau of the Census uses a specific definition of a farm for its own data-collection and publication program, hence many of the addresses on the source lists supplied by other agencies did not meet that definition, and some method of deleting from the file those addresses that did not represent agricultural operations was necessary.

The Farm and Ranch Identification Survey enabled the Bureau to improve the coverage (completeness) of the 1978 census while, at the same time, keeping the size of the census mailing at an acceptable level. To improve coverage, additional lists were included in the original mail file. For example, for the 1974 census, only selected records from the ASCS list were used to develop the census mailing list. In 1978, the 4.9 million addresses in the ASCS file were added to the census file. These additions to the mail file naturally included a significant proportion of cases whose status as farms was uncertain and the Bureau decided to carry out a mail survey to identify those cases that did not represent agricultural operations. Addresses

identified as out-of-scope could then be deleted from the final list.

In addition, the survey could be used to identify successors to persons who had discontinued farm operations, as well as tenant operators who were not on the list. It would also furnish updated size information for farm operators.

Spring Farm and Ranch Identification Survey Test

Background information—The Farm and Ranch Identification Survey was scheduled for the spring and early summer of 1978, several months prior to the finalizing of the census address list. From the beginning it was realized that, to be effective and at the same time realize significant economies with respect to reducing the census mailings, the survey would need to attain a high rate of response with minimum followup. Furthermore, necessary processing would have to be kept to a minimum. The basic requirement for the survey questionnaire, then, was that it request the minimum information necessary to decide whether or not the name and address represented an agricultural operation.

Work on the design of the identification survey report form began late in 1976, with an initial survey form-content test scheduled for the spring of 1977.

The test report forms—Two versions of the identification survey form were produced in January 1977. Form 77-A4(A)-T1, "1977 Farm and Ranch Identification Survey," was considered the basic survey form design and was an 8" x 10½" single sheet of blue stock with black printing and shading.

The form was divided into six data-inquiry items, a remarks section (part of item 6) and a request for the name, address, and telephone number of the person preparing the form. Data were requested on (1) acreage owned, and acres rented or leased to or from others; (2) names and addresses of tenants and acres rented to each; (3) agricultural items expected to be produced in 1977; (4) estimated value of products sold in 1976, and expected sales for 1977 (check-off boxes of approximate values of sales were included); (5) county and State in which the largest value of products were produced in 1977; and (6) an explanation if there were no agricultural operations in 1977.

Form 77-A4(B)-T1, "1977 Farm and Ranch Identification Survey," was a shortened and simplified variant of the A4(A), printed in black ink on a 5¼" x 8" blue card. Item 1 asked only how many acres were owned and how many were rented or leased from others, while item 4 asked the respondent to write in the estimated values of sales for 1976 and expected sales for 1977. Item 6 requested the respondent to report the expected use of the land, if it was not to be used for agriculture in 1977. There was no space for remarks.

The test sample—A stratified sample of 7,783 records was selected for the test from the 1974 Census of Agriculture address file and split into two samples, a national sample with 5,808 records and a cluster sample of 1,975 records. The national sample was drawn from 1974 files of in-scope and out-of-scope respondents and specified nonrespondents. The sample was stratified by type and size of farm, excluding farms with

1974 total value of production of \$500,000 or more. For cash-grain and livestock and dairy farms, a 1-in-500 sample was selected, while all other farms were sampled at a 1-in-250 rate. The cluster sample was drawn from the 1974 in-scope, out-of-scope, and nonrespondent records for the following counties:

Winnebago, Ill.	Canyon, Idaho
Allegan, Mich.	Fresno, Calif.
Chautauqua, N.Y.	Doña Ana, N. Mex.
Sampson, N.C.	Smith, Miss.
Worth, Ga.	

The random selection from the cluster sample resulted in a file of approximately 200 addresses for each county. The clustering was designed to facilitate carrying out personal interviews with adequate coverage at minimum expense, but ultimately no personal interviews were done and the cluster sample addresses were treated as part of the general mailing.

Mailout and followup—Initial mailout of the test forms was done from Jeffersonville, Ind. on March 25, 1977. The national and cluster samples were evenly divided for the mailing, 3,892 addresses being sent form 77-A4(A)-T1, and 3,891 being sent form 74-A4(B)-T1. The mailing package for each address contained a transmittal letter that explained the reason for the survey and requested prompt response, as well as a return envelope.

A followup mailing was made on April 22, when 1,778 A4(A) forms and 1,699 A4(B) cards were sent to nonrespondents; 140 postmaster returns (PMR's) were also mailed. This mailing was the only data-collection effort made after the initial mailout. Final receipts were closed out on May 17.

Response and processing—Response to the test was generally very good, particularly with only one followup mailing. A total of 2,918 A4(A) forms and PMR's were received, representing 75 percent of the original mailout. Response to the shorter A4(B) card was even better, 3,075, or 79 percent.

The forms were received at the Bureau's Jeffersonville facility, where they were checked in and responses to individual items were tallied to determine whether respondents would be able (or willing) to provide the information requested. The tallies and studies indicated that respondents would be able to furnish the sort of information desired. Overall response to the A4(A) form, while not as high as that for the A4(B), had been very good, and there had been no difficulty in obtaining the somewhat more detailed information it requested. Inasmuch as this greater detail permitted easier and more thorough identification of agricultural operations, the Bureau adopted the A4(A) form's general design for a further test in the fall of 1977.

The Fall Mail List Update Test

Background information—The Mail List Update Test was a much smaller operation than the spring test and was intended primarily to recheck response to the items on the A4 report form. The report form, 77-A4-T2, "1977 Mail List Update," was a modified version of the 77-A4(A)-T1. The format of item

1 was changed and item 2 provided space for names and addresses of persons from whom land was rented, while item 3 requested the same information for tenants. Item 5 of the T2 form was the equivalent of item 4 on the T1, and asked only for an estimate of the value of agricultural products expected to be sold in 1977. Item 5 (county and State location) from the T1 was dropped, while item 6 was added, asking if "this place operated under any name other than the one shown in the address label." The wording of the respondent identification item was changed from "Name and address of person preparing this report" to "Person to contact regarding this report." The A4-T2 was an 8x10½-inch sheet of buff stock, with printing and shading in black ink on both sides.

Mailout and response—The mail list for the fall test was constructed using the 1974 census in-scope and out-of-scope respondent lists. A random sample of 2,541 addresses was selected, and address labels were prepared. On October 18, 1977, packages containing the report form, a cover letter explaining the reason for the test, and the return envelope, were mailed to the sample addresses. There was no followup.

Response to the fall test was comparable to that of the spring test. After 28 days, a response rate of 57.1 percent (including PMR's) had been achieved, about 3 percentage points ahead of that attained after a comparable time in the spring test.

Processing and analysis—Report forms were checked in manually in Jeffersonville and sent to Suitland for tallying of responses to individual items, evaluation of test results, and comparison with earlier test results.

The analysis of completed A4-T2 forms indicated that, as a general rule, the format employed was adequate for the collection of sufficient information to correctly classify a respondent with respect to his or her status as an agricultural producer. However, a number of specific changes in the report form were recommended. These were—

1. Revise the form to dissuade landlords from reporting products grown or sales made by tenants or sharecroppers.
2. Advise respondents apparently having all agricultural land rented out to explain the use of any remaining land.
3. Change the wording of the A4-T2 item 7 to make it clear to respondents that they needed to indicate the reason why they were *not* engaging in agricultural activity in the subject year.
4. Change the certification "Person to contact regarding this report" back to "Person preparing this report."
5. Restore the "Remarks" section.
6. Change the title of the form back to "Farm and Ranch Identification Survey."

The Farm and Ranch Identification Survey report form—The final version of the form 78-A4, "1978 Farm and Ranch Identification Survey," was a modification of the A4-T2 form used in the fall mail list update test. The format was generally simplified and the A4-T2 item 2 (concerned with the names and addresses of persons from whom land was rented) was deleted. There were minor changes in the wording of some items to con-

form with the recommendations made after the analysis of responses to the mail list update test, but the original A4-T2 format was considered generally satisfactory.

Development of Farm and Ranch Identification Survey Mail File

A preliminary mail address file for the 1978 Census of Agriculture was compiled in the spring of 1978. This initial effort drew on most of the sources that would be used for the final file, including the Agricultural Stabilization and Conservation Service (ASCS) list, 1976 Internal Revenue Service (IRS) form 1040F and 1040C files, the Business Master File (BMF) of addresses reporting agricultural employees, and lists of agricultural partnerships and corporations, as well as the in-scope and nonrespondent lists from the 1974 Census of Agriculture. After completion of the clerical and computer unduplication program (see the section on "Address List Compilation," pp. 14-20, for details of the compilation and unduplication procedures), the resulting file contained 5,921,600 names and addresses.

The primary purpose of the identification survey was to eliminate from the census mailing those addresses that did not represent agricultural production. Addresses on the preliminary list that were found on only one source list, or on two or more lists that in the 1974 census had comparatively high proportions of addresses not meeting the Bureau's farm definition, were to be selected for the survey. Accordingly, a computer selection of the address file was made, and addresses with source codes from the selected sources were assembled as the survey list. The sources, and the numbers of addresses drawn from each were as follows:

Source	Number of addresses selected
Total	4,080,737
ASCS only	2,215,963
IRS form 1040 only	553,584
1974 nonresponse only; 1974 nonresponse/ ASCS combined	122,285
1974 in-scope only; 1974 in-scope/ASCS	417,463
IRS form 1040/ASCS	508,714
BMF only	131,998
IRS form 1040/1974 nonresponse/ASCS combined	130,730

After selection of the addresses for the survey was completed in April and May 1978, computer tapes were prepared for use in the production of address labels and preparations for the mailout of the report forms from Jeffersonville was begun.

Mailout and Followup

Preparation and initial mailout—The mail file for the identification survey, over 4 million records, was split into four groups to facilitate handling and processing. Allocation of records to each group was determined on the basis of the source list (or combinations of source lists) from which a given record was

drawn and the State in which the address was located. Records were grouped by source list as follows:

Groups 1-3	Group 4
ASCS only	IRS 1040 file/ASCS combined
IRS 1040 file only	1974 nonrespondent/IRS 1040 file/
BMF only	ASCS combined
1974 in-scope only	
1974 nonrespondent only	
1974 in-scope/ASCS combined	
1974 nonrespondent/ASCS combined	

While group 4 contained addresses from all the States except Hawaii, groups 1-3 included records for States as listed below:

- Group 1: Alabama, Arizona, Arkansas, Connecticut, Delaware, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Nevada, New Hampshire, New Mexico, Rhode Island, Tennessee, Utah, Vermont, Virginia, West Virginia
- Group 2: Alaska, California, Colorado, Florida, Georgia, Hawaii, Idaho, New Jersey, North Carolina, Pennsylvania, Oklahoma, Oregon, South Carolina, Texas, Washington, Wyoming
- Group 3: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, New York, North Dakota, Ohio, South Dakota, Wisconsin

The Bureau prepared computer tapes containing the address list, by group, for the label contractor to use to produce bar-coded address labels in ZIP-code sequence. Bureau employees supervised the use of these tapes to ensure compliance with the confidentiality provisions of the census law.

The mailing packages were assembled, labeled, and mailed from Jeffersonville on a flow basis, as the labels were produced and delivered. Each package consisted of a 78-A4 report form with a bar-coded address label attached, a form 78-A4(L1) transmittal letter explaining the purpose of the survey and requesting prompt response, and a form BC-1266 return envelope overprinted "AG-SS." These materials were inserted in a form 78-A5 outgoing window envelope, and the bar-coded address label was applied through the window. All of the packages were sent by first-class mail, by groups, as follows:

Group	Begun	Completed	Number mailed
Total.	5/03/78	5/31/78	4,080,737
Group 1.	5/03/78	5/11/78	954,901
Group 2.	5/11/78	5/18/78	1,178,643
Group 3.	5/18/78	5/24/78	1,310,470
Group 4.	5/28/78	5/31/78	636,723

Followup mailings—No telephone followup of the identification survey nonrespondents was conducted, but there were four followup mailings. The first of these was begun a week after the last of the initial mailing was completed, and all were done on a flow basis, beginning with group 1 addresses, and working through to those of group 4. The mailing packages for the

followups were identical to those of the initial mailing except for the transmittal letter (form 78-A4(L2) letters were used in the first followup), which was different for each followup. Mailing label codes showed the status of each case as nonrespondent or PMR (postmaster return).

The cutoff for the first followup was approximately 4 weeks after the last of the initial mailing for each group. A new computer tape of nonrespondent names and addresses for each group was prepared and used to produce address labels. All mailing packages were assembled, labeled, and mailed from Jeffersonville.

The second followup began approximately 3 weeks after the first followup mailing for each group. Once again, packages were identical to earlier mailings, except that the A4(L3) transmittal letter was used; all preparation and mailing took place at Jeffersonville. Mailing was carried out as for the previous operations, but those for groups 1 and 2 were combined.

The third followup differed from its predecessors in that a sample of nonrespondent addresses was drawn to test the use of a toll-free telephone information number. Approximately 4,000 addresses were randomly selected from each of the three remaining groups. While the nonsample addresses received the A4(L4) letter requesting response, the 12,000 sample cases received the A4(L5), which included the toll-free number and urged respondents with questions to call for information. No more than a handful of such calls were received.

The fourth, and last, followup mailing closely resembled the third. The mailing packages sent were identical to those sent earlier, except that the transmittal letters sent to each group, while not differing in content, were dated differently for each. The final mailing for the fourth followup occurred on August 26, 1978. The mailings for each group, for each followup, and for the survey as a whole were as follows:

Group	Begun	Completed	Total mailed
Initial mailout			
Total.	5/03/78	5/31/78	4,080,737
1st followup			
Total.	6/07/78	6/26/78	2,172,799
Group 1.	6/07/78	6/09/78	529,514
Group 2.	6/10/78	6/13/78	618,591
Group 3.	6/17/78	6/20/78	634,994
Group 4.	6/23/78	6/26/78	389,700
2nd followup			
Total.	7/03/78	7/17/78	1,367,171
Group 1.	7/03/78	7/06/78	715,877
Group 2.			
Group 3.	7/12/78	7/13/78	380,914
Group 4.	7/14/78	7/17/78	270,380
3rd followup			
Total.	7/22/78	8/05/78	1,068,875
Group 1.	7/22/78	7/24/78	563,612
Group 2.			
Group 3.	8/01/78	8/01/78	291,660
Group 4.	8/05/78	8/05/78	213,603

Group	Begun	Completed	Total mailed
4th followup			
Total.	8/11/78	8/26/78	865,123
Group 1.	8/11/78	8/12/78	450,345
Group 2.			
Group 3.	8/18/78	8/19/78	232,790
Group 4.	8/26/78	8/26/78	181,988

Postmaster returns (PMR's)—New mailout packages to replace postmaster returns (PMR's) were prestuffed at Jeffersonville. The packages were identical to the initial mailing packages except that the outgoing envelopes were overprinted with "M2." PMR's with an ASCS-only source code were not re-mailed, while those with a name or address correction, or an indication that the addressee was deceased, were referred to the correspondence unit for remailing. Address labels bearing a check-in status code of 21 (for first-time PMR's without a name or address change, or deceased) were prepared for the remaining cases, 73,509 in all, and were attached through the windows of the outgoing envelopes. This first group of PMR's was mailed on June 26. (PMR totals are not included in the total followup mailings listed above.)

A second group of first-time PMR's was treated in much the same fashion in the second followup, except the 78-A4(L3) letter was substituted for the A4(L1) used for the earlier group. Report form packages were mailed to 22,743 addresses still listed as first-time PMR's on July 22.

The last mailing to addresses listed as first-time PMR's was made on August 14, when 16,333 packages were mailed. The contents of the packages for the final mailing to first-time PMR cases was identical to those used in the third followup mailing. Second-time PMR's were referred to the correspondence unit. (Selected second-time PMR's were remailed on a flow basis by the correspondence unit.)

Processing

Receipt, batch and check-in—The report forms for the identification survey were returned to Jeffersonville for processing. Upon receipt, the unopened mailing return packages were sorted into (1) PMR's, (2) all receipts in BC-1266 return envelopes, (3) replies to census-originated correspondence (overprinted "AGCOR-SS"), and (4) other mail. The packages, except those for PMR's, were then opened and, within each of the initial sort groups, were sorted again in three mail categories: (1) receipts with barcoded census file numbers (CFN's), (2) those with CFN's but no barcodes, and (3) receipts without CFN's.

Receipts without CFN's were sent to the CFN research unit, while barcoded receipts were sent to batch for barcode check-in; those without barcodes were batched and routed for check-in keying. Receipts (including correspondence) without barcodes

were batched into work units, usually of approximately 250 CFN's each, and form A402, "Check-In Work Unit Cover Sheet," was attached. The A402 carried the date, the number of CFN's in the work unit, and a check-in code for the work unit; the first digits of the codes were as follows:

- 2 PMR
- 3 Respondent-originated correspondence
- 4 Form received

The work units then were sent to check-in keying where the CFN and check-in code assigned to each form were recorded on a key-to-disk system, with an output on computer tape. The resultant file was transmitted to the Suitland computer facility via telephone datalink for computer matching to the address file.

Report forms with barcoded CFN's were batched into work units of 500 or 1,000 each. A form A402 cover sheet was attached to each work unit, with the same information as was included for the nonbarcoded receipts, and the work units were sent for barcode scanning. The barcode scanner employed a laser device to "read" the barcoded CFN's printed on the address labels and transfer the numbers to computer tape. The use of the barcodes and scanner greatly accelerated check-in of the report forms.

Clerical review—The primary purpose of the survey was to remove addresses with no agricultural operations from the census list, hence a review of the responses received was ultimately necessary. The clerical staff at Jeffersonville reviewed the data on in-scope forms and assigned "in-scope" or "out-of-scope" designations, or problem-referral codes: When the check-in report forms were received by the clerical unit, each was reviewed by a clerk, who scanned the entire form, including the remarks section. If the data from the report form indicated the address had agricultural operations, "I/S" was written in red ink in the upper right-hand corner of the face of the form. The reviewer checked to see if the form named a tenant or a successor (persons with no agricultural operations were asked to report successors); if the former, a "T" was written in the top margin of the form, while an "S" was written there if the response named a successor. Reviewers wrote "O/S" in the upper right-hand corner of receipts with no agricultural operations reported, while forms that represented problems of definition or identification (refusals; land, but no agricultural activity, reported; suspected agricultural services; inconsistent entries, etc.) were coded "R" (referral), that code being written in red ink just to the right of the address label on the face of the form.

As the individual forms in each work unit were reviewed and coded, they were placed in code groups for further processing. When the work unit was completed, the groups of forms were sent on for the next processing step. These groups were as described in right-hand column.

Technical review and microfilm search—The technical review unit was responsible for resolving problem cases referred to it by the clerical review unit, as well as processing "2+" reports (i.e., two or more reports received in the same envelope) and refer-

Code group	Destination
"R"	To technical review
Report forms with "S," or "S" and "T" ("I/S")	Sorted by State for microfilm search
"T" only	Division sort, then microfilm search or to keying of data and tenant names
"I/S"	Batch for data keying
"O/S" (no tenants or successors)	Central files

als from the microfilm search unit. Reports received were reviewed in more detail than in the clerical unit and the responses were interpreted to determine a report form's status. Forms were coded "in scope" if the respondent reported any agricultural production, or that sale of agricultural products was expected in 1978. If review of the responses on a form indicated that the address represented an abnormal farm (i.e., one operated by an institution, Indian reservation, etc.) or an agricultural services operation, the form involved was referred to subject-area specialists in Suitland. Following technical review, the coded I/S report forms were returned to the processing cycle.

Report forms reporting sales of \$100,000 or more, and those with selected types of names reported in item 5, were checked against the microfilm address lists to identify duplicate records. All successor names and addresses, and selected tenant names and addresses, were checked against the microfilm lists to determine if the tenant or successor was present on the mail file (because of the large number of cases involved, all tenant names were not researched). All tenant and successor cases that were researched on microfilm but were not located, along with the remaining tenant and successor cases, were keyed during data entry. These tenants and successors comprised a new source file, and were included in the census mailing list in the fall unduplication.

Data keying and computer processing—Report forms were batched into work units of 200-300 for keying of data and tenant and successor names and addresses, using the electronic key-to-disk-to-tape system at Jeffersonville. Once on disk, the data were automatically transferred to computer tape and were transmitted by data link to the main computer facility in Suitland where data tapes for use in the compilation and unduplication of the final census mailing list were prepared.

Results

Response to the survey—The 80.5-percent response rate achieved in the Farm and Ranch Identification Survey was considered very good overall, although it varied somewhat, depending on the list source for any given address. An 86.7-percent response rate was achieved for addresses from the 1974 census in-scope and the 1974 in-scope/ASCS combined lists, while only 41.1 percent of the forms mailed to addresses from the combined 1974 nonresponse/1040/ASCS list elicited a response. The rates attained for the various source lists are shown as follows.

Source	Mailed	Receipts	PMR's	Percent	
				Receipts (less PMR's)	PMR's (of total mailed)
Total	4,080,737	2,980,540	378,639	80.5	9.3
ASCS only	2,215,963	1,581,957	281,520	81.8	12.7
IRS 1040 only	553,584	460,298	14,501	85.4	2.6
1974 nonresponse only/1974 nonresponse-ASCS combined.	122,285	46,466	18,240	44.7	14.9
BMF only	131,998	92,601	16,732	80.3	12.7
1974 in-scope only, 1974 in-scope-ASCS combined .	417,463	328,300	38,785	86.7	9.3
IRS 1040-ASCS combined	508,714	417,931	7,138	83.3	1.4
1974 nonresponse IRS 1040-ASCS combined	130,730	52,987	1,723	41.0	1.3

Results—Of the 3 million report forms received, approximately 1.9 million were classified as out of scope and were deleted from the final 1978 census mailing list. Out-of-scope addresses included landlords not carrying on any agricultural activities, duplicate addresses, ex-owners, "no connection with agriculture," etc. Corrections to names and addresses, acreage, and size codes from the 1 million I/S report forms received were used to update the census mailing file.

Following the fall name and address unduplication, the out-of-scope records from the Farm and Ranch Identification Survey were dropped from the census mailing list, along with all postmaster returns and ASCS-only nonresponse cases.

PUBLICITY

General Information

Public information programs are particularly important to mail censuses; since respondents must willingly cooperate with the enumeration if data are to be collected quickly and efficiently. When plans were being drawn up for the publicity campaign for the 1978 Census of Agriculture, it was decided that respondents would be more likely to cooperate with the data-collection effort if they had some idea of how the information gathered would be used; hence the campaign was designed not only to encourage farmers to complete and return their report forms, but also to inform them of the intended uses of the data.

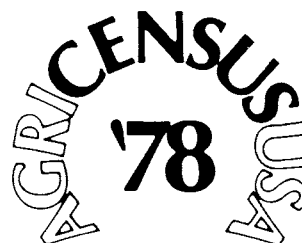
While many of the techniques and procedures used for the 1974 census were repeated for 1978, a number of changes were made in the light of lessons learned. Most significant, perhaps, was a de-emphasis of the use of television. The extraordinary expense of preparing television "spots," as well as the fact that farmers are generally more dependent on the radio than on television for news and information, led the Bureau to drop the idea of a series of 10-, 30-, and 60-second television "spots" such as those used in the 1974 program. While public service announcements were prepared for television release during the census, the precensus phase emphasized the radio advertising campaign and printed materials.

The total public information campaign was a multimedia effort, involving radio, newspapers, television, farm publica-

tions, and the distribution of informational materials to schools, businesses, individuals, and organizations throughout the country. The initial news release for the census in January 1978 reminded farmers to keep accurate records through the census year. The information program continued through the enumeration period, "peaking" in mid-1979, near the end of the regular data-collection effort.

Theme and Symbol

Evaluation of the 1974 enumeration suggested that the theme message used for the publicity campaign—"Fill it out, mail it in—NOW!"—had not been particularly well received by recipients. It was decided that the information effort for the 1978 census should have a less direct theme and symbol, one that reminded the public of the census but did not seem to be demanding action. Accordingly, a simple census logo, the number 78 with "AGRICENSUSUSA" in a three-quarter circle around it, was designed for use on all agriculture census materials.



Radio

Radio is the primary news source for most farmers and the Bureau made extensive use of it throughout the census period. In March 1978, the radio awareness effort began with the distribution to 32 farm broadcasting networks of a salute to American farmers by the Director of the Bureau, with a request that it be broadcast as part of the observances of Agriculture Day on March 20. In addition to periodic news releases on the progress of the census, a series of 10-, 30-, and 60-second public service announcements were taped by the president of the National Association of Farm Broadcasters (NAFB) and about 250 copies were made available for distribution at the

NAFB convention in November 1978. In addition, a set of 1½- to 2½-minute interviews with 10 agricultural experts were recorded and transferred to a 12-inch long-playing disc. Copies of this disc were mailed to 1,229 radio stations that had large farm audiences, while another 150 were made available for distribution at the NAFB convention.

Printed Materials

Newspapers, magazines, and informational material for distribution are all important parts of any census publicity effort. For 1978, this part of the campaign, in addition to posters, brochures, and the like, included distribution of articles and information to newspapers, proclamations, standardized speeches and statements, drop-in advertisements, and a series of stories tailored to each State for use by local publications. Some of these efforts are described in greater detail below.

Posters—Some 152,000 census of agriculture posters (printed in green, yellow, brown, and red ink) were printed. About 17,700 of these were delivered to the USDA for distribution to its agencies, while 10 copies were sent to each of some 9,000 vocational-agriculture teachers throughout the country for their classes. Additional copies were sent to various private agriculture-oriented organizations and associations.

Brochures and standardized speeches and statements—A pamphlet, "The 1978 Census of Agriculture and You," was prepared for general use and was included with all the information kits, census guides, and so on, mailed by the Bureau. Copies were distributed by Bureau personnel staffing booths at conventions, and also were sent to vocational-agriculture departments, county agents, USDA local offices, and the like. The agricultural statistics brochure in the Bureau's *Factfinder for the Nation* series was also distributed.

A suggested text for a 6- to 7-minute speech in support of the census was prepared and was made available to interested organizations for use at their conventions or local meetings. Distribution of copies of this text was as follows:

Organization or agency	Approximate total
ASCS (for information kits)	3,500
Ruritan National (for local chapters in 35 States)	1,350
Jaycees State chairmen of Outstanding Young Farmer Program (10 each)	420
Kiwanis district governors (10 each)	320
Directors' meeting of the Agriculture Council of America	100
Lions district governors in Maryland, Virginia, and Delaware	100

The Kiwanis, Lions, Jaycees (Junior Chamber of Commerce), and Ruritan also published articles in their members' monthly magazines announcing the availability of free copies of the speech.

Newspapers and magazines—The Bureau sent 551 agriculture census information kits directly to farm-oriented publications, farm writers, and to the farm editors of daily newspapers throughout the Nation. Newspaper farm editors were placed on the Bureau's distribution list and were sent all news releases

related to the agricultural census, as well as a series of drop-in ads of various sizes (examples on following page).

A series of stories, one for each State, was developed to outline the changes in local agriculture over the last 25 years, as measured by the data collected in the census of agriculture. Copies of the appropriate stories were mailed to 1,262 identified farm media outlets across the country. In addition, as was done for 1974, some 500 farm magazine editors were contacted about using census-oriented photographs, shot to their specifications, for use on the covers of their issues appearing during the data-collection phase of the enumeration. About 130 asked for these photographs, while a further 20 requested census report forms and envelopes for use as props in shooting their own pictures.

Farm Census Guide

The *Farm Census Guide* (form 78-A20) was a reference manual prepared for use by county agents, vocational-agriculture teachers, and others who assisted farmers and other respondents to complete their report forms. The 55-page booklets contained step-by-step instructions for completing each section of the standard report forms. These guides, together with cover letters and/or additional materials as listed below, were delivered in bulk, or were mailed directly from the Bureau's Jeffersonville, Ind., facility. The principal distributions were as follows:

Organization or agency	Number of copies	Content of mailing package
Agricultural Stabilization and Conservation Service	21,000	A20 guide, 78A20 or 78A20(L1) cover letter
Soil Conservation Service	5,000	A20 guide, 78A20 or 78A20(L1) cover letter
Cooperative Extension Service	4,625	A20 guide, 1978 Census of Agriculture brochure, 78A20 or 78A20(L1) cover letter
Farmers Home Administration	1,900	A20 guide, 1978 Census of Agriculture brochure, 78A20 or 78A20(L1) cover letter
Statistical Research Service	120	A20 guide, poster, 1978 Census of Agriculture brochure, 78A1(S) report form, <i>Factfinder</i> on Agricultural Statistics CFF No. 3 (Rev.), 78A20 or 78A20(L1) cover letter
Farm Credit Administration	3,800	A20 guide, poster, 78A20 or 78A20(L1) cover letter
High school, college, and university vocational agricultural departments	16,500	A20 guide, 78A1(S) report form, <i>Factfinder</i> on Agricultural Statistics CFF No. 3 (Rev.), 78A17 Lesson Plan, 78A17(L1) cover letter
Agricultural bankers	3,300	A20 guide, 78A20(L2) cover letter

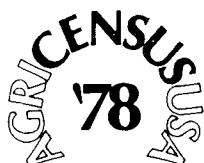
Agribusiness and Agricultural Organizations

Second only to the Federal and State Governments as users of census data is agriculture-related industry, hence the Bureau

Typical Drop-in Magazine Ads

It's Agriculture Census Time!

That's right, and a good Agriculture census will help all farmers. The Census Bureau will be contacting all farmers and ranchers by mail in January 1979 to measure the changes that have taken place since 1974. Only the census provides data on a comparable basis for counties in all States.



U.S. DEPARTMENT
OF COMMERCE
Bureau of the Census

Sound Decisions...



By the farming community—farmers, suppliers, banks—often depend upon data found only in the Census of Agriculture. Check your January mail for the streamlined 1978 report form.

U.S. DEPARTMENT
OF COMMERCE
Bureau of the Census



Missing Farm Facts Are Costly

Agriculture is a key business to America.

The decisions that are made need to be based on the best information possible. The purpose of the Census of Agriculture is to supply these facts.

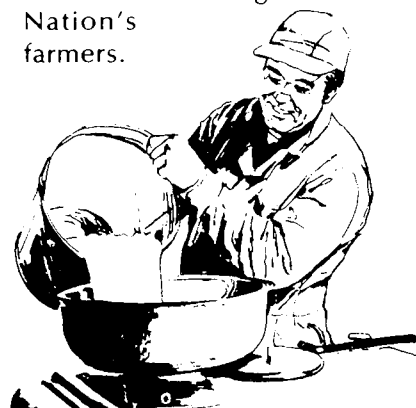
The 1978 Census of Agriculture will provide benchmark data useful to farmers and the farming community. It takes both farm and ranch operators and the Census Bureau to do the job right! Facts about individual farms and ranches are kept confidential. Only summary statistics are published.

U.S. DEPARTMENT
OF COMMERCE
Bureau of the Census



1978 AGRICULTURE CENSUS

Busy farmers will find the new agriculture census report much shorter and easier than the 1974 report form. Data for '78 are collected by mail early in '79. Since 1840, we've been serving the Nation's farmers.



U.S. DEPARTMENT
OF COMMERCE
Bureau of the Census



Since 1840... The Agriculture Census

The report form for the 21st Census of Agriculture will be mailed to the Nation's farmers in January 1979. Data are needed from all agricultural producers for this new chapter in the 140-year history of American agriculture.

U.S. DEPARTMENT
OF COMMERCE
Bureau of the Census



of the Census asked the assistance of those involved in agribusiness to help publicize the census. The informational materials sent to the news media, county agents, vocational-agriculture teachers, and others interested in the enumeration were also made available to representatives of agribusiness, either directly by the Bureau or through the USDA or other agencies. Agribusiness assistance included the insertion of census-related articles and ads in their media or publications and the distribution of census posters and brochures through their sales outlets and sales organization, as well as "word-of-mouth" encouragement.

Additional assistance in informing the public of the importance of the census was requested from many associations and organizations representing the broadest possible cross-section of the agriculture-oriented population and economy. Special slide programs were prepared and shown at 4H and Future Farms of America conventions, and members of these organizations, as well as representatives of colleges and universities, the Farm Credit Bank, Federal Land Grant Association, and the Production Credit Association, received copies of the census posters and other informational materials to distribute.

The associations and organizations that were represented on the Census Advisory Committee on Agriculture Statistics cooperated with the publicity program to the fullest extent possible, including publicizing the census through their own publicity resources and making representatives available for recorded and/or filmed interviews or statements supporting the enumeration. (See p. 7 for a list of member organizations.)

In addition, the following private organizations cooperated with the Bureau in the publicity campaign in various ways:

- American Agricultural Editors' Association
- American Association of Agricultural College Editors
- Agricultural Publishers' Association
- National Association of Farm Broadcasters (NAFB)
- National County Agents Association
- National Rural Electric Cooperative Association

The Federal Government is the largest single user of census data, and various Government agencies were called upon to help in publicizing the census. The largest user within the Federal Government, the Department of Agriculture, assisted the information campaign primarily through the following agencies:

- Agricultural Stabilization and Conservation Service
- Economics, Statistics, and Cooperatives Service
- Farmers Home Administration
- Forest Service
- Rural Electrification Administration
- Science and Education Administration
- Soil Conservation Service

PRINTING AND ADDRESSING REPORT FORMS

General Information

For the 1974 census, the majority of the report forms mailed to farm operators were self-mailing packages, with the recip-

ient's name and address printed on the cover, which served as the mailout wrapper. Separate mailing labels were used in the assembly of traditional mailout packages for special cases, such as for Alaska and Hawaii, for agricultural services establishments, and for the followup mailings. This was a major change in procedures compared to the 1969 census, and while it worked well enough, it was felt by Agriculture Division's census planning group that the new report forms designed for the 1978 enumeration would elicit a better rate of response if there was a reversion to the use of separate items in the package. In part, this was because the 1978 report forms were considerably shorter than the 1974 versions, and the change in the general format of the forms made the use of a booklet/mailling cover system less efficient. An additional consideration was the resemblance of the self-mailing forms to State and Federal tax forms; using the older system would avoid respondent confusion as well as the natural resistance of many people to most things reminiscent of tax collection forms.

Private contractors printed all of the census materials, assembled the mailing packages (except for those for special cases and Hawaii) according to Bureau specifications, and forwarded the packages and special materials to Jeffersonville. The Bureau staff at Jeffersonville added any special materials required to the mailing packages, and applied the address labels to the packages prior to the mailout.

Address Labels

The address labels for the initial and all followup mailings were printed by a private contractor using a computerized jet-imaging system. This process employed streams of computer-controlled ink droplets, directed onto a continuously moving length of paper, or in this case, a strip of labels. Alignment of the image was extremely precise, which was especially important for the 1978 labels because of the use of barcodes above the address on each label. The speed of the imaging could be controlled up to approximately 40,000 lines of characters per minute. The labels were printed, four addresses across, on pinned label stock for use in the Bureau's labeling machines.

Magnetic computer tapes containing the census address lists were prepared by the Bureau and were used by the contractor to produce the labels. By the end of May 1979, 208 tapes had been prepared and provided to the contractor for printing the labels for the initial and the followup mailings. The first delivery of approximately 1 million mailing labels for the initial mailout was made in late November 1978, with the remaining 3.5 million or so being delivered on a flow basis, in batches of about 250,000, over the following several weeks. After each followup mailing closeout date, which was always on a Tuesday, the Bureau updated the nonrespondent address file tapes within 24 hours, and sent them by courier to the contractor. New sets of address labels for nonrespondents were printed and ready for application by the Friday following the closeout.

Security of Census Address Files

The confidentiality requirements of the census law extend to protecting the Bureau's mailing address lists. This required that the computer tapes used in the production of the address

labels, and the labels themselves, be protected from any disclosure of individual addresses. To implement the confidentiality requirements, the label contractor's entire printing staff were deputized as temporary census agents, and thus made subject to the confidentiality provisions of title 13. The contractor also provided special facilities for the secure storage of the Bureau's address tapes, and one or more Bureau representatives were always present while the contractor was using the tapes to observe safeguards maintained during production of the address labels, storage of the tapes and labels prior to sending the latter to Jeffersonville, destruction of waste, etc. Bureau personnel were also responsible for unpacking the address tapes on their arrival at the contractor's plant, inspecting the tapes to verify their condition, and supervising the return of the tapes to the Bureau for erasure.

Printing, Assembling, and Addressing the Mailing Packages

Quantities—Three separate contractors printed and assembled the mailing packages for the 1978 Census of Agriculture. The approximate quantities of mailing packages for individual

agricultural operations specified in the contracts were as follows:

Form No.	Quantity ordered
Total.	4,433,000
74-A1(N).	3,300,000
74-A1(S) (yellow)	990,000
74-A1(S) (green)	135,000
74-A1(H).	8,000

Note: The A1(S) (green) was used for "must" cases; the A1(H) was a blue-green variant of the A1(S), used for Hawaii; the A1(S) (yellow) was used for all "certainty" cases, as well as for all non-certainty sample cases.

Quality control—The printing contractors were also responsible for assembling the mailout packages and shipping them to the Bureau's Jeffersonville facility. The specific contents of the packages to be mailed to individual agricultural operations were as given in table 3.

Table 3. Principal Contracts for Report Forms for Initial Data Collection Operations

Form No.	Description	Total quantity received	Delivery period	Contractor	Cost
78-A1(N) ¹	Agricultural production report form (non-sample), 4 pages, 20½" x 14" folded to 10¼" x 4 2/3", white writing sub. 100, printed in black ink on two sides with 90-percent coverage of 20-percent toned process blue.	6,100,000	Aug. 1978-Apr. 1979	Government Printing Office (GPO)	\$564,000
78-A1(S) ¹	Agricultural production report form (sample), 6 pages, 26" x 14" folded to 10¼" x 4 2/3", white writing sub. 100, printed in black ink on two sides with 90-percent coverage of 50-percent toned PMS yellow.	2,165,000	Aug. 1978-Apr. 1979	GPO	262,000
78-A1(H)	Agricultural production report form (Hawaii), 6 pages, 26" x 14" folded to 10¼" x 4 2/3", white writing sub. 100, with printing in black ink on two sides.	16,000	Oct. 1978-Apr. 1979	GPO	3,000
78-A1(S)	Agricultural production report form (for "must" and "certainty" cases), 6 pages, 26" x 14" folded to 10¼" x 4 2/3", white writing sub. 100, printed in black ink on two sides with 90-percent coverage of 50-percent toned green.	335,000	Aug. 1978-Apr. 1979	GPO	67,000
78-A1(PR) (SP)	Agricultural production report form (Puerto Rico), 4 pages, 21" x 16" folded to 10½" x 16"; salmon sub. 40, with printing in black ink on two sides (English version); white offset sub. 100, with printing in PMS reflex blue ink.	5,000 (English) 30,000 (Spanish)	April 1978	GPO	1,712.00

**Table 3. Principal Contracts for Report Forms for Initial
Data Collection Operations—Continued**

Form No.	Description	Total quantity received	Delivery period	Contractor	Cost
78-A1(VI)	Agricultural production report form (Virgin Islands), 2 pages, 20½" x 16", white offset sub. 100, printing in black ink on two sides.	1,200	June 1978	Dept. of	168.00
78-A1(G)	Agricultural production report form (Guam), 4 pages, 16" x 14" folded to 8" x 14", white offset sub. 100, printing in black ink on two sides.	4,000	March 1978	Commerce	478.00
78-A40A ¹	Agricultural services report form (soil preparation and crop services), 4 pages, 20½" x 14" folded to 10¼" x 14" white offset sub. 100, printed in black ink on two sides with 90-percent coverage in blue shading.	60,000 (original) 37,000 (file)	October 1978	GPO	5,947.00
78-A40B ¹	Agricultural services report form (veterinary and animal services), specifications same as above except 90-percent coverage in PMS red shading.	180,000 (original) 110,000 (file)	September 1978	GPO	13,815.00
78-A40B	Reprint	50,000	March 1979	GPO	2,193.00
78-A4C ¹	Agricultural services report form (landscape and horticultural services), specifications same as above except 90-percent coverage in salmon shading.	293,000 (original) 180,000 (file)	September 1978	GPO	35,595.00
78-A40D ¹	Agricultural services report form (combined form), specifications same as above except 90-percent coverage in purple shading	67,000 (original) 35,000 (file)	October 1978	GPO	6,591.00
78-A40D	Reprint	100,000	Jan.-Feb. 1979	GPO	5,513.00
78-A60	Census of Irrigation data collection form (single-basin organizations), 4 pages, 21" x 17" folded to 10½" x 8½", white offset sub. 100, printed in black ink on two sides with 90-percent coverage in 20-percent toned process blue.	20,000 (original) 17,000 (file)	November 1978	GPO	2,969.00
78-A60A	Same as 78-A60 except shaded in 70-percent tone PMS 102 yellow.	2,000 (original) 2,000 (file)	November 1978	Commerce	562.00
78-A61	Census of Irrigation data collection form (multi-basin organizations), 4 pages, 21" x 17" folded to 10½" x 8½", white offset sub. 100, printed in black ink on two sides with 90-percent coverage of 20-percent toned PMS 361 green.	1,500 (original) 1,000 (file)	October 1978	Commerce	456.00

¹ Contracts were for sets of materials for mailing packages including originals, file copies, instruction sheet, and transmittal letter. Form descriptions apply to "originals"; the file copies were similar but were usually shaded in gray.

Upon receipt in Jeffersonville, the mailing packages were submitted to a quality control check. Fifteen mailing packages were randomly selected from the first carton of each type of packages (each carton contained 275-325 packages), and from every fifth carton thereafter of each shipment, and were

inspected using a balance scale. If a package was out of balance, it was opened and the contents were inspected. In addition to the balance scale, every 100th sample package was opened and the contents were inspected to verify the order of insertion. Any package that was incomplete, or in which the contents

had been inserted in the wrong order, or in which the label area did not show through the open window of the mailout envelope, was considered defective and the entire carton from which it has been drawn was temporarily rejected. All of the packages in each rejected carton were inspected until 100 consecutive error-free packages were found, at which time it was returned to the preparation cycle.

Hawaii and Alaska—The mailing packages for Hawaii were assembled at Jeffersonville, rather than by a private contractor, but were essentially identical in content to the 78-A1(S) sample packages except that the report form 78-A1(H) and 78-A1(H)I information sheet were substituted for the standard sample forms. The packages for Alaska were also assembled at Jeffersonville, and were standard sample packages except that they, like the Hawaiian packages, were mailed with first-class postage.

Multiunits and Abnormals—While the assembly of single-unit mailing packages was fairly simple, multiunits and abnormal operations required special handling. For multiunits, Bureau headquarters provided the Jeffersonville staff with (a) two pressure-sensitive master address labels—one for the outgoing envelope or carton, and one for a folder in which all the materials for each case could be assembled; and (b) a set of three-bank multiunit master and plant labels—two copies for Jeffersonville, one for the Agriculture Division file, and one for the Agriculture Services Branch file. Plant labels, in alpha plant-number sequence, were also included (Cheshire labels for regular agriculture report forms and pressure-sensitive labels for agricultural services and Hawaiian forms). Two copies of a control sheet, one for the main file at Suitland and one for insertion in the appropriate folder, were generated by computer for each company.

Private contractors prestuffed the mailing envelopes for regular agriculture operations, which the Jeffersonville staff then assembled into multiunit packages. Address labels were

applied to individual plant packages (in which a revised version of the A2 brochure was substituted for the regular A2, and the A8 return envelope replaced the A7) and the packages were inserted in the appropriate company folders.

When all the materials for one company had been collected in its folder, the contents of the folder, except for the control sheet, were placed in an outgoing envelope or carton, which was labeled and left unsealed for quality-control inspection.

The packages for "abnormal" farms (i.e., institutional farms, grazing associations, experimental stations, etc.) were assembled at Jeffersonville. The packages contents were similar to those for "must" cases, except that the A24 instruction sheet was used in addition to the A1(I).

Labeling—Upon receipt in Jeffersonville the address labels were sorted by the type of form to which they were to be applied (A1(N), A1(S) "yellow" (excluding Alaska), and A1(S) "green"), then sorted by ZIP code within form type and split as follows:

1. Five-digit ZIP code with 150 or more cases
2. Multi-ZIP coded cities with 10 or more cases
3. Three-digit ZIP codes with 10 or more cases
4. All other cases

The labels for multiunits, abnormals, and other cases requiring special handling were applied manually, using pressure-sensitive labels. However, the vast majority of the census packages—over 4 million in all—were labeled by machine. Each single-unit package was addressed by applying the appropriate label mechanically onto the A1(S) or A1(N) form through the window of the mailout envelope. Four labeling machines at Jeffersonville performed this function at the rate of 10,000 addresses per hour each. The initial mailout operations took place between late December 1978 and mid-January 1979. For details of the mailout phase of the census, see chapter 4.

Table 4. Package Contents

Type of package	Outgoing envelope	Report form	File copy	Information sheet	Return envelope	Brochure	Cover letter
Nonsample	78-A7 (B) (3rd class)	78-A1 (N) "blue"	78-A1 (N) "brown"	78-A1 (I)	78-A8	78-A2	78-A1 (L1)
Sample -Must	78-7 (A) (1st class) or 78-A7 (B) (3rd class)	78-A1 (S) "green"	78-A1 (S) "brown"	78-A1 (I)	78-A8	78-A2	78-A1 (L1)
-Other	78-A7 (A) (1st class) or 78-A7 (B) (3rd class)	78-A1 (S) "yellow"	78-A1 (S) "brown"	78-A1 (I)	78-A8	78-A2	78-A1 (L1)
Hawaii	78-A7 (A) (1st class)	78-A1 (H) "blue-green"	78-A1 (H) "brown"	78-A1(H)I	78-A8	78-A8	78-A1 (L1)

Note: Contents are inserted in the order listed except for the A1 (S) "yellow" sample packages, in which the information sheet and return envelope were in reverse order. First-class postage was used for "abnormal" farms, Alaska, Hawaii, and multiunits.