# Chapter 6. Evaluation and Research Program

## QUESTIONNAIRE VARIATION STUDY (QVS)

### General Information

It has been a longstanding practice of the Bureau of the Census to conduct one pretest or more in preparation for each census of agriculture. The agriculture census pretest conducted in 1968 included field use of several variations of specific questions and variations of the general format of report forms. In comparing these variations by consistency of response, by the frequency of responses not directly keyable to magnetic tape or punchcards, and by "not answered" rates for the individual questions, it was observed that some of the tested question versions seemed superior to their alternate versions. This information was used in planning the final design of the report forms for the 1969 Census of Agriculture.

The effects of the variations in wording and format of specific questions tested in the pretest conducted in 1968 were interrelated with each other and with the possible but unknown effects of some differences in the gross characteristics of the report forms. Thus, it was proposed that a more systematic investigation of the effects of variations in specific questions and in gross characteristics of the report forms be conducted as part of the 1969 census. The study that resulted is known as the Questionnaire Variation Study (QVS).

The objective of the QVS was to isolate the effects of certain individual variations as well as the interaction effects of certain combinations of variations. It was anticipated that the findings of such an investigation could aid in the interpretation of 1969 census results, contribute to the design of the report form for the next census of agriculture, and add to the general body of knowledge about the effect on response of certain report-form design practices.

**Questionnaire Variations Tested**

Seven variations of the wording and format of the report form used generally in the 1969 census were selected for testing:

1. An alternate version of the acres and tenure questions in section 1 of the report form. These questions lead to a determination of the acres in the place; that is, the land to which the items on the report form apply. These questions have long posed conceptual problems, and the increasingly complex organizational structure of modern agriculture makes the problem more serious than in earlier years. Exhibits 1A and 1B show the "census version" and the "variation" studied, respectively.

**Exhibit 1A. Census Standard Version of Section 1**

**Section 1 – ACREAGE in 1969, OWNERSHIP, and LAND VALUE**
*(If there was any change in acreage operated during 1969, see Leaflet, section 1, part A.)*

| | | Acres | Your estimate of the current market value of these acres and the buildings on them — CENTS NOT REQUIRED — Dollars | Cents |
|---|---|---|---|---|
| 1. Land owned | None ☐ | 014 | 015 $ | |
| 2. Land rented or leased from others – *Include land worked on shares, leased Federal, State, and railroad land; and land used rent free. (Do not include land used on a per-head basis under a grazing permit.)* | None ☐ | 016 | 017 $ | |
| 3. Land rented or leased to others – *Include land subleased and land worked on shares by others* | None ☐ | 018 | 019 $ | |
| 4. **Total acres – *Please ADD acres owned (item 1) to acres rented (item 2), then SUBTRACT acres rented to others (item 3), and enter your answer in this space*** → | | 020 | These are the ACRES in "THIS PLACE" for this census report | |
| 5. How many acres in THIS PLACE were diverted under soil bank or other Federal programs such as those for feed grains, wheat, etc.? | None ☐ | 021 | _____ Acres | |
| 6. Were there any real estate mortgages, deeds of trust, or land purchase contracts on any part of the land and buildings you own? | | 022 | 1 ☐ Yes 2 ☐ No | |
| 7. How many persons rented or leased land from you in 1969? – *Include those working land on shares.* | None ☐ | 023 | _____ Persons | |
| 8. How many acres of the land you rented or leased from others (item 2) did you subrent or sublease to others? – *Include land rented or leased by you which was worked on shares by others* | None ☐ | 024 | _____ Acres | |

9. If you rented land from others (item 2), give the following information by type of land ownership.

| Ownership of land you rented from others *(Account for all acres reported in item 2)* | Acres | Rental arrangement in 1969 *Mark with X all boxes which apply* — Share of crops | Share of livestock or products | Cash as rent | Other arrangement |
|---|---|---|---|---|---|
| a. Individuals, partnerships, estates | 025 | 1 ☐ | 2 ☐ | 3 ☐ | 4 ☐ |
| b. Corporations – *include railroad land* | 026 | 1 ☐ | 2 ☐ | 3 ☐ | 4 ☐ |
| c. State lands – *school lands, etc.* | 027 | | | 3 ☐ | 4 ☐ |
| d. Indian lands – *tribal or reservation, leased* | 028 | 1 ☐ | 2 ☐ | 3 ☐ | 4 ☐ |
| e. Federal lands – *include leased acreage of Taylor Grazing lands (See Leaflet)* | 029 | | | 3 ☐ | 4 ☐ |

10. Any grazing permits on a per-head basis – *Forest service, Taylor Grazing, etc.* — 030: 1 ☐ Yes 2 ☐ No; 031 Acres, if known; 032 Number of head

*Before continuing Please read*

## Exhibit 1B. Variation of Section 1

**Section 1 – ACREAGE in 1969, OWNERSHIP, and LAND VALUE** *(If there was any change in acreage operated during 1969, see Leaflet, section 1, part A.)*

**Part A**

**Did you own any land in 1969?**

☐ Yes – **Complete items 1 through 4**

☐ No – **Go to Part B**

1. How many acres did you own in 1969? . . . . . 014 _____ Acres
   a. About how much would those acres and the buildings on them sell for on today's market? – *Omit cents* . . . . . 015 $ _____
2. Were there any real estate mortgages, deeds of trust, or land purchase contracts on any part of the land and buildings? . . . . . 016 1 ☐ Yes 2 ☐ No
3. Of the land that you owned, how many acres did you rent or lease to others? – *Include land worked on shares by others. (If "None," skip to item 4.)* . . . . . None 017 ☐ or _____ Acres
   a. About how much would those acres and the buildings on them sell for on today's market? – *Omit cents* . . . . . 018 $ _____
4. *Subtract acres in item 3 from acres in item 1* **These are the acres you own and operate** → 019 **Item 4**

**Part B**

**Did you rent or lease any land from others in 1969?** *Include land worked on shares; leased Federal, State, and railroad land; and land used rent free. (Do not include land used on a per-head basis under a grazing permit.)*

☐ Yes – **Complete items 5 through 9**

☐ No – **Go to Part C**

5. How many acres did you rent or lease from others in 1969? . . . . . 020 _____ Acres
   a. About how much would those acres and the buildings on them sell for on today's market? – *Omit cents* . . . . . 021 $ _____
6. How many acres did you rent from –
   a. Individuals, partnerships, estates . . . . . 022 _____ Acres
   b. Corporations – *Include railroad land* . . . . . 023 _____ Acres
   c. State lands – *school lands, etc.* . . . . . 024 _____ Acres
   d. Indian lands – *tribal or reservation, leased* . . . 025 _____ Acres
   e. Federal lands – *Include leased acreage of Taylor Grazing lands (See Leaflet).* . . . . 026 _____ Acres

   *Total of a through e should equal acres in item 5.*
7. What kind of rental arrangements did you have? *Mark with X all boxes which apply.* 027 1 ☐ Share of crops 2 ☐ Share of livestock or products 3 ☐ Cash as rent 4 ☐ Other arrangement
8. Of the land that you rented or leased from others, how many acres did you subrent or sublease to others? – *Include land worked on shares by others. (If "None," skip to item 9.)* . . . . . None 028 ☐ or _____ Acres
   a. About how much would those acres and the buildings on them sell for on today's market? – *Omit cents* . . . . . 029 $ _____
9. *Subtract acres in item 8 from acres in item 5.* **These are the acres you rent from others and operate** → 030 **Item 9**

**Part C**

**Total acres**

**Complete items 10 through 13**

10. *Add items 4 and 9.* **These are the ACRES in "THIS PLACE" for this census report** → 031
11. How many acres in THIS PLACE were diverted under soil bank or other Federal programs such as those for feed grains, wheat, etc.? . . None 032 ☐ or _____ Acres
12. Did you have any grazing permits on a per-head basis? *Forest service, Taylor Grazing, etc.* . . . . . 033 No 2 ☐ Yes 1 ☐ → 034 _____ Acres, if known 035 _____ Number of head
13. How many persons rented or leased land from you in 1969? *Include those working land on shares. See items 3 and 8.* . . . . . None 036 ☐ or _____ Persons

***Please read...***

You may be able to skip most of this form if –

a. All the land you own or rent is rented to someone else

b. There were no crops or livestock in 1969 on the land reported in item 10

Before continuing, please read "SHOULD YOU COMPLETE THIS FORM?" in Leaflet, section 1, part C.

**Section 2 – LOCATION of agricultural activity in 1969**

1. Are all of your agricultural operations located in the county shown in the upper right corner of the address label?

   ☐ No – *Write name and acres for principal county on first line; write names and acres for additional counties in spaces provided. If necessary, continue in remarks on page 12.*

   ☐ Yes – *Answer item 2*

| | Name of county | State | Acres |
|---|---|---|---|
| Principal county | | | 037 |
| Other counties | | | |
| | | | |
| | | | |
| **Total acres** (Must equal acres in section 1, item 10) → | | | |

2. Location within county of your principal agricultural operations . . . . . Township, district, precinct, etc. – *See Leaflet, section 2*

2. At the top of the column for acres in section 3, on land use, inclusion of a space for the respondent to copy his entry for the number of "acres in this place" from section 1. Historically, there is a tendency for farm operators to think of "farms" as they are known locally, e.g., "In addition to my own farm, I also farm the Jarvis place." Correct answers to the items in section 1 would have shown the owned and rented acres added together, with the sum designated as "acres in this place." This definition of "acres in this place" tends to be forgotten by some respondents when they complete later portions of the report form, with the result that only the owned portion of the land they operate is accounted for in section 3. On the other hand, some respondents improperly include in section 3 land that they own but rent out. The variation shown in exhibits 2A and 2B tested the value of emphasizing the census definition of the "acres in this place" by calling for the transcription of the total number of these acres from section 1 to the top of section 3.

## Exhibit 2A. Census Standard Version of Section 3

**Section 3 – Land USE in 1969**

The purpose of this section is to distribute all acres in this place among items 1 through 4.
*Please read Leaflet, section 3, before answering item 1a.*

| | | |
|---|---|---|
| | 1. Cropland | |
| ***Reminder:*** If the same land was used for two or more purposes, report that land only once – in the first item that applies. | a. Cropland harvested – *Include all land from which crops were harvested or hay was cut, and all land in orchards, citrus groves, vineyards, and nursery and greenhouse products* | 041 Acres |
| | b. Cropland used only for pasture or grazing | 042 Acres |
| | c. Cropland used for cover crops, legumes, and soil-improvement grasses, but not harvested and not pastured | 043 Acres |
| | d. Cropland on which all crops failed *(Exception: Do not report here land in orchards and vineyards on which the crop failed. Such acreage is to be reported in item 1a.)* | 044 Acres |
| | e. Cropland in cultivated summer fallow | 045 Acres |
| | f. Cropland idle | 046 Acres |
| | 2. Woodland – *Include here all woodlots and timber tracts and cutover and deforested land with young timber growth.* | |
| | a. Woodland pastured | 047 Acres |
| ***Please check:*** If the acres for item 5 do not agree with the acres shown in section 1, item 4, please read Leaflet, section 3, and check your entries. | b. Woodland not pastured | 048 Acres |
| | 3. Other pastureland and rangeland – *Include here any pasture other than cropland and woodland pasture.* | |
| | a. Pastureland and rangeland improved by liming, fertilizing, seeding, irrigating, draining, or controlling weeds and brush | 049 Acres |
| | b. Pastureland and rangeland not improved | 050 Acres |
| | 4. All other land – *Include here any land not reported above.* | |
| | a. Land in house lots, barn lots, ponds, roads, wasteland, etc. | 051 Acres |
| | 5. Total acres in this place – *Please add the acres in items 1 through 4 and enter the total in this space* → *(This total should be the same as the total in section 1, item 4.)* | 052 Total acres |

## Exhibit 2B. Variation of Section 3

**Section 3 – Land USE in 1969** (The purpose of this section is to distribute all acres in this place among items 1 through 4. *Please read Leaflet, section 3, before answering these items.)*

| | | |
|---|---|---|
| | Total acres in this place – *Copy from section 1, item 10* → | Total acres |
| | 1. Cropland | |
| ***Reminder:*** If the same land was used for two or more purposes, report that land only once – in the first item that applies. | a. Cropland harvested – *Include all land from which crops were harvested or hay was cut, and all land in orchards, citrus groves, vineyards, and nursery and greenhouse products* | 041 Acres |
| | b. Cropland used only for pasture or grazing | 042 Acres |
| | c. Cropland used for cover crops, legumes, and soil-improvement grasses, but not harvested and not pastured | 043 Acres |
| | d. Cropland on which all crops failed *(Exception. Do not report here land in orchards and vineyards on which the crop failed. Such acreage is to be reported in item 1a.)* | 044 Acres |
| | e. Cropland in cultivated summer fallow | 045 Acres |
| | f. Cropland idle | 046 Acres |
| | 2. Woodland – *Include here all woodlots and timber tracts and cutover and deforested land with young timber growth.* | |
| | a. Woodland pastured | 047 Acres |
| | b. Woodland not pastured | 048 Acres |
| | 3. Other pastureland and rangeland – *Include here any pasture other than cropland and woodland pasture.* | |
| | a. Pastureland and rangeland improved by liming, fertilizing, seeding, irrigating, draining, or controlling weeds and brush | 049 Acres |
| | b. Pastureland and rangeland not improved | 050 Acres |
| | 4. All other land – *Include here any land not reported above.* | |
| | a. Land in house lots, barn lots, ponds, roads, wasteland, etc. | 051 Acres |
| | *Please add the acres in items 1 through 4 and enter the total in this space* → | 052 Total acres |

These totals should be the same

3. Addition of a column of "none" boxes to section 31, which asks for inventory of specified machinery and equipment. The purpose of this variation, shown in exhibits 3A and 3B, was to resolve the question: Can a blank item (i.e., no response entered), where no box is available for checking "none," be properly interpreted as having the same meaning as a checked "none" box? The machinery-and-equipment section was selected for the study because the 11 items provided a resonable basis for studying the problem, without creating a formidable forms-design task and without interfering with the effects of the other variations being studied.

### Exhibit 3A. Census Standard Version of Section 31

**Section 31 – MACHINERY and EQUIPMENT on this place on December 31, 1969.** *(Include only equipment used in 1968 or 1969. See Leaflet, section 31.)*

| Selected machinery and equipment on this place, December 31, 1969 | Number manufactured in – 1965 or later | 1964 or earlier |
|---|---|---|
| 1. Automobiles | 570 | 571 |
| 2. Motortrucks – *Include pickups* | 572 | 573 |
| 3. Wheel tractors other than garden tractors and motor tillers | 574 | 575 |
| 4. Crawler tractors | 576 | 577 |
| 5. Riding garden tractors, 7 hp. and over | 578 | 579 |
| 6. Grain and bean combines, self-propelled only | 580 | 581 |
| 7. Corn heads for combines | 582 | 583 |
| 8. Other cornpickers and picker-shellers | 584 | 585 |
| 9. Pickup balers | 586 | 587 |
| 10. Windrowers – pull and self-propelled *(Exclude mower conditioners)* | 588 | 589 |
| 11. Field forage harvesters, shear bar only | 590 | 591 |

| | CENTS NOT REQUIRED Dollars | Cents |
|---|---|---|
| 12. Estimated market value of all machinery and equipment usually kept on this place and used for the farm business – *Include the items listed above and any other machinery and equipment.* | 592 $ | |

### Exhibit 3B. Variation of Section 31

**Section 31 – MACHINERY and EQUIPMENT on this place on December 31, 1969.** *(Include only equipment used in 1968 or 1969. See Leaflet, section 31.)*

| Selected machinery and equipment on this place, December 31, 1969 | None | Number manufactured in – 1965 or later | 1964 or earlier |
|---|---|---|---|
| 1. Automobiles | ☐ | 570 | 571 |
| 2. Motortrucks – *Include pickups* | ☐ | 572 | 573 |
| 3. Wheel tractors other than garden tractors and motor tillers | ☐ | 574 | 575 |
| 4. Crawler tractors | ☐ | 576 | 577 |
| 5. Riding garden tractors, 7 hp. and over | ☐ | 578 | 579 |
| 6. Grain and bean combines, self-propelled only | ☐ | 580 | 581 |
| 7. Corn heads for combines | ☐ | 582 | 583 |
| 8. Other cornpickers and picker-shellers | ☐ | 584 | 585 |
| 9. Pickup balers | ☐ | 586 | 587 |
| 10. Windrowers – pull and self-propelled *(Exclude mower conditioners)* | ☐ | 588 | 589 |
| 11. Field forage harvesters, shear bar only | ☐ | 590 | 591 |

| | CENTS NOT REQUIRED Dollars | Cents |
|---|---|---|
| 12. Estimated market value of all machinery and equipment usually kept on this place and used for the farm business – *Include the items listed above and any other machinery and equipment.* | 592 $ | |

4. Separation of the cost column in section 33, on use of insecticides and other chemicals, into two parts: (a) Cost of materials and (b) charge for applying. See exhibits 4A and 4B. The purpose of this section was to obtain data on the cost of chemical materials excluding charges for application of the materials. The purpose of this variation was to test the relative merits of a single item excluding the cost of application versus two items asking separately about the cost of materials and the charge for applying them. The underlying problem here was thought to be the inability of the farmer to provide information on cost of materials only, under some circumstances. For example, the farm operator who has his alfalfa sprayed by airplane for green bug control usually pays a specified amount for each acre sprayed. He may not know either the amount or cost of the chemical material used. The two-item approach, if a substantial number of respondents could report both elements of cost, would yield better data on cost of materials only, and also would provide the Bureau with a basis for editing report forms that reported a combined materials and application cost or were otherwise grossly inconsistent.

**Exhibit 4A. Census Standard Version of Section 33**

**Section 33 – INSECTICIDES, HERBICIDES, FUNGICIDES, OTHER PESTICIDES, LIME and OTHER CHEMICALS used on this place in 1969.**

Include any of these materials paid for by your landlord and by custom operators. For each item listed, report acres only once, but report cost of all such materials used on these acres in 1969. *(See Leaflet, section 33.)*

| | Tons used | Acres on which used | Estimated cost (Do not include cost of applying) CENTS NOT REQUIRED Dollars | Cents |
|---|---|---|---|---|
| 1. Lime *(Do not include land plaster or gypsum or lime for sanitation.)* | 610 | 611 | 612 $ | |
| 2. Sprays, dusts, fumigants, etc. to control – | | | | |
| a. Insects on hay crops | | 613 | 614 $ | |
| b. Insects on other crops (corn, cotton, tobacco, potatoes, trees, vines, etc.) | | 615 | 616 $ | |
| c. Nematodes in crops | | 617 | 618 $ | |
| d. Diseases in crops and orchards (blights, smuts, rusts, etc.) | | 619 | 620 $ | |
| e. Weeds or grass in crops – *Include both pre-emergence and post-emergence)* | | 621 | 622 $ | |
| f. Weeds or brush in pasture | | 623 | 624 $ | |
| 3. Chemicals for defoliation or for growth control of crops or thinning of fruit | | 625 | 626 $ | |
| 4. Expenditures for insect control on livestock and poultry | | | 627 $ | |

**Exhibit 4B. Variation of Section 33**

**Section 33 – INSECTICIDES, HERBICIDES, FUNGICIDES, OTHER PESTICIDES, LIME and OTHER CHEMICALS used on this place in 1969.**

Include any of these materials paid for by your landlord and by custom operators. For each item listed, report acres only once, but report cost of all such materials used on these acres in 1969. *(See Leaflet; section 33.)*

| | Tons used | Acres on which used | Estimated cost of materials only CENTS NOT REQUIRED Dollars | Cents | *If custom applied* – Additional charge for applying CENTS NOT REQUIRED Dollars | Cents |
|---|---|---|---|---|---|---|
| 1. Lime *(Do not include land plaster or gypsum or lime for sanitation.)* | 610 | 611 | 612 $ | | 912 $ | |
| 2. Sprays, dusts, fumigants, etc. to control – | | | | | | |
| a. Insects on hay crops | | 613 | 614 $ | | 914 $ | |
| b. Insects on other crops (corn, cotton, tobacco, potatoes, trees, vines, etc.) | | 615 | 616 $ | | 916 $ | |
| c. Nematodes in crops | | 617 | 618 $ | | 918 $ | |
| d. Diseases in crops and orchards (blights, smuts, rusts, etc.) | | 619 | 620 $ | | 920 $ | |
| e. Weeds or grass in crops – *Include both pre-emergence and post-emergence* | | 621 | 622 $ | | 922 $ | |
| f. Weeds or brush in pasture | | 623 | 624 $ | | 924 $ | |
| 3. Chemicals for defoliation or for growth control of crops or thinning of fruit | | 625 | 626 $ | | 926 $ | |
| 4. Expenditures for insect control on livestock and poultry | | | 627 $ | | 927 $ | |

5. In section 34 (on expenses) and 35 (on value of products sold), replacing the single answer column with two columns: (a) Operator's share and (b) landlord's or contractor's share. See exhibits 5A and 5B for section 34; 6A and 6B for section 35. The intent in the census was to obtain total data for the place being reported. Farms with landlords quite frequently are operated under expense-sharing and income-sharing arrangements. Farm operators, however, sometimes fail to realize that they are to include the landlord's share of the data. In other instances they may be reluctant to report cost incurred and income received by their landlords. The point of this variation was to determine whether or not better data on the combined expenses and sales of farm operators and their landlords would be obtained by having them reported separately.

## Exhibit 5A. Census Standard Version of Section 34

**Section 34 – Production EXPENSES for this place in 1969.**

Include your best estimate of expenses paid by others – your landlord, contractors, buyers, etc. – for crops, livestock or livestock products produced on this place. *(See Leaflet, section 34.)*

CENTS NOT REQUIRED

| | | Dollars | Cents |
|---|---|---|---|
| 1. | Livestock and poultry purchased – cattle, calves, hogs, pigs, sheep, lambs, goats, horses, baby chicks, poults, started pullets, etc. | 630 $ | |
| 2. | Total feed purchased for livestock and poultry – grain, hay, silage, mixed feeds, concentrates, etc. *(Total of dollars for a, b, c, and d)* | 631 $ | |
| a. | Commercially mixed formula feeds purchased – complete, supplement, concentrates. *(Do not include ingredients purchased separately, such as soybean meal, cottonseed meal, and urea.)* — Tons 632, Tenths 10, Dollars 633 $ | | |
| b. | Ingredients purchased – such as soybean meal, cottonseed meal, urea, etc., millfeeds or other milling byproducts. *(Do not include whole grains.)* — Tons 634, Tenths 10, Dollars 635 $ | | |
| c. | Whole grains purchased – such as corn, oats, barley, grain sorghum, wheat, rye, etc. Include cracked grain. *(Do not include millfeeds or other milling byproducts, or green chop.)* — Tons 636, Tenths 10, Dollars 637 $ | | |
| d. | Hay, green chop, silage, etc. — Tons 638, Tenths 10, Dollars 639 $ | | |
| 3. | Seeds, bulbs, plants, and trees purchased | 640 $ | |
| 4. | Commercial fertilizer purchased – all forms, including rock phosphate and gypsum | 641 $ | |
| 5. | Total gasoline and other petroleum fuel and oil purchased for the farm business – Diesel fuel, LP gas, butane, propane, piped gas, kerosene, fuel oil, motor oil, grease, etc. *(Total of a, b, c, and d)* | 642 $ | |
| a. | Gasoline for the farm business | 643 $ | |
| b. | Diesel fuel for the farm business | 644 $ | |
| c. | LP gas, butane, and propane for the farm business | 645 $ | |
| d. | Motor oil, grease, piped gas, kerosene, and fuel oil for the farm business | 646 $ | |
| 6. | Hired farm labor – *Include all money paid in cash for farm labor including payments to family members, and for Social Security taxes. (Do not include housework, customwork, and contract work.)* | 647 $ | |
| 7. | Contract labor – *Include expenditures primarily for labor, such as harvesting of fruit, vegetables, berries, etc., performed on a contract basis by a contractor, a crewleader, a cooperative, etc.* | 648 $ | |
| 8. | Machine hire and customwork – *Include expenditures primarily for use of equipment, and for customwork such as grinding and mixing feed, plowing, combining, corn picking, silo filling, spraying, dusting, etc.* | 649 $ | |
| 9. | Agricultural chemicals purchased – *Add dollars reported in section 33 and enter total here* | 650 $ | |
| 10. | All other production expenses – *Include current operating expenses, and depreciation, taxes, interest, cash rent, insurance, repairs, etc., for the farm business. (See Leaflet, section 34.)* | 651 $ | |
| 11. | Total production expenses – *Add dollars for items 1 through 10 and enter total here* → | 652 $ | |

## Exhibit 5B. Variation (Double Column) of Section 34

**Section 34 – Production EXPENSES for this place in 1969.**

If all expenses were paid by you, fill only the first column.

If any expenses for crops, livestock or livestock products produced on this place were paid or furnished by others – your landlord, contractors, buyers, etc. – enter your best estimate of these expenses in the second column and yours in the first column. *(See Leaflet, section 34.)*

| | Tons | Tenths | Total production expenses: Amount paid by you — CENTS NOT REQUIRED Dollars | Cents | Total production expenses: Amount paid or furnished by landlords or contractors, if any (See Leaflet) — CENTS NOT REQUIRED Dollars | Cents |
|---|---|---|---|---|---|---|
| 1. Livestock and poultry purchased – cattle, calves, hogs, pigs, sheep, lambs, goats, horses, baby chicks, poults, started pullets, etc. | | | 630 $ | | 930 $ | |
| 2. Feed purchased for livestock and poultry: | | | | | | |
| a. Commercially mixed formula feeds purchased – complete, supplement, concentrates. *(Do not include ingredients purchased separately, such as soybean meal, cottonseed meal, and urea.)* | 632 | /10 | 633 $ | | 933 $ | |
| b. Ingredients purchased – such as soybean meal, cottonseed meal, urea, etc., millfeeds or other milling byproducts. *(Do not include whole grains.)* | 634 | /10 | 635 $ | | 935 $ | |
| c. Whole grains purchased – such as corn, oats, barley, grain sorghum, wheat, rye, etc. *Include cracked grain. (Do not include millfeeds or other milling byproducts, or green chop.)* | 636 | /10 | 637 $ | | 937 $ | |
| d. Hay, green chop, silage, etc. purchased | 638 | /10 | 639 $ | | 939 $ | |
| 3. Seeds, bulbs, plants, and trees purchased | | | 640 $ | | 940 $ | |
| 4. Commercial fertilizer purchased – all forms, including rock phosphate and gypsum | | | 641 $ | | 941 $ | |
| 5. Gasoline and other petroleum fuel and oil purchased for the farm business: | | | | | | |
| a. Gasoline for the farm business | | | 643 $ | | 943 $ | |
| b. Diesel fuel for the farm business | | | 644 $ | | 944 $ | |
| c. LP gas, butane, and propane for the farm business | | | 645 $ | | 945 $ | |
| d. Motor oil, grease, piped gas, kerosene, and fuel oil for the farm business | | | 646 $ | | 946 $ | |
| 6. Hired farm labor – *Include all money paid in cash for farm labor including payments to family members, and for Social Security taxes. (Do not include housework, customwork, and contract work.)* | | | 647 $ | | 947 $ | |
| 7. Contract labor – *Include expenditures primarily for labor, such as harvesting of fruit, vegetables, berries, etc., performed on a contract basis by a contractor, a crewleader, a cooperative, etc.* | | | 648 $ | | 948 $ | |
| 8. Machine hire and customwork – *Include expenditures primarily for use of equipment, and for customwork such as grinding and mixing feed, plowing, combining, corn picking, silo filling, spraying, dusting, etc. Also include total of right-hand dollars column in section 33.* | | | 649 $ | | 949 $ | |
| 9. Agricultural chemicals purchased – *Total of this line should equal total of left-hand dollars column in section 33* | | | 650 $ | | 950 $ | |
| 10. All other production expenses – *Include current operating expenses, and depreciation, taxes, interest, cash rent, insurance, repairs, etc., for the farm business. (See Leaflet, section 34)* | | | 651 $ | | 951 $ | |
| 11. Total – *Add dollars for all items and enter totals here* → | | | 652 $ | | 952 $ | |

6. To the maximum extent reasonable, deletion of the explanatory notes from the report form. For this study the variation minimized the use of explanatory notes only in sections 34 and 35, on production expenses and on value of products sold. The comparison is shown for section 34 in exhibits 5A and 7.

The purpose of this variation was to test the hypothesis that explanatory notes tend to clutter the form and confuse the respondent rather than to clarify the item and improve the accuracy of the statistics. If it could be shown that the elimination of explanatory notes has no detrimental effect on the quality of response to certain questions, several desirable consequences would result: Less time spent in the formulation of complicated notes, a cleaner and more open forms design, and perhaps even a more cooperative attitude on the part of respondents.

## Exhibit 6A. Census Standard Version of Section 35

**Section 35 – MARKET VALUE, before taxes and expenses, of agricultural products sold from this place in 1969 – crops, livestock, livestock products, etc.**

| Include market value of landlord's and contractor's share. *(See Leaflet, section 35.)* | | CENTS NOT REQUIRED Dollars | Cents |
|---|---|---|---|
| | 1. Grains – corn for grain, small grains, soybeans for beans, grain sorghums, cowpeas for peas, dry beans, and dry peas | 660 $ | |
| | 2. Tobacco | 661 $ | |
| | 3. Cotton and cottonseed | 662 $ | |
| | 4. Field seeds, hay, forage, and silage | 663 $ | |
| | 5. Other field crops – peanuts, Irish potatoes, sweetpotatoes, sugar beets, sugarcane, pineapples, popcorn, mint for oil, hops, etc. – *Specify* | 664 $ | |
| | 6. Vegetables, sweet corn, and melons *(Do not include Irish potatoes and sweetpotatoes.)* | 665 $ | |
| | 7. Fruits, nuts, and berries – apples, berries, citrus, grapes, peaches, pecans, pears, etc. | 666 $ | |
| | 8. Poultry and poultry products – broilers, other chickens, eggs, ducks, turkeys, etc. | 667 $ | |
| | 9. Dairy products – milk, cream, etc. *(Report goat dairy products in item 13.)* | 668 $ | |
| | 10. Dairy cattle and calves | 669 $ | |
| | 11. Other cattle and calves | 670 $ | |
| | 12. Hogs, sheep, and goats – *Include pigs, lambs, wool, and mohair.* | 671 $ | |
| | 13. Other livestock and livestock products – horses, mules, fur-bearing animals, bees, honey, goat dairy products, etc. – *Specify* | 672 $ | |
| | 14. Nursery and greenhouse products sold – *Add dollars reported in section 22 and enter total here.* | 673 $ | |
| | 15. Forest products sold – *Add dollars reported in section 24 and enter total here.* | 674 $ | |
| | 16. Total market value of all agricultural products sold, before taxes and expenses – *Add dollars for items 1 through 15 and enter total here* → | 675 $ | |

## Exhibit 6B. Variation (Double Column) of Section 35

**Section 35 – MARKET VALUE, before taxes and expenses, of agricultural products sold from this place in 1969 – crops, livestock, livestock products, etc.**

If you did not lease land on shares or grow crops or livestock under contract, fill only the first column.

If any landlords or contractors received a share, enter the market value of their shares in the second column and yours in the first column.

| | Total market value | | | |
|---|---|---|---|---|
| | Amount received by you | | Landlord's or contractor's share, if any (See Leaflet) | |
| | CENTS NOT REQUIRED | | CENTS NOT REQUIRED | |
| | Dollars | Cents | Dollars | Cents |
| 1. Grains – corn for grain, small grains, soybeans for beans, grain sorghums, cowpeas for peas, dry beans, and dry peas | 660 $ | | 960 $ | |
| 2. Tobacco | 661 $ | | 961 $ | |
| 3. Cotton and cottonseed | 662 $ | | 962 $ | |
| 4. Field seeds, hay, forage, and silage | 663 $ | | 963 $ | |
| 5. Other field crops – peanuts, Irish potatoes, sweetpotatoes, sugar beets, sugarcane, pineapples, popcorn, mint for oil, hops, etc. – *Specify* _____ | 664 $ | | 964 $ | |
| 6. Vegetables, sweet corn, and melons *(Do not include Irish potatoes and sweetpotatoes.)* | 665 $ | | 965 $ | |
| 7. Fruits, nuts, and berries – apples, berries, citrus, grapes, peaches, pecans, pears, etc. | 666 $ | | 966 $ | |
| 8. Poultry and poultry products – broilers, other chickens, eggs, ducks, turkeys, etc. | 667 $ | | 967 $ | |
| 9. Dairy products – milk, cream, etc. *(Report goat dairy products in item 13.)* | 668 $ | | 968 $ | |
| 10. Dairy cattle and calves | 669 $ | | 969 $ | |
| 11. Other cattle and calves | 670 $ | | 970 $ | |
| 12. Hogs, sheep, and goats – *Include pigs, lambs, wool, and mohair* | 671 $ | | 971 $ | |
| 13. Other livestock and livestock products – horses, mules, fur-bearing animals, bees, honey, goat dairy products, etc. – *Specify* _____ | 672 $ | | 972 $ | |
| 14. Nursery and greenhouse products sold – *Total of this line should equal total of dollars column in section 22* | 673 $ | | 973 $ | |
| 15. Forest products sold – *Total of this line should equal total of section 24* | 674 $ | | 974 $ | |
| 16. Total – *Add dollars for items 1 through 15 and enter totals here* → | 675 $ | | 975 $ | |

**7. Omission of the light overall shading.** Lightly shading all the report form except for the answer spaces had seemed to be such a good idea that it was adopted for the census without testing. Thus, to gain a measure of the effect of shading, the Bureau used a variant report form that was exactly like the census report form except for the omission of shading. (This variation is not shown here.)

## Exhibit 7. Variation (No Notes) of Section 34

**Section 34 – Production EXPENSES for this place in 1969.**

Include your best estimate of expenses paid by others – your landlord, contractors, buyers, etc. – for crops, livestock or livestock products produced on this place. *(See Leaflet, section 34.)*

| | | CENTS NOT REQUIRED Dollars | Cents |
|---|---|---|---|
| 1. Livestock and poultry purchased | | 630 $ | |
| 2. Total feed purchased for livestock and poultry *(Total of dollars for a, b, c, and d)* | | 631 $ | |
| | Tons / Tenths | Dollars | Cents |
| a. Commercially mixed formula feeds | 632 / 10 | 633 $ | |
| b. Ingredients *(Do not include whole grains.)* | 634 / 10 | 635 $ | |
| c. Whole grains | 636 / 10 | 637 $ | |
| d. Hay, green chop, silage, etc. | 638 / 10 | 639 $ | |
| 3. Seeds, bulbs, plants, and trees purchased | | 640 $ | |
| 4. Commercial fertilizer | | 641 $ | |
| 5. Total gasoline and other petroleum fuel and oil purchased for the farm business *(Total of a, b, c, and d)* | | 642 $ | |
| | Dollars | Cents | |
| a. Gasoline | 643 $ | | |
| b. Diesel fuel | 644 $ | | |
| c. LP gas, butane, and propane | 645 $ | | |
| d. Motor oil, grease, piped gas, kerosene, and fuel oil | 646 $ | | |
| 6. Hired farm labor | | 647 $ | |
| 7. Contract labor | | 648 $ | |
| 8. Machine hire and customwork – *Include total of right-hand dollars column in section 33* | | 649 $ | |
| 9. Agricultural chemicals – *This line should equal total of left-hand dollars column in section 33* | | 650 $ | |
| 10. All other production expenses – *Include current operating expenses, and depreciation, taxes, interest, cash rent, insurance, repairs, etc., for the farm business. (See Leaflet, section 34.)* | | 651 $ | |
| 11. Total production expenses – *Add dollars for items 1 through 10 and enter total here* → | | 652 $ | |

### Composition of the QVS Report Forms

It was considered that the seven variants described above would probably interact with each other. Therefore, the seven variants were combined in different ways into nine versions of the report form. This was done in such a way that the individual effects of each variation could be isolated, as well as those interaction effects whose occurrence was considered to be most probable. The composition of the nine QVS report forms is shown in chart 1 below.

**Chart 1. Composition of Questionnaire Variation Study Report Forms**

(The letter C represents the standard, census format and the letter V represents the variation of the census format.)

| Form number | Variation number | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | V | C | C | V | V | C | C |
| 2 | V | C | C | C | C | C | C |
| 3 | V | V | V | C | V | V | C |
| 4 | V | V | V | V | C | V | C |
| 5 | C | C | C | V | V | C | C |
| 6 | C | C | C | C | C | C | C |
| 7 | C | V | V | C | V | V | C |
| 8 | C | V | V | V | C | V | C |
| 9 | C | C | C | C | C | C | V |

Thus, form number 6 was identical to the standard census form, and number 9 was identical to 6 except for deletion of the overall shading. With the exception of section 2 (on location of agricultural activity), which had to be modified slightly in order to fit on the page with the variant of section 1, all sections of the QVS report forms that were not specifically involved in the study were identical to the standard census report form.

The QVS report forms were printed in green ink on white paper, while regular census forms were printed in black ink on buff paper. The differences in color were designed to aid in identification of forms during census processing operations. The QVS file copies of the report forms were printed in brown ink on white paper. All forms—QVS, regular census, and file copies—had keywords and instructions printed in red ink to provide emphasis.

Associated with regular census forms were leaflet guides containing detailed definitions and instructions for respondents. Appropriately modified versions of these booklets were prepared for mailing with QVS report forms.

### Sample Selection and Preparation of Mailing Pieces

The QVS sample consisted of approximately 1 percent of the single-unit cases on the census mailing list with anticipated value of sales or expenditures between $2,500 and $500,000. (Farms with sales between these limits account for more than three-fifths of all farms in the United States and more than 80 percent of the value of farm products sold.) These measures of size were available from the administrative and other records from which the census mailing list was constructed. The lower value cutoff was necessary because cases below this cutoff were to receive short forms, while the QVS was confined to standard-length forms. The higher cutoff was chosen because it was felt that cases above this cutoff might require special handling or processing with which the QVS might interfere.

The QVS sample was selected systematically from the census list of cases within the specified cutoffs. The census mailing list was arranged in an essentially random order at the time of sample selection. From the first set of nine records so selected, and from each set of nine, thereafter, the first record was assigned to the first variant report form; the second record, to the second variant form; and so on.

In the same manner as for the standard census forms, the QVS forms were stuffed into outgoing, open-window envelopes along with postage-paid return envelopes, with file copies, and with the appropriately modified leaflet guides that were mentioned earlier. Mailing labels, showing codes that identified the type of variation assigned to each case, were then printed and affixed, through the open windows, to the appropriate forms.

### Mailing, Receipt, and Followup

All operations of mailing, of check-in of receipts, and of mail followup of nonrespondents were the same for QVS forms as for standard census forms.

Because of operational problems, an exact count of respondent-returned QVS forms is not available. However, an exact count of forms available for analysis is known, and a combination of this count with two estimates to be described below yields the figures shown in table 1. Thus, the Bureau estimates that 92.4 percent of all QVS forms, including postmaster returns, were returned by closeout of mail operations. An exact count of QVS returns is known for the time at which the fourth mail followup was conducted. At that time, 89.2 percent of the QVS forms had been returned, including postmaster returns. This compares with a census figure, for all forms in the original mailout, of 86.1 percent returned by the time of the fourth mail followup. There were no apparent differences between the return rates of the nine QVS versions nor between the seven variations.

**Table 1. QVS Forms by Type of Response**

| Type of response | Number[1] | Percent[2] |
|---|---|---|
| Total mailed out | 31,929 | 100.0 |
| Nonresponse | 2,430 | 7.6 |
| Response | 29,499 | |
| Postmaster returns | 319 | 1.0 |
| Respondent returns | 29,180 | |
| Multiple returns, QVS blank[3] | 1,554 | 4.9 |
| Available for analysis | 27,626 | |
| Unshaded forms | 3,085 | 9.7 |
| Shaded forms | 24,541 | 76.9 |

[1] Responses are estimated; see text for explanation.
[2] Because of rounding, percents do not add to 100.0
[3] In each of these cases, the respondent returned two forms or more together, at least one of which was a standard census form, and chose to make his report on the standard form, leaving all QVS forms blank.

In table 1, postmaster returns are estimated to be 1 percent of the total QVS forms mailed out because 1 percent is the percentage of all census forms that had been categorized as postmaster returns by the time of the fourth mail followup.

There is also an estimate in table 1 of the number of QVS forms that were lost to analysis because they had been returned blank along with a completed standard census form. This situation was possible because the census mailing list had not been completely unduplicated. Although respondents had been instructed, in their leaflet guides, to complete the QVS form when they received both QVS and standard census forms, they sometimes completed only the standard report form. In other cases they completed and mailed in both the QVS and the standard forms. Exact counts of the cases where such instructions were not followed were obtained for the first 12,390 QVS forms returned, and these counts were used to arrive at the estimate shown in table 1 for the entire QVS sample.

Following check-in of returned QVS forms, each return was transcribed to a standard census form. Care was taken to insure that sums of entries on QVS forms were transcribed where appropriate. The standard copies were then used throughout the regular census processing while the QVS forms were retained for analysis. These procedures had the following advantages:

1. The variant formats and entries of QVS forms would not interfere with regular census processing.

2. Analysis of the QVS forms could begin immediately after transcription rather than after the forms had passed through the lengthy census processing operations.

3. Respondents' entries on QVS forms could be analyzed before such entries were subject to amendment by the census processing staff or by the staff following up on incomplete or inconsistent information.

Table 1 shows the numbers of shaded and unshaded QVS forms separately. The processing and analysis of the unshaded forms had not been completed as of the time this report was being written. Thus, the remaining discussion and tables are confined to shaded forms only.

**Analytical Processing**

The first step in the analytical processing of QVS report forms was to assign certain basis codes. Each form was coded as to whether it was in or out of scope for analysis. This definition of "out of scope" does not correspond to the regular census definition, especially since many of the forms that were returned blank, and that therefore could not be analyzed, probably were determined during regular census followup to be associated with farming operations.

The in-scope QVS forms were further identified as to the completeness of two pieces of information considered to be necessary to the analysis: Acreage information and tenure information. The results of this coding and of the scope determination are shown in table 2 below. Thus, excluding the unshaded forms, 17,897 forms were available for analysis.

Table 2 shows the number of standard and experimental forms by whether the acreage and tenure questions (section 1 of the forms) were answered. While the difference of 3.5 percentage points between the standard and experimental forms for which this section was completed (shown on the last line of table 2) is small, it has an estimated three-standard-error confidence interval of 2.0 to 5.0 percentage points. When millions of forms are involved, it is possible that this small advantage of the experimental acreage and tenure questions over the standard questions may lead to worthwhile savings in processing time and costs. In addition, the 1.7 percentage point difference in the number of forms that were returned "essentially blank" has a three-standard-error confidence interval of 0.2 to 3.2 percentage points, which indicates an additional slight advantage in the use of the experimental acreage and tenure questions.

Each of the QVS forms available for analysis was coded as to size of farm in terms of number of acres in the place, and as to complexity of tenure—two important auxiliary variables in any subsequent analysis of covariance. The tenure classifications are

**Table 2. Comparison of Standard and Experimental Versions of Acreage and Tenure Questions, by Completeness of Information Reported**

| Completeness of information | Number of forms | | | Percent | | |
|---|---|---|---|---|---|---|
| | Total | Standard section 1 | Experimental section 1 | Total | Standard section 1[1] | Experimental section 1 |
| Total | 24,541 | 12,205 | 12,336 | 100.0 | 100.0 | 100.0 |
| Out of scope | 6,305 | 3,267 | 3,038 | | | |
| Essentially blank[2] | 5,883 | 3,028 | 2,855 | 24.0 | 24.8 | 23.1 |
| Landlord only | 422 | 239 | 183 | 1.7 | 2.0 | 1.5 |
| In scope | 18,236 | 8,938 | 9,298 | | | |
| Acreage and/or tenure not reported | 339 | 254 | 85 | 1.4 | 2.1 | 0.7 |
| Acreage and tenure reported | 17,897 | 8,684 | 9,213 | 72.9 | 71.2 | 74.7 |

[1] Because of rounding, percents do not add to 100.0
[2] Includes nonfarms other than landlord-only cases.

shown in chart 2 below. The numbers in the cells of the chart identify complexity of tenure in decreasing order. Thus, cell 1 represents the greatest complexity, and cell 8, the least.

**Chart 2. Complexity-of-Tenure Codes**

(In decreasing order of complexity, i.e., code 1 is most complex and code 8 is least complex.)

| | | Some acres owned by respondent | | |
|---|---|---|---|---|
| | | Some rented out | None rented out | No acres owned |
| Some unowned acres rented in by respondent | Some rented out | 1 | 2 | 5 |
| | None rented out | 3 | 4 | 7 |
| No unowned acres rented in | | 6 | 8 | |

The analytical processing of the bulk of the QVS forms was still under way when this report was written. That processing consisted mainly of analyses of variance and covariance of selected statistics to test the various hypotheses described previously. A number of interaction effects were to be studied.

### Preliminary Results

A subsample of approximately 800 QVS forms was selected randomly, consisting of about 100 forms of each of the 8 shaded versions, and simple tabulations of this subsample were obtained by manual tallying.

In processing the subsample, no attempt was made to analyze the interaction effects, since the sample was rather small for this. However, most of the comparisons for all farms included about 400 forms in each group being compared. In addition, most of the tabulations show results by two size classifications and by two complexity-of-tenure classifications. The breaks in these classifications were chosen so as to divide the subsample as nearly into halves as possible.

Inasmuch as the estimates presented below are complex in form, their sampling errors were not calculated. Sampling errors of all estimates computed from the full sample were to be calculated. The sampling errors on all estimates given below are undoubtedly quite large, and it is certainly possible that results obtained from the full sample in the future may reverse some of the present preliminary findings. The preliminary results are presented at this time, however, because they may be useful in the design of report forms for the next census of agriculture and because, by and large, they seem reasonable both by hypothesis and by expert knowledge of certain agricultural characteristics and practices.

Because these results are subject to large sampling errors, most of them are shown as ratios of mean values reported on the experimental versions of the report forms to mean values reported on standard versions. That is, no estimates of the level of any agricultural statistics are shown. Such statistics are available from the publications of the 1969 Census of Agriculture.

### Acreage and Tenure Questions

As shown in table 3 below, a preliminary finding was that the experimental version of the acreage and tenure questions yielded higher reports of acres-in-the-place than did the standard questions, both for small and large farms. While the 12-percent higher estimate of the experimental questions over the standard questions may well be within the limits of sampling error, the findings by complexity of tenure suggest that it is not. That is, it is quite reasonable to expect that the experimental questions would have had their greatest impact, if they had any, on respondents connected with the more complex tenure arrangements.

**Table 3. Acreage Reported in Response to Standard and Experimental Questions, by Size of Farm and Complexity of Tenure**

| Size of farm and complexity of tenure | Ratio of experimental average acres to standard average acres[1] |
|---|---|
| All farms | 1.12 |
| Size of farm | |
| Less than 220 acres | 1.22 |
| 220 acres or more | 1.17 |
| Complexity of tenure | |
| Simple tenure: Full owners, no land rented out | 1.01 |
| Complex tenure: All other cases | 1.15 |

[1] Averages are based on 464 experimental forms and 335 standard forms.

### Land-Use Questions

About all that can be said about the consistency between acres reported in the land-use questions and those reported in the acres-and-tenure questions, as shown in table 4 below, is that the best achieved consistency is not very good. This is almost certainly due to the observed very high nonresponse rates to the land-use questions, regardless of their format. The combination of the standard forms of the two sets of questions achieved the best consistency, 68.7 percent, but there is apparently no real difference between this combination and any of the others.

**Table 4. Consistency of Entries Between Acreage and Tenure Questions and Land-Use Questions for Standard and Experimental Versions**

(Percent of forms)

| Acreage and tenure questions (section 1) | Land-use questions (section 3) | | |
|---|---|---|---|
| | Total | Standard | Experimental |
| Total | 64.5 | 63.9 | 65.0 |
| Standard | 67.2 | 68.7 | 66.0 |
| Experimental | 62.5 | 60.6 | 64.2 |

### Machinery and Equipment Questions

Table 5 below indicates that the experimental addition of "none" boxes to the machinery and equipment questions appears to result in the reporting of more items of equipment for the larger farms. Since the larger farms would be expected to have the larger number of items, any experimental effect might be expected to appear for the larger farms. But the experimental effect seems to result in fewer reported items for smaller farms, so the results are difficult to interpret.

**Table 5. Machinery Reported in Response to Experimental and Standard Questions, by Size of Farm**

| Size of farm | Ratio of experimental average items of machinery to standard average items of machinery[1] |
|---|---|
| All farms | 1.14 |
| Less than 220 acres | 0.87 |
| 220 acres or more | 1.22 |

[1] Averages are based on 431 experimental forms and 368 standard forms.

### Chemicals Questions

Table 6 below shows results for the questions on expenditures for agricultural chemicals other than fertilizers. For the smaller farms, which have little custom application of chemicals, there is no difference between the two versions of the questions. For the larger farms, however, the experimental addition of a column explicitly and separately asking for the cost of application, which hypothetically leads to the proper omission of this cost from the entries on costs of chemicals alone, does indeed result in the hypothesized effect. That is, for larger farms the mean cost of chemicals, excluding the cost of application, as reported in the experimental questions is considerably below the mean cost as reported in the standard questions.

**Table 6. Expenditures for Chemicals Reported in Response to Experimental and Standard Questions, by Size of Farm**

(Farms reporting expenditures for chemicals)

| Size of farm | Ratio of experimental average expenditures for chemicals to standard average expenditures for chemicals[1] |
|---|---|
| All farms reporting expenditures for chemicals | 0.77 |
| Less than 220 acres | 0.98 |
| 220 acres or more | 0.75 |

[1] Averages are based on 166 experimental forms and 170 standard forms.

### Expense and Value Questions: Effect of One vs. Two Columns

Tables 7 and 8 below appear to indicate that the experimental use of a separate column for landlords' and contractors' shares of expense or of value of product resulted in larger dollar reports. But the results are mixed, difficult to interpret, and undoubtedly clouded by large sampling errors.

**Table 7. Production Expenses: Ratio of Average Reported on Experimental Expenditures Questions (Double Column) to Average Reported on Standard Questions (Single Column), by Size of Farm, for Farms With Landlords**

| Size of farm | Ratio of experimental average expenditures to standard average expenditures[1] |
|---|---|
| All farms with landlords | 0.98 |
| Less than 220 acres | 1.50 |
| 220 acres or more | 1.01 |

[1] Averages are based on 225 experimental forms and 170 standard forms.

**Table 8. Value of Products Reported in Response to Experimental and Standard Questions, by Size of Farm for Farms With Landlords**

| Size of farm | Ratio of experimental average value of products to standard average value of products[1] |
|---|---|
| All farms with landlords | 1.19 |
| Less than 220 acres | 1.24 |
| 220 acres or more | 1.26 |

[1] Averages are based on 225 experimental forms and 170 standard forms.

### Expense and Value Questions: Effect of Deleting Explanatory Notes

The preliminary results in tables 9 and 10 below are easier to interpret. The deletion of explanatory notes from the expenditures questions appears to increase reports from the operators of small farms. Further investigation is needed, but one might hypothesize that the expenditures questions, which appear quite formidable and complex when accompanied by explanatory notes, lead to considerable item nonresponse because of respondent fatigue or rejection of the complex, and that removing their formidable aspect by deleting many of the notes results in less of this nonresponse. This hypothesis would seem to hold for the smaller farms, whose operators might be most

subject to such an effect. On the other hand, the difference in appearance of the value-of-product questions with and without notes is trivial, and table 10 does not show the experimental effect seen in table 9.

**Table 9. Production Expenses: Ratio of Average Reported on Experimental Expenditures Questions (No Notes) to Average Reported on Standard Questions (Notes), by Size of Farm**

| Size of farm | Ratio of experimental average expenditures to standard average expenditures[1] |
|---|---|
| All farms | 1.21 |
| Less than 220 acres | 1.37 |
| 220 acres or more | 1.01 |

[1] Averages are based on 423 experimental forms and 363 standard forms.

**Table 10. Value of Products Reported in Response to Experimental and Standard Questions, by Size of Farm**

| Size of farm | Ratio of experimental average value of products to standard average value of products[1] |
|---|---|
| All farms | 1.20 |
| Less than 220 acres | 1.08 |
| 220 acres or more | 1.04 |

[1] Averages are based on 423 experimental forms and 363 standard forms.

Complete results of the analysis of the full QVS sample, including presentation and discussion of sampling errors, will be available in the future as a publication of the Bureau of the Census.

## COVERAGE CHECK[1]

### Purpose of Coverage Checks

The Bureau of the Census attempts to measure the accuracy of its statistics for all major censuses and to inform its data users of the important limitations of the statistics. The coverage check program provides an evaluation of some census of agriculture data. The primary purposes of coverage checks for the census of agriculture are as follows:

1. To provide users of census data with estimates of the completeness of the census farm counts and of a limited number of items which might affect their use of the data.

2. To identify factors associated with census errors, including characteristics of the missed farms, in order to obtain more complete coverage in future censuses.

### Earlier Coverage Checks

A coverage check or evaluation has been conducted for each census of agriculture since 1945. The basic procedure was the same for the 1969 census as for past coverage checks, but techniques have been refined and sample design improved with each census. The basic procedures have been as follows:

1. Selection of an area probability segment sample, and canvass of all farms associated with each segment, to establish a measurement base or standard.

2. A match of all farms in the base sample to the census reports and lists, to establish the relationship of the base to census.

3. Followup to check and clarify differences and to establish "true" values.

4. Processing, tabulation, analysis, and publication of results.

The use of the enumerated area sample as a measurement standard was justified on the basis of the more intensive enumeration and processing procedures that were used for the evaluation sample farms. Such procedures were not possible nationwide in the agriculture census because of the excessive cost and time that would have been involved.

Starting with the census taken in 1950 to cover 1949, the results of the coverage checks have been made widely available to users of agriculture census data. This has been done primarily through publication in the regular census of agriculture volumes. Preliminary results of the coverage checks have been made available to the Department of Agriculture as quickly as possible for use in revising current series on farm numbers, land in farms, cropland, livestock, and major crops.

### Objectives of the 1969 Census of Agriculture Coverage Check

The basic purpose of the 1969 Census of Agriculture coverage check was the same as for previous censuses. However, since the 1969 census was the first agriculture census to be enumerated by mail, some specific objectives were altered and some were added. The objectives were as follows:

1. To measure the completeness of the census farm count, including the completeness of the mailing list and the effectiveness of the census processing procedure in identifying farms on the list.

[1] For a more detailed report on the coverage check, see: U.S. Bureau of the Census. **1969 Census of Agriculture**, Volume V, **Special Reports**, Part 16, **Coverage Evaluation**. Washington, D.C., U.S. Government Printing Office, 1974.

2. To provide estimates of the completeness of the data for selected items, indicating the characteristics of farms not included in the census.

3. To evaluate the accuracy of the reporting of acres of land in farms by operators included in the census.

4. To evaluate the quality of the various administrative lists used to construct the census mail list and to provide information for improving coverage in future censuses. Special emphasis was placed upon evaluation of the contribution of the different list sources to the number of farms counted in the census, evaluation of the accuracy of the size indicators in these sources, and measurement of the duplication between sources.

**The June Enumerative Survey Sample**

The measurement base or standard used for the 1969 Census of Agriculture Coverage Check was the area sample of farms from the June 1969 Enumerative Survey conducted by the Statistical Reporting Service (SRS) of the U.S. Department of Agriculture. The use of the June survey was based upon a cooperative agreement which specified the type of survey information that could be provided and the conditions for the use of the information.

The SRS Enumerative Survey area sample is a single stage, stratified, general purpose sample of the 48 conterminous States. The stratification is geographical, based upon the intensity of agricultural operations. The sample consists of about 17,000 area segments with about 23,000 segment resident farm operators. The average size of a segment ranges from about 300 acres in areas where most of the land is under cultivation to about 4,000 acres in the range or grazing areas. Information for the June 1969 survey was collected in personal interviews by enumerators employed by the SRS.

The measurement base used for the 1969 Census of Agriculture Coverage Check did not include the entire June survey sample. The major part used was the sample of approximately 23,000 farm operators living inside the area segment for whom whole-farm data comparable to census data were available. In addition, a subsample of the 30,000 nonfarm persons living inside the segment was used to provide a supplemental estimate of census overcount. (The June survey obtained information also on farms and part-farms in the segment whose operators lived outside the segment, and on nonfarm tracts with no occupied dwellings.) The June survey information obtained for the coverage check for the 23,000 segment resident operators included district, segment, tract, name and address, name of farm or ranch, county name, telephone number, total acres in the place, acres in segment, acres by tenure, and class interval code indicating total value of 1968 sales. Information covering specific crops and livestock was not available.

In the processing of the coverage check, small operations in the June survey were reviewed to determine whether they qualified as farms under the census operational definition; those not qualifying were excluded from the measurement base. In addition, some of the cases classified as nonfarm places in the June survey were reclassified as farms during the coverage check processing operation. These cases were added to the measurement base.

The June survey, which was primarily independent of the census and of the sources used to construct the census mailing list, served as a valuable source for the evaluation sample. The sample size was relatively larger and provided greater reliability and geographic detail than was possible for previous coverage checks.

The use of the June Enumerative Survey sample as the measurement base for the 1969 Census of Agriculture Coverage Check Program provided the agriculture census with many evaluation capabilities not possible in previous censuses. The capability of establishing early evaluation results proved beneficial in the 1969 census. In addition, the sample size was sufficient to provide for examination of census coverage at the State level. An additional advantage was the reduction of respondent burden made possible through the cooperative use of data by the SRS and the Bureau of the Census.

Although greatly outweighed by advantages, there were some disadvantages in the 1969 coverage check program. Due to the limited availability of June Enumerative Survey data, it was possible to evaluate only the number of farms and land in farms. The differences between the census and the SRS in reporting dates caused some conceptual problems when ownership changes occurred during the census year. The sample of farm operators living in the segment used for the evaluation did not appear to provide completely unbiased estimate of all farms.

**Matching and Processing Operations**

The principal processing operations for the 1969 Census of Agriculture Coverage Check were as follows:

1. Receipt of June survey data from the SRS and transcription to control-match records.

2. Stage 1 matching of sample cases on name and address basis to the entire census name and address microfilm file. The sample cases were classified as matches, nonmatches, or possible matches.

3. Mailing of specially designed report forms (A90) and followup for all nonmatch and possible match cases for additional information from form A90 and the June Enumerative Survey.

4. Stage 2 matching of returned A90 forms to the census mailing list, using the additional information collected.

5. Matching to census report forms, and assignment of coverage classification codes to identify relationship to census.

6. Transcription to keying document and keying.

7. Computer consistency edit and edit review.

8. Tabulation of data.

The June survey sample data were received in the latter part of 1969 and the match with names and addresses on the census mailing list was initiated in December 1969. Specific criteria were established to define matches and possible matches. In

general, when a positive match was found, no further search continued. This is one of the factors which would contribute to an underestimate of mailing list duplication.

The coverage sample cases were also matched to about 700,000 names on the Agricultural Stabilization and Conservation Service (ASCS) list not included in the census mailing list for specified States.

The Stage 1 matching operation was completed in June 1970 and a specially designed report form (A90) was mailed to all nonmatches and possible matches in July 1970. The report form contained basic questions on land, land ownership, and operational characteristics of the farm. In addition, in order to provide additional information for matching census files, questions were asked regarding county location, changes in acres operated in 1969, alternate mail addresses, social security and EI number, type of business organization, and names and addresses of other persons associated with the operation. Report forms were mailed to about 4,200 nonmatches and 3,000 possible matches. There were three followup mailings, then interviewer followup of the final nonrespondents.

The Stage 2 matching operation was a second attempt to locate June survey farms in the census mailing list. Supplemental information on the returned A90 report forms was the primary basis for the additional search. The 7,200 nonmatches and possible matches were reduced to about 3,000 nonmatches in the Stage 2 operation. After the Stage 2 matching, census report forms were pulled and copies prepared for all matched cases. These materials were assembled and reviewed for acreage comparability and for classification in relation to the census. There were 32 coverage classification codes used to identify coverage check cases as included, overcounted, or undercounted in the census. Each of the three major classification groups had several subclasses which related to the similarity of acres, the part of the sample, or the part of the census involved. Differences in acres or reporting units were resolved primarily by telephone followup. In cases where telephone followup was not feasible, the county ASCS offices or county agricultural agents were called for acreage information. A review of the very small operations to determine qualification under the census definition of a farm, and an additional search for large farms classified as missed in the census, were also completed during this review.

Transcription of the coverage check data to a keyable format was completed in December 1971. In early 1972, the program for the computer consistency edit was completed. The purpose of the computer edit was to identify errors made during keying and review.

### Estimates of Farm Coverage

The coverage check provided estimates of three components of coverage in relation to the census. These were estimates of farms and acres (1) included in the census, (2) overcounted in the census, and (3) missed in the census. Estimates were based on resident farm and nonfarm places falling into the June Enumerative Survey Sample, reclassified on the basis of census farm definition. The estimates include all matches to census nonrespondents and do not include the effect of the census replication procedure.

The estimates indicate that the census included 85.0 percent of all farms in the conterminous United States. The coverage in North Central States was somewhat greater than in other regions. The indicated missed farm rate for the whole country was 17.6 percent and the overcount rate was 2.6 percent for a net miss rate of 15.0 percent. The net missed farm rate in the 1964 census was about 11.3. The missed farm rate was 33.3 percent for the smaller farms (value of products less than $2,500) and the overcount rate was 1.7 percent for a net missed rate of 31.6 percent. For farms with a total value of products sold of $2,500 or more, the missed farm rate was 6.5 percent and the overcount rate 3.2 percent, so the net miss rate was 3.3 percent. The net missed farm rate was considerably greater for the small farms than for large farms in 1969 as well as in earlier censuses.

The coverage check indicated that 96.7 percent of the farms with a total value of products sold of $2,500 or more were included in the 1969 census, compared to estimates of 96.7 percent in 1964 and 96.2 percent in 1959. The completeness of the 1969 census count for small farms appeared to be somewhat less than that determined for preceding censuses—only 68.4 percent of the small farms were included in the 1969 census compared to 81 percent in 1964 and 86 percent in 1959.

The coverage check estimates indicated that 76 percent of the total missed farms were not located on the mailing list and 24 percent were on the mailing list but were misclassified in processing. In 20 North Central and Western States for which the ASCS names were not used in generating the mailing list, 61 percent of the missed farms were not on the mailing list or ASCS list; 16 percent were on the ASCS list; and 23 percent were misclassified in processing. For these States, about 69 percent of the farms identified as missed were small farms.

According to the 1969 Census of Agriculture, 37 percent of the 2,730,250 farms enumerated were farms with a value of products sold of less than $2,500. These small farms had about 2 percent of the total value ($45.6 billion) of products sold for all census farms. Since the majority of the missed farms (78 percent) were small farms, the census coverage of farm production from the viewpoint of value of products sold was considerably greater than the indicated 85 percent for the farm count. (The evaluation studies completed prior to the adoption of the mail census approach had indicated that rather large undercoverage of small farms was to be expected.)

The standard error for the coverage check estimates was expected to be in the area of 2 to 6 percent at the census division level and between 1 and 2 percent at the National level. In addition to sampling error, the estimates were also subject to nonsampling error. Some of the possible sources of nonsampling errors were errors in the coverage check matching and processing procedure, response error in coverage reports, and possible bias in the measurement base.

### IRS Record Check Study of Coverage: Missed Sample Farms in Washington and Oregon

The IRS record check study was initiated in an attempt to determine reasons for the apparent great decrease between the 1964 and 1969 censuses in the number of farms counted in

Washington and Oregon. The largest decrease occurred in the "small farms" (value of products sold less than $2,500) category (see table 11).

**Table 11. 1969 and 1964 Farms by Value of Products Sold**

| State and year | Farms | | Value of products sold | | | |
|---|---|---|---|---|---|---|
| | | | Less than $2,500 | | $2,500 and over | |
| | Number | Percent change, 1964 to 1969 | Number | Percent change, 1964 to 1969 | Number | Percent change, 1964 to 1969 |
| Washington: | | | | | | |
| 1969 | 34,069 | | 12,247 | | 21,822 | |
| 1964 | 45,574 | −25.2 | 22,643 | −45.9 | 22,931 | −4.8 |
| Oregon: | | | | | | |
| 1969 | 29,068 | | 12,035 | | 17,033 | |
| 1964 | 39,757 | −26.9 | 21,772 | −44.7 | 17,985 | −5.3 |

The basis for the study was the "missed farms" group from the 1969 Census Coverage Check sample. There were originally 189 missed farms (106 in Washington and 83 in Oregon) out of 895 unweighted June survey farms in the Coverage Check sample in the two States. Preliminary estimates of census coverage for the two States are presented below in table 12.

The file of IRS Schedules 1040F and C was the source of 78 percent of the names on the census mailing list for the United States. The 189 undercounted sample farms were matched against IRS files to obtain Document Locator Number and the indication of the type of form filed. The IRS documents were reviewed along with coverage check material in an effort to determine the reason for exclusion from the census mailing list.

Most of the missed farms (86 percent) in Washington and Oregon had a value of products of less than $2,500. These farms were very small, marginal operations, and most of their products (usually livestock and hay) were probably for home use. Off-farm wages or retirement income were often reported. Apparently farm income or expenditure was too small to warrant use of the IRS 1040F. There was no indication that an appreciable number of cases in the appropriate IRS files were excluded from the census mailing list.

It was determined that about 76 percent (144 cases) of the missed farms were not included on lists obtained from IRS because the persons filing gave no clear indication of agricultural activities: About half (92 cases) had filed individual returns only. Others (10 cases) had filed business returns (Schedule 1040C) with no indication of agricultural activity. Others (42 cases) were not represented in the IRS files for 1968 or 1969.

About 8 percent of the missed farms were not on the census mailing list but should have been. About 11 percent were excluded from the census because of response or processing error. The remaining 5 percent classified as missed represent inadequacies in the matching procedure or incompleteness of information used for matching.

A mailing list source used for some of the States but not for Washington and Oregon was Agricultural Stabilization and Conservation Service (ASCS) lists. If that source had been used, the improvement in coverage would have been small. The census coverage would have been improved by 2,155 farms (4.6 percent) in Washington and 737 farms (2.9 percent) in Oregon, assuming no response or processing error, if the ASCS names had been included in the census mailing lists.

A fairly large part of the difference between the number of farms counted in the 1964 and 1969 censuses in Washington and Oregon seems to be due to inadequacies in the 1969 census mailing list for those States, with another but smaller part accounted for by response and processing error.

### Associated Census Evaluation Work

In addition to its primary purpose, the coverage check sample was used to provide early warning of problems so that remedial action could be taken before they became substantial. As an

**Table 12. Census Coverage in Washington and Oregon**

(Preliminary weighted average)

| State and coverage category | Number | Percent | Farms by value of products sold | | | |
|---|---|---|---|---|---|---|
| | | | Less than $2,500 | | $2,500 and over | |
| | | | Number | Percent | Number | Percent |
| Washington: | | | | | | |
| Counted in census | 35,271 | 74.8 | 11,714 | 51.1 | 23,557 | 97.1 |
| Overcount | 870 | 1.8 | 55 | .2 | 815 | 3.4 |
| Missed | 12,765 | 27.1 | 11,250 | 49.1 | 1,515 | 6.3 |
| Estimated total | 47,166 | 100.0 | 22,909 | 100.0 | 24,257 | 100.0 |
| Oregon: | | | | | | |
| Counted in census | 21,057 | 81.8 | 8,236 | 65.3 | 12,821 | 97.6 |
| Overcount | 850 | 3.3 | 164 | 1.3 | 686 | 5.2 |
| Missed | 5,547 | 21.5 | 4,546 | 36.0 | 1,001 | 7.6 |
| Estimated total | 25,754 | 100.0 | 12,618 | 100.0 | 13,136 | 100.0 |

example, coverage check match rates with the census list indicated that the mailing lists for the New England States and New York, Pennsylvania, New Jersey, Michigan, and Ohio should be supplemented by adding names from the ASCS lists.

The coverage check sample was also used when early review of individual census reports indicated a possibility of underreporting of soybeans and hay in the agriculture census. Census and coverage sample data were obtained for a subsample of coverage check farms in order to provide an estimate of the magnitude of the underrporting.

## THE PROCESSING SAMPLE

### General

Data reported by the respondents to the 1969 Census of Agriculture were carried through various stages of review. These stages began with assurance that the data were acceptable for data keying and ended with final corrections to the computer runs. In each stage of review, adjustments were made which may have had a measurable effect on the quality of the published statistics.

One part of the evaluation program for the 1969 Census of Agriculture is an evaluation of all the measurable effects attributed to the census processing. Also, the Bureau will attempt to isolate those stages of review for which procedural changes may reduce the time needed for data processing or may improve the quality of the data. For the purpose of this study, the returned questionnaires and records for a sample of counties will be reviewed. This evaluation program is referred to as the Processing Master Sample.

### Prior Experience

For the 1964 Census of Agriculture, counties were selected and the data on all characteristics associated with the sample counties were evaluated. The study was confined to analysis of the effect of keypunch errors, analysis of computer edit changes of data received from the respondents, and analysis of certain clerical operations.

The results of the project were useful in the design of the 1969 census report form, in the consideration of the quality of keystroke operations, in preparation of computer edit specifications, and in provision of guidelines for clerical operations. The results also led to the elimination of an intermediate level of staff for handling problems referred to them by clerks prior to professional review.

### Sample Selection

For the 1969 Processing Master Sample, 10 counties were selected for the evaluation. Selection was based on 1964 census data ranking all counties by specific agricultural characteristics. Each county selected was among the top 10 counties in at least one agricultural characteristic and among the 100 ranking counties for the greatest number of additional agricultural characteristics. The counties, with the number of farms they included and the characteristics they represented, are listed in chart 3.

**Chart 3. Counties in the Processing Sample by the Characteristics Represented**

| Characteristics (1964) | | Aroostook, Maine | Chester, Pa. | Columbia, Wis. | Polk, Minn. | Sussex, Del. | Pitt, N.C. | Hidalgo, Tex. | Maricopa, Ariz. | Kern, Calif. | Poinsett, Ark. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Value of crops sold | | * | X | | X | | | X | * | * | X |
| Irish potatoes | acres harvested | * | | | * | | | | X | | |
| | quantity harvested | * | X | | * | | X | | X | * | |
| Soybeans for bean | acres harvested | | | | | | | | | | * |
| | quantity harvested | | | | | X | | | | | * |
| Soybeans for grain | acres harvested | | | | | | | * | | | |
| | quantity harvested | | | | | | | X | X | | |
| Oats for grain | acres harvested | | | | * | | | | | | |
| | quantity harvested | X | | X | * | | | | | | |
| Sugar beets | acres harvested | | | | * | | | | | X | |
| | quantity harvested | | | | X | | | | | * | |
| Dry beans | acres harvested | | | | | | | | | X | |
| Cotton | acres harvested | | | | | | | X | * | * | X |
| | quantity harvested | | | | | | | X | * | * | X |
| Tobacco | acres harvested | | | | | | * | | | | |
| | quantity harvested | | | | | | * | | | | |
| Rice | acres harvested | | | | | | | | | | X |
| | quantity harvested | | | | | | | | | | X |
| Vegetables | acres harvested | X | | X | | X | | * | * | | |
| | value sold | | | X | | X | | X | * | X | |
| Alfalfa for hay | acres harvested | | | | X | | | | * | * | |
| | quantity harvested | | | | | | | | * | * | |
| Clovers and mixtures for hay | acres harvested | X | | | | | | | | | |
| | quantity harvested | X | | | | | | | | X | |

**Chart 3. Counties in the Processing Sample by the Characteristics Represented—Continued**

| Characteristics (1964) | Aroostook, Maine | Chester, Pa. | Columbia, Wis. | Polk, Minn. | Sussex, Del. | Pitt, N.C. | Hidalgo, Tex. | Maricopa, Ariz. | Kern, Calif. | Poinsett, Ark. |
|---|---|---|---|---|---|---|---|---|---|---|
| Value of agriculture products sold | | * | | | | | | X | X | |
| Value of forest products sold | X | | | | | | | | | |
| Land from which crops were harvested | | | | * | | | X | X | * | |
| Fruits, nuts, and berries ... acres harvested | | | | | | | X | * | * | |
| value sold | | | | | | | X | X | X | |
| Oranges ... trees of all ages | | | | | | | * | X | X | |
| quantity harvested | | | | | | | X | X | | |
| Peaches ... trees of all ages | | | | | X | | | | X | |
| quantity harvested | | | | | | | | | X | |
| Pears ... trees of all ages | | | | | | | | | X | |
| quantity harvested | | | | | | | | | X | |
| Plums and prunes ... trees of all ages | | | | | | | | | X | |
| quantity harvested | | | | | | | | | X | |
| Grapefruit ... trees of all ages | | | | | | | * | * | | |
| quantity harvested | | | | | | | X | * | | |
| Grapes ... vines of all ages | | | | | | | | X | * | |
| quantity harvested | | | | | | | | X | * | |
| Peanuts ... acres harvested | | | | | | X | | | | |
| quantity harvested | | | | | | X | | | | |
| Value of all livestock and livestock products sold | | | | | X | | | * | * | |
| Value of all livestock and livestock products | | | | | | | | * | * | |
| Sold other than poultry and dairy products sold | | | | | | | | * | * | |
| Cattle and calves ... number on farm | | | | | | | | * | * | |
| number sold | | | | | | | | * | * | |
| value sold | | | | | | | | * | * | |
| Number of fattened cattle sold for slaughter | | | | | X | | | * | * | |
| Number of cows and heifers that have calved | | | | | | | | X | X | |
| Number of cows other than milk cows | | | | | | | | | X | |
| Number of milking cows on farm | | X | X | | | | | X | | |
| Value of dairy products sold | | X | | | | | | * | | |
| Quantity of whole milk sold | | X | X | | | | | * | | |
| Number of sheep and lambs on farm | | | | | | | | X | * | |
| Number of ewes 1 year or older | | | | | | | | * | | |
| Value of poultry and poultry products sold | | | | | * | | | | | |
| Broilers and other meat-type chickens sold for slaughter | | | | | * | | | | | |
| Dozens of chicken eggs sold | | | | | | | | | X | |
| Turkeys ... number raised | | | | | X | | | | | |
| hens kept for breeding | | | | | | | | | * | |
| Number of farms in county (1964) | 2,153 | 2,016 | 1,859 | 2,361 | 2,121 | 2,174 | 4,124 | 1,888 | 1,712 | 1,042 |

*County was in top 10 for characteristics. X County was in top 100 for characteristics.

The counties were purposively selected and are not representative of the United States. Therefore, neither national nor regional estimates reflecting the quality of census processing will be made.

## Plans

In the evaluation, the Bureau plans to measure the quantitative changes in both magnitude and direction for each set of data provided by the respondent that incurred an adjustment in one or more review stages of the census processing. Each characteristic for which there was an adjustment to the data will be identified.

The processing stages to be evaluated are (1) review prior to data keying, (2) review of data keying, (3) review of the computer processing, and (4) professional review of the tabulations.

**Review prior to data keying**—Prior to data keying, data adjustments might have been performed as a result of review by a clerical editor, a verifier, the agriculture support group, an analyst, or a correspondence clerk. Data adjustments to one respondent's set of data might have been performed by one or more of these reviewers prior to data keying. Changes made on the census report forms were color coded by type of reviewer so that each data adjustment could be traced back to its author.

The review stages prior to data keying will be treated in the evaluation program as five substages of review, and measures of quantitative differences between substages will be obtained. In addition, an analysis of the types of actions taken to adjust the data (e.g., deletion of cents, resolution of multiple entries, etc.) will be identified for each reviewer in the five substages.

**Data keying**—At the data-keying stage, changes in the data adjustments could occur as a result of keying errors. Sample verification was performed for quality control of data keying, and as a result some errors which would have been caught by 100-percent verification might have remained. In order to measure the quantitative deviations resulting from keying errors, a "perfect" file, that is, a data file free of all recognizable keying errors, will be created. The regular production file keyed for the 1969 Census of Agriculture will be used as the basis for creating the perfect file. Comparison of the perfect file with the census production file will provide an evaluation of the effects of keying errors on the data.

**Computer processing and professional review**—There were one or more computer processing reviews to which a set of data could be subjected. A primary computer review, to which all sets of data were subjected, was known as a "batch edit." A batch edit was a computer review of all data received before a certain cutoff date during data processing. The data for most counties were reviewed in one or more batch edits. If the set of data met the requirements of the batch edit, it was accepted and readied for preliminary tabulation. If rejected, the set of data moved to the fourth stage of review, the professional review. Following professional data adjustments, the set of data was subjected to a second computer review, called the correction edit. The correction edit had basically the same edit specifications as the batch edit, but the review now was concerned with the set of data in which some data had been adjusted.

Preliminary tabulations of all data sets followed the correction edit, after which there was another opportunity for data adjustments by the professional reviewers. Those sets of data containing data adjustment were then subjected to a diary edit that had basically the same edit specifications as the previous edit. Again, sets of data unaccepted by diary edit were professionally reviewed.

Final tabulations were created by summarizing the data into county and State data. Any data adjustment following final tabulations were not traced back to a particular respondent, and consisted only of county or State data adjustment by professional reviewers. This was the final review stage prior to publication.