Appendix C.
Statistical Methodology

THE SCREENING PHASE AND THE MAIL LIST MODEL

The 1997 Census of Agriculture featured a pre-census screening phase that surveyed selected records, by mail or telephone, for presence or absence of agricultural activity. Records selected for screening had a low probability of qualifying as farms. All records responding to the screener and reporting no agricultural activity were removed from the census mail list. Eliminating nonfarm records from the mail list reduced respondent burden and data collection costs.

The screening phase included nearly 500,000 records. Records were selected for screening using one of the following criteria:

1) Records on selected agriculture specialty lists that had no other list source,

2) Records identified by a mail list model as having a low probability of being a farm.

A mail list model predicted the probability that an addressee on the 1997 preliminary census mail list operated a farm. The model defined groups based on combinations of characteristics such as source(s) of the mail list record, expected value of agricultural production, and geographic location. Farm proportions were estimated for these groups by calculating the proportion of 1992 census respondent records that were farms which exhibited the characteristics defined by the group. This proportion, also called the in-scope rate, provided an estimate of the probability that an addressee in the group operated a farm.

Each address record on the 1997 preliminary census mail list was assigned to a model group by matching record characteristics to model group characteristics. Records belonging to the groups with the highest farm probability were those more likely to be farms. Records with a farm probability of approximately 30 percent or less were selected for screening, along with records included on selected agriculture specialty lists as noted above.

Before screening, the preliminary census mail list consisted of 3,314,790 records. There were 478,298 records selected for screening. Of these, 125,570 records were determined to be nonfarms as a result of the screening phase and were removed. These records were removed from the final census mail list. The remaining 3,189,220 records received census report forms.

CENSUS SAMPLE DESIGN

All name and address records on the final census mail list were designated to receive a 1997 Census of Agriculture report form. Two different types of census report forms, sample and nonsample, were used to collect data. Sections 1 through 20 and 28 through 32 of the sample form were identical to sections on the nonsample census form. Sample form sections 21 through 27 contained additional questions on usage of fertilizers and chemicals, farm production expenditures, value of machinery and equipment, value of land and buildings, farm-related income, and hired workers. There were 11 regional versions of the nonsample form and 13 regional versions of the sample form with listings of crops varying by region. These different forms were used to reduce the response burden of the census, while providing reliable information on a large number of data items.

The sample form was mailed to all mail list records in Alaska, Hawaii, and Rhode Island and to a sample of records in other States selected from the final mail list. Mail list records were selected into the sample with certainty if they (1) were expected to have large total value of agricultural products sold or large acreage, (2) were multi-unit operations (i.e., separate farms producing under one company organization), (3) were in a county with less than 100 farms in 1992, or (4) had other special characteristics. Farms with special characteristics were abnormal farms, such as institutional farms, experimental and research farms, and Indian reservations. Mail list records in counties containing 100 to 199 farms in 1992 were systematically sampled at a rate of 1 in 2; records in counties containing 200 to 299 farms in 1992 were systematically sampled at a rate of 1 in 4; and records in counties containing 300 or more farms in 1992 were systematically sampled at a rate of 1 in 6. The remaining mail list records not chosen to receive the sample form received the nonsample census form. This differential sampling scheme was used to provide reliable data for the sample sections of the report form for all counties.

EDITING DATA AND IMPUTATION FOR ITEM NONRESPONSE

The census of agriculture complex edit and imputation system is an automated computerized system that performed the following functions:

- Ensured reasonable relationships between/among data items, values for various sizes of farms, combinations of commodities, and economic interactions.
- Ensured necessary consistencies were present (there were more than 70 distinct consistency requirements).
- Ensured climatic, geographic, legal, and physical constraints were met.

The system performed these and similar functions for more than 900 data key codes for sample records and approximately 850 data key codes for nonsample records.

For the 1997 Census of Agriculture, as in previous censuses, all reported data were keyed and then edited by computer. The edits were used to determine whether the reports met the minimum criteria to be counted as farms in the census. The complex edit and imputation system provided the basis for deciding to accept, impute (supply), delete, or alter the reported value for each data record item.

Whenever possible, edit imputations, deletions, and changes were based on component or related data on the respondent's report form. For some items, such as operator characteristics, data for that record from the previous census were used when available. Values for other missing or unacceptable reported data items were calculated based on reported quantities and known fixed price parameters.

When these and similar methods were not available and values had to be supplied, the imputation process used information reported for another farm operation in a geographically adjacent area with characteristics similar to those of the farm operation with incomplete data. For example, a farm operation that reported acres of corn harvested, but did not report quantity of corn harvested, was assigned the same bushels of corn per acre harvested as that of the last nearby farm with similar characteristics that reported acceptable yields during that particular execution of the computer edit. The imputation for missing items in each section of the report form was conducted separately; thus, assigned values for one operation could come from more than one respondent.

Prior to the imputation operation, a set of default values and relationships was assigned to the possible imputation variables. The relationships and values varied depending on the item being imputed. For example, different default values were assigned for several Standard Industrial Classifications and total value of sales categories when imputing hired farm labor expenses. These values and item relationships for the possible imputation variables were stored in the computer in a series of matrices.

Each execution of the computer edit consisted of records from only one State sorted by reported State and county. For a given execution of the edit, the stored entries in the various matrices were retained in memory only until a succeeding record having acceptable characteristics for the same sections of the report form was processed by the computer. Then the acceptable responses of the succeeding operation replaced those previously stored. When a record processed through the edit had unreported or unacceptable data, the record was assigned the last acceptable ratio or response from an operation with a similar set of characteristics. Once each execution of the computer edit for a State was completed, the possible imputation variables were reset to the default values and relationships for subsequent executions. An edit run usually consisted of 10,000 or more records.

After the initial computer edit, all keyed reports not meeting the census farm definition were reviewed to ensure that the data had been keyed correctly. Edit referrals were generated for 17 percent of the reports included as farms; they were reviewed for keying accuracy and to ensure that the computer edit actions were correct. If the results of the computer edit were not acceptable, corrections were made and the record re-edited.

CENSUS ESTIMATION

The 1997 Census of Agriculture used two types of statistical estimation procedures to account for whole farm nonresponse and sample data collection. Since the sample form was mailed to all mail list records in Hawaii, only the procedure associated with whole farm nonresponse is discussed in this State publication. The procedure was necessary because some farm operators did not respond to the census despite numerous attempts to contact them.

Whole Farm Nonresponse Estimation

Whole farm nonresponse to the census occurred when a response was never received for a record. If the record was a large farm, as defined by value of production or acreage, or a unique farm operation, intensive telephone or personal followup was conducted during census processing to obtain a response. If these attempts failed, either the NASS survey database, the census historic database, or other more current sources were used to impute data for the record.

During mail list development, the State Statistical Offices (SSOs), in an effort to reduce respondent burden, identified records that participated in multiple NASS surveys and/or situations where there were special reporting relationships between an enumerator and a respondent. These records were referred to as tagged records. The SSOs had full responsibility for the data collection for these records, including imputation of data for the record if a response was not obtainable.

Whole farm nonresponse that occurred within the remaining universe of records was accounted for by a statistical weighting procedure. The weights of the responding farms were adjusted to account for farms that did not respond. The information needed for this process was obtained from the 1997 Nonresponse Survey. The SSOs conducted the nonresponse survey using computer-assisted telephone interviewing (Blaise-CATI) or personal enumeration when

telephone contact was not possible. Alaska and Rhode Island were not eligible for the survey because all nonrespondents were subject to extensive followup. In these cases, data were collected by telephone or other methods. The nonresponse survey collected information from a sample of census nonrespondents to determine farm status and estimate the proportion of farms in the nonresponse universe. The information was then used to estimate the number of nonresponding farm operations by State and county.

The 1997 Nonresponse Survey consisted of a stratified systematic sample of the nonresponse records within each State. The sample was selected near the end of the census follow-up operations. Five strata were defined to be homogeneous on probability of farm status and were based on screener status, total value produced, and list source(s) of the mail list record.

Based on survey results, estimates of the proportion of census nonrespondents operating farms were made for each stratum in the State. The estimates were applied to the total number of census nonrespondents in that stratum, providing a State estimate of the number of census nonrespondents that operated farms. The number of census nonrespondents that operated farms was then derived for each county by stratum. This estimation procedure assumed that the distribution of farms in a stratum by county was the same for census nonrespondents as for census respondents.

Within each stratum in a county, a noninteger nonresponse weight was calculated and assigned to each eligible respondent farm record. Census respondent farms that were designated as large farms or tagged records or as farms that exhibited ''rare'' commodities were ineligible to represent nonrespondent farms and were excluded from the nonresponse weighting procedure. These records were assigned nonresponse weights of 1.0.

The noninteger nonresponse weight is the ratio of the sum of the estimated number of nonrespondent farms from the nonresponse survey and the number of eligible census respondent farms, divided by the number of eligible census respondent farms. Stratum controls were established to ensure that this weight never exceeded 2.0. For the published tabulations of the complete count items, the noninteger nonresponse weight was randomly rounded to an integer weight of either 1 or 2 for each record. For the sample count items, the noninteger nonresponse weight was used in the calculation of the final sample weight.

Table A quantifies the effect of the nonresponse estimation procedure on selected census data items. The percentages in this table are percents of the census values contributed by nonresponse estimation. These indicate the potential for bias in published figures resulting from nonresponse to the census. The estimates provided in this table do not reflect the effect of item nonresponse to individual census data items. The effect of this item nonresponse is discussed in the ''Census Nonsampling Error'' section.

CENSUS SAMPLING ERROR

The sample for the 1997 Census of Agriculture was only one of a large number of possible samples of the same size that could have been selected using the same sample design. In this context, ''sample'' refers to the sample for both the nonresponse survey and the selection of farms to receive sample forms. In Hawaii, sampling error in the census data results only from the nonresponse sample.

The standard error, or sampling error, of a survey estimate is a measure of the variation among the estimates from all possible samples. It is a measure of precision - that is, how well an estimate from a particular sample approximates the true population parameter. The percent relative standard error of an estimate is defined as the standard error of the estimate divided by the value of the estimate, then multiplied by 100. The true population parameter can be defined or conceptualized several different ways. One way is to think of the true population parameter as the average result of all possible samples (selected using a given sample design). A second way is to think of the true population parameter as the figure obtained from carrying out a complete enumeration of the population.

If all possible samples were selected, each of the samples surveyed under essentially the same conditions, and an estimate and its standard error calculated from each sample, then:

1. Approximately 90 percent of the intervals from 1.65 standard errors below the estimate to 1.65 standard errors above the estimate would include the true population parameter.

2. Approximately 95 percent of the intervals from 1.96 standard errors below the estimate to 1.96 standard errors above the estimate would include the true population parameter.

The following example illustrates the computations necessary to produce a confidence statement for an estimate. Assume that the estimate of number of farms for a State is 94,382 and the relative standard error of the estimate is 0.1 percent (0.001). Multiplying 94,382 by 0.001 yields 94, the standard error; therefore, a 90-percent confidence interval is 94,227 to 94,537 (i.e., 94,382 plus or minus 1.65 x 94). If corresponding confidence intervals were constructed for all possible samples of the same size and design, approximately 90 percent of these intervals would contain the true population parameter. Similarly, a 95-percent confidence interval is 94,198 to 94,566 (i.e., 94,382 plus or minus 1.96 x 94).

Census items were classified as either complete count or sample count items. All farm operators were asked the complete count items. Examples of complete count items were: land in farms, harvested cropland, livestock inventory and sales, crop acreage, quantities harvested and crop sales, land use, irrigation, government loans and payments, conservation acreage, type of organization, and operator characteristics.

Only a sample of farm operators were asked the sample count items. These items appeared only in sections 21 through 27 of the sample form. Sample count items were included under the following section headings: commercial fertilizers, chemicals, production expenses, farm machinery and equipment, value of land and buildings, farm-related income, and hired workers.

Variability in the estimates of complete count items was due only to the nonresponse survey estimation procedure. With regard to the estimates of sample count items, variability was due to both the nonresponse survey estimation procedure and the census sample selection and estimation procedure. Therefore, variability in the sample count item estimates tends to be larger than the variability in the complete count item estimates. Percent relative standard error is a common measure of variability.

Table B provides the generalized reliability estimates of the estimated number of farms in a county that reported complete count and sample count items. The top half of the table shows the percent relative standard errors for estimated number of farms in a county that reported a complete count item, and the bottom half relates to sample count items. These reliability estimates are derived from regression equations. Separate regression equations were used to produce each section of table B. Each regression equation was fit with the estimated number of farms in a county reporting an item as the independent variable and the relative variance of that estimate as the dependent variable for the appropriate counties in the State. To illustrate the use of this table, assume that the estimate of the number of farms reporting hogs and pigs for a particular county, as given in county table 15, is 89. Since hogs and pigs is a complete count data item, refer to the first part of table B and use the estimated percent relative standard error of the estimate from the row with farm count equal to or just less than the estimated number of farms, 89. For this example, the percent relative standard error of the estimate comes from the row for 75 farms reporting. For sample count items, follow the same procedure using the second part of table B. Since in Hawaii all mail list records received the sample form, both parts of the table reflect only variability from the nonresponse survey for the items of interest.

Table C presents the percent relative standard error of selected State data items for all farms, and table D presents the percent relative standard error of selected State data items for all farms with sales of $10,000 or more.

Table E presents the standard error for percent change in State totals from 1992 to 1997. The general purpose of the percent change estimate is to provide a relative measure of the difference in a characteristic between censuses. The relative change for a given characteristic is defined as the ratio of the difference of the 1997 and the 1992 estimate for that characteristic to the 1992 estimate. This ratio is multiplied by 100 to obtain the percent change. The standard error of a percent change estimate is the standard error of the ratio multiplied by 100.

Table F presents the percent relative standard error for State and county totals for selected data items. The percent relative standard error of the estimate for the same item differs among counties in the State. Reasons for this are differences among counties in the (1) total number of farms, (2) number of large farms included with certainty, (3) size classifications of the farms sampled, (4) amount of nonresponse, (5) general agricultural characteristics, and (6) specific characteristic being measured.

For most of the tables in this appendix, and also many of the tables throughout the publication, there is a footnote that reads ''Data are based on a sample of farms.'' The table entries that this footnote relate to are estimates of totals. To illustrate, suppose that the entry ''other farm-related income'' is shown with this footnote and has some number of farms given. This number given would represent an estimated total number of farms with ''other farm-related income,'' based on the farms that were in the sample. This number should not be interpreted as the number of farms in the sample that have ''other farm-related income.'' Hawaii is considered a special case since all mail list records in the State received the sample form. Thus, the sample of farms receiving the sample form actually represent a 100 percent sample.

CENSUS NONSAMPLING ERROR

The accuracy of the census counts is affected jointly by sampling errors (described in the previous section) and nonsampling errors. Extensive efforts were made to compile a complete and accurate mail list for the census, to design an understandable report form with instructions, and to minimize processing errors through the use of quality control measures. Nonsampling errors arise from many sources, including respondent or enumerator error or incorrect data keying, editing, or imputing for missing data. Another source of nonsampling error is referred to as coverage error. This source results from mail list incompleteness and duplication as well as misclassification of records on the mail list. Coverage evaluation were conducted in all States except Alaska and Hawaii. Thus, coverage evaluation results are not discussed in this State publication. The subsections below briefly address some other sources of nonsampling error.

Respondent and Enumerator Error

Incorrect or incomplete responses to the census report form or to the questions posed by an enumerator can introduce error into the census data. To reduce reporting error, detailed instructions for completing the report form were provided to each respondent. Questions were phrased as clearly as possible based on previous tests of the report form. In addition, each respondent's answers were checked for completeness and consistency by the complex edit and imputation system.

Item Nonresponse

As information flowed from data collection to tabulation, various types of item nonresponses were identified on the

census report forms. Nonresponse to particular questions on the census report form that logically should have been present created a type of nonsampling error in both complete count and sample count data. In this case, information from a similar farm was used to impute for these missing data items. The resulting data may have been biased if the characteristics of the nonreporting respondents were different from those of reporting respondents for those items.

Processing Error

All phases of processing for each census report form were potential sources for the introduction of nonsampling error. An automated check-in recorded that the report had been returned and excluded from further followup mailings. Approximately one-third of the mail returns were reviewed to resolve questions dealing with multiple reports, respondent remarks, or no reported data. The remaining mail returns (about two-thirds) were batched and sent directly to data keying, along with some of the reviewed cases containing farm data. Keyed records were transmitted, formatted, and run through the complex edit and imputation system. About one-fifth of all forms edited were clerically reviewed for inconsistencies, omissions, or questionable values. While reviewing these forms, the edit review staff determined if the action taken by the computer edit and imputation system was correct. Edited records were tabulated to the county level. Each county was reviewed and, when necessary, individual records were corrected prior to publication.

Developing accurate processing methods is complicated by the complex structure of agriculture. Among the complexities are the many places to be included, the variety of arrangements under which farms are operated, the continuing changes in the relationship of operators to the farm operated, the expiration of leases and the initiation or renewal of leases, the problem of obtaining a complete list of agriculture operations, the difficulty of contacting and identifying some types of contractor/contractee relationships, the operator's absence from the farm during the data collection period, and the operator's opinion that part or all of the operation does not qualify and should not be included in the census. During data collection and processing of the census, all operations underwent a number of quality control checks to ensure as accurate an application as possible.

Table A. Percent of State Totals Contributed by Whole Farm Nonresponse Estimation: 1997

Item	Percent of total	Item	Percent of total
Farms ..... number..	14.4	Corn for grain or seed ..... acres..	–
Land in farms ..... acres..	1.3	Wheat for grain ..... acres..	–
Estimated market value of land and buildings ..... $1,000..	5.4	Livestock and poultry inventory:	
Market value of agricultural products sold ..... $1,000..	2.0	Cattle and calves..... number..	2.4
Harvested cropland..... acres..	2.5	Hogs and pigs ..... number..	10.8
		Layers 20 weeks old and older..... number..	.1

Table B. Reliability Estimates for Number of Farms in a County Reporting a Complete Count Item or Sample Count Item: 1997

Farms	Relative standard error of estimate (percent)	Farms	Relative standard error of estimate (percent)
COMPLETE COUNT ITEM		SAMPLE COUNT ITEM	
Number of farms reporting:		Number of farms reporting:	
25	5.9	25	5.4
50	4.3	50	4.0
75	3.6	75	3.4
100	3.2	100	3.1
150	2.7	150	2.8
200	2.5	200	2.5
300	2.2	300	2.3
500	1.9	500	2.1
750	1.8	750	2.0
1,000.....	1.7	1,000.....	2.0
1,500.....	1.6	1,500.....	1.9
2,000.....	1.6	2,000.....	1.9

Table C. **Reliability Estimates of State Totals for All Farms: 1997**

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Relative standard error of estimate (percent)
FARMS AND LAND IN FARMS		
Farms ..... number..	5 473	.7
Land in farms ..... acres..	1 439 071	.1
Average size of farm ..... acres..	263	.8
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD		
Total sales (see text) ..... farms..	5 473	.7
$1,000..	496 935	.1
Average per farm ..... dollars..	90 798	.8
Farms by value of sales:		
Less than $1,000 (see text) ..... farms..	816	1.6
$1,000..	189	2.3
$1,000 to $2,499 ..... farms..	822	1.5
$1,000..	1 336	1.6
$2,500 to $4,999 ..... farms..	743	1.5
$1,000..	2 628	1.5
$5,000 to $9,999 ..... farms..	797	1.4
$1,000..	5 635	1.4
$10,000 to $19,999 ..... farms..	764	1.4
$1,000..	10 658	1.4
$20,000 to $24,999 ..... farms..	225	2.3
$1,000..	4 890	2.3
$25,000 to $39,999 ..... farms..	383	1.7
$1,000..	11 745	1.7
$40,000 to $49,999 ..... farms..	152	2.7
$1,000..	6 570	2.7
$50,000 to $99,999 ..... farms..	323	1.7
$1,000..	21 637	1.7
$100,000 to $249,999 ..... farms..	229	–
$1,000..	34 613	–
$250,000 to $499,999 ..... farms..	105	–
$1,000..	35 956	–
$500,000 or more ..... farms..	114	–
$1,000..	361 078	–
Sales by commodity or commodity group:		
Crops, including nursery and greenhouse crops ..... farms..	4 208	.7
$1,000..	401 411	.1
Grains ..... farms..	–	–
$1,000..	–	–
Corn for grain ..... farms..	–	–
$1,000..	–	–
Wheat ..... farms..	–	–
$1,000..	–	–
Soybeans ..... farms..	–	–
$1,000..	–	–
Sorghum for grain ..... farms..	–	–
$1,000..	–	–
Barley ..... farms..	–	–
$1,000..	–	–
Oats ..... farms..	–	–
$1,000..	–	–
Other grains ..... farms..	–	–
$1,000..	–	–
Cotton and cottonseed ..... farms..	–	–
$1,000..	–	–
Tobacco ..... farms..	–	–
$1,000..	–	–
Hay, silage, and field seeds ..... farms..	7	10.8
$1,000..	797	3.2
Vegetables, sweet corn, and melons ..... farms..	656	1.3
$1,000..	33 702	.5
Fruits, nuts, and berries ..... farms..	2 248	.9
$1,000..	174 573	.2
Nursery and greenhouse crops ..... farms..	1 428	1.0
$1,000..	83 159	.3
Other crops ..... farms..	432	1.5
$1,000..	109 180	.1
Livestock, poultry, and their products ..... farms..	1 054	1.2
$1,000..	95 524	.1
Poultry and poultry products ..... farms..	90	3.3
$1,000..	17 999	.1
Dairy products ..... farms..	16	–
$1,000..	29 058	–
Cattle and calves ..... farms..	660	1.4
$1,000..	27 895	.3
Hogs and pigs ..... farms..	190	2.5
$1,000..	6 336	1.1
Sheep, lambs, and wool ..... farms..	54	4.6
$1,000..	139	6.7
Other livestock and livestock products (see text) ..... farms..	231	2.1
$1,000..	14 097	.4
Value of agricultural products sold directly to individuals for human consumption (see text) ..... farms..	525	1.5
$1,000..	4 586	1.3

Item	Total	Relative standard error of estimate (percent)
FARM PRODUCTION EXPENSES[1]		
Total farm production expenses ..... farms..	5 471	.9
$1,000..	398 567	.1
Average per farm ..... dollars..	72 851	.9
Livestock and poultry purchased ..... farms..	479	1.6
$1,000..	6 471	.5
Feed for livestock and poultry ..... farms..	845	1.3
$1,000..	35 749	.2
Commercially mixed formula feeds ..... farms..	468	1.6
$1,000..	22 850	.2
Seeds, bulbs, plants, and trees ..... farms..	1 508	1.0
$1,000..	10 348	.2
Commercial fertilizer ..... farms..	4 051	.9
$1,000..	25 653	.2
Agricultural chemicals ..... farms..	3 834	.9
$1,000..	17 187	.2
Petroleum products ..... farms..	5 055	.9
$1,000..	16 335	.3
Electricity ..... farms..	2 067	.9
$1,000..	8 810	.2
Hired farm labor ..... farms..	1 652	.9
$1,000..	150 682	.1
Contract labor ..... farms..	679	1.3
$1,000..	4 881	1.0
Repair and maintenance ..... farms..	4 020	.8
$1,000..	31 918	.2
Customwork, machine hire, and rental of machinery and equipment ..... farms..	738	1.3
$1,000..	2 718	.6
Interest ..... farms..	1 036	1.0
$1,000..	13 964	.5
Secured by real estate ..... farms..	598	1.3
$1,000..	7 665	.9
Not secured by real estate ..... farms..	523	1.2
$1,000..	6 299	.3
Cash rent ..... farms..	1 620	1.0
$1,000..	11 923	.4
Property taxes ..... farms..	4 166	.9
$1,000..	5 196	.8
All other farm production expenses ..... farms..	4 841	.8
$1,000..	56 733	.2
NET CASH RETURN FROM AGRICULTURAL SALES FOR THE FARM UNIT (SEE TEXT)[1]		
All farms ..... number..	5 473	.9
$1,000..	98 368	.3
Average per farm ..... dollars..	17 973	.9
Farms with net gains[2] ..... number..	3 449	.9
$1,000..	132 843	.2
Average net gain ..... dollars..	38 517	.9
Farms with net losses ..... number..	2 024	1.2
$1,000..	34 476	.4
Average net loss ..... dollars..	17 033	1.2
GOVERNMENT PAYMENTS AND OTHER FARM-RELATED INCOME		
Government payments ..... farms..	116	2.6
$1,000..	625	2.2
Other farm-related income[1] ..... farms..	415	1.7
$1,000..	4 170	1.5
Customwork and other agricultural services ..... farms..	213	2.4
$1,000..	1 688	3.3
Gross cash rent or share payments ..... farms..	140	2.5
$1,000..	2 063	.7
Forest products, excluding Christmas trees and maple products ..... farms..	25	6.6
$1,000..	190	7.2
Other farm-related income sources ..... farms..	67	3.4
$1,000..	229	3.8
COMMODITY CREDIT CORPORATION LOANS		
Total ..... farms..	–	–
$1,000..	–	–

See footnotes at end of table.

Table C. **Reliability Estimates of State Totals for All Farms: 1997**—Con.

[For meaning of abbreviations and symbols, see introductory text]

Item		Total	Relative standard error of estimate (percent)
LAND IN FARMS ACCORDING TO USE			
Total cropland	farms	4 882	.8
	acres	292 107	.3
Harvested cropland	farms	4 594	.8
	acres	100 094	.2
Farms by acres harvested:			
1 to 9 acres	farms	3 980	.8
	acres	11 270	.8
10 to 19 acres	farms	370	1.6
	acres	4 711	1.6
20 to 29 acres	farms	87	2.5
	acres	(D)	(D)
30 to 49 acres	farms	59	2.6
	acres	2 158	2.7
50 to 99 acres	farms	44	2.4
	acres	2 879	2.5
100 to 199 acres	farms	19	2.0
	acres	2 325	1.6
200 to 499 acres	farms	18	–
	acres	5 846	–
500 to 999 acres	farms	2	–
	acres	(D)	(D)
1,000 acres or more	farms	15	–
	acres	67 461	–
Cropland:			
Pasture or grazing only	farms	501	1.6
	acres	41 834	1.8
Other cropland	farms	1 052	1.1
	acres	150 179	.1
Total woodland	farms	213	2.3
	acres	108 704	.2
Pastureland and rangeland other than cropland and woodland pastured	farms	688	1.4
	acres	898 737	.2
Land in house lots, ponds, roads, wasteland, etc.	farms	2 224	.9
	acres	139 523	.3
Irrigated land	farms	2 241	.8
	acres	76 971	.2
Acres irrigated:			
1 to 9 acres	farms	1 982	.9
	acres	4 675	1.0
10 to 49 acres	farms	201	1.6
	acres	3 559	1.4
50 to 99 acres	farms	20	1.6
	acres	(D)	(D)
100 to 199 acres	farms	11	–
	acres	1 315	–
200 to 499 acres	farms	11	–
	acres	3 639	–
500 to 999 acres	farms	3	9.2
	acres	(D)	(D)
1,000 acres or more	farms	13	–
	acres	60 530	–
Harvested cropland irrigated	farms	2 181	.8
	acres	70 442	.1
Pasture and other land irrigated	farms	124	2.8
	acres	6 529	2.1
Land under Conservation Reserve or Wetlands Reserve Programs	farms	–	–
	acres	–	–
VALUE OF LAND AND BUILDINGS[1]			
Estimated market value of land and buildings	farms	5 473	.9
	$1,000	3 460 472	.4
Average per farm	dollars	632 281	.9
Average per acre	dollars	2 405	.4
VALUE OF MACHINERY AND EQUIPMENT[1]			
Estimated market value of all machinery and equipment	farms	5 471	.9
	$1,000	211 775	.4
Average per farm	dollars	38 709	1.0
AGRICULTURAL CHEMICALS[1]			
Commercial fertilizer	farms	3 974	.9
	acres on which used	133 927	.2

Item		Total	Relative standard error of estimate (percent)
TENURE OF OPERATOR			
All operators	farms	5 473	.7
	acres	1 439 071	.1
Full owners	farms	2 980	.9
	acres	222 410	.3
Part owners	farms	707	1.1
	acres	992 075	.1
Tenants	farms	1 786	.9
	acres	224 586	.6
OWNED AND RENTED LAND			
Land owned	farms	3 695	.8
	acres	795 982	.1
Owned land in farms	farms	3 687	.8
	acres	727 864	.1
Land rented or leased from others	farms	2 504	.8
	acres	728 191	.2
	landlords	3 571	.8
Rented or leased land in farms	farms	2 493	.8
	acres	711 207	.2
Land rented or leased to others	farms	230	1.9
	acres	85 102	.5
OPERATOR CHARACTERISTICS			
Operators by place of residence:			
On farm operated		3 196	.9
Not on farm operated		1 810	1.0
Not reported		467	1.6
Operators by principal occupation:			
Farming		3 052	.7
Other		2 421	1.0
Operators by days worked off farm:			
Any		2 827	.9
200 days or more		1 566	1.1
Operators by sex:			
Male	farms	4 551	.8
	acres	1 380 371	.1
Female	farms	922	1.3
	acres	58 700	1.1
Average age of operator	years	55.0	1.1
FARMS BY TYPE OF ORGANIZATION			
Individual or family (sole proprietorship)	farms	4 583	.8
	acres	279 198	.6
Partnership	farms	328	1.9
	acres	(D)	(D)
Corporation:			
Family held	farms	384	1.3
	acres	380 168	.2
More than 10 stockholders	farms	19	4.6
10 or less stockholders	farms	365	1.3
Other than family held	farms	113	2.2
	acres	554 404	(L)
More than 10 stockholders	farms	17	3.7
10 or less stockholders	farms	96	2.5
Other—cooperative, estate or trust, institutional, etc.	farms	65	3.3
	acres	(D)	(D)
HIRED FARM LABOR[1]			
Hired workers by days worked:			
150 days or more	farms	766	.8
	workers	6 940	.2
Less than 150 days	farms	1 364	1.0
	workers	5 525	.9
INJURIES AND DEATHS			
Farm-related injuries:			
Operator and family members	farms	52	4.3
	number	67	4.3
Hired workers	farms	90	1.3
	number	263	.5
Farm-related deaths:			
Operator and family members	farms	1	–
	number	(D)	(D)
Hired workers	farms	2	–
	number	(D)	(D)

See footnotes at end of table.

Table C. **Reliability Estimates of State Totals for All Farms: 1997**—Con.

[For meaning of abbreviations and symbols, see introductory text]

Item		Total	Relative standard error of estimate (percent)
FARMS BY SIZE			
1 to 9 acres	farms	3 456	.9
	acres	12 232	.9
10 to 49 acres	farms	1 417	1.0
	acres	28 290	1.0
50 to 69 acres	farms	122	2.7
	acres	6 742	2.7
70 to 99 acres	farms	77	3.2
	acres	6 358	3.3
100 to 139 acres	farms	75	3.5
	acres	8 464	3.5
140 to 179 acres	farms	44	4.0
	acres	6 971	4.0
180 to 219 acres	farms	24	6.3
	acres	(D)	(D)
220 to 259 acres	farms	17	6.1
	acres	(D)	(D)
260 to 499 acres	farms	98	3.0
	acres	32 962	2.9
500 to 999 acres	farms	43	4.4
	acres	28 738	4.4
1,000 to 1,999 acres	farms	33	–
	acres	45 095	–
2,000 acres or more	farms	67	–
	acres	1 254 456	–
FARMS BY NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM			
Oilseed and grain farming (1111)	farms	2	–
	acres	(D)	(D)
Vegetable and melon farming (1112)	farms	563	1.4
	acres	(D)	(D)
Fruit and tree nut farming (1113)	farms	2 286	1.0
	acres	194 943	.2
Greenhouse, nursery, and floriculture production (1114)	farms	1 277	1.0
	acres	25 388	.7
Other crop farming (1119)	farms	354	1.7
	acres	173 780	.1
Beef cattle ranching and farming (112111)	farms	561	1.6
	acres	(D)	(D)
Cattle feedlots (112112)	farms	22	6.5
	acres	(D)	(D)
Dairy cattle and milk production (11212)	farms	14	–
	acres	6 135	–
Hog and pig farming (1122)	farms	152	2.8
	acres	2 540	4.9
Poultry and egg production (1123)	farms	39	4.8
	acres	(D)	(D)
Sheep and goat farming (1124)	farms	54	4.5
	acres	(D)	(D)
FARMS BY NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM—Con.			
Animal aquaculture and other animal production (1125, 1129)	farms	149	2.7
	acres	10 188	3.9
LIVESTOCK			
Cattle and calves inventory	farms	829	1.3
	number	181 732	.4
Beef cows	farms	625	1.4
	number	93 711	.4
Milk cows	farms	44	4.0
	number	8 389	.1
Cattle and calves sold	farms	660	1.4
	number	66 726	.3
	$1,000	27 895	.3
Hogs and pigs inventory	farms	248	2.2
	number	29 440	2.2
Hogs and pigs sold	farms	190	2.5
	number	38 066	1.4
	$1,000	6 336	1.1
Sheep and lambs of all ages inventory	farms	104	3.4
	number	22 541	.5
Sheep and lambs sold	farms	45	5.0
	number	2 484	4.0
Horses and ponies inventory	farms	591	1.5
	number	4 923	1.5
Horses and ponies sold	farms	69	3.7
	number	189	3.3
POULTRY			
Layers and pullets 13 weeks old and older inventory (see text)	farms	140	2.9
	number	726 534	(L)
Layers 20 weeks old and older	farms	136	2.9
	number	714 924	(L)
Broilers and other meat-type chickens sold	farms	9	5.3
	number	478 672	(L)
SELECTED CROPS HARVESTED			
Sugarcane for sugar	farms	13	6.5
	acres	31 483	(L)
	tons	2 873 712	(L)
Pineapples harvested	farms	27	–
	acres	12 992	–
	tons	348 428	–
Vegetables harvested for sale (see text)	farms	657	1.3
	acres	6 549	.6
Land in orchards	farms	2 786	.9
	acres	37 906	.4

[1]Data are based on a sample of farms.
[2]Farms with total production expenses equal to market value of agricultural products sold are included as farms with gains.

Table D. Reliability Estimates of State Totals for Farms With Sales of $10,000 or More: 1997

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Relative standard error of estimate (percent)
FARMS AND LAND IN FARMS		
Farms ..... number..	2 295	.6
Land in farms ..... acres..	1 312 108	.1
Average size of farm ..... acres..	572	.6
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD		
Total sales (see text) ..... farms..	2 295	.6
$1,000..	487 147	.1
Average per farm ..... dollars..	212 265	.6
Farms by value of sales:		
$10,000 to $19,999 ..... farms..	764	1.2
$1,000..	10 658	1.3
$20,000 to $24,999 ..... farms..	225	2.3
$1,000..	4 890	2.3
$25,000 to $39,999 ..... farms..	383	1.7
$1,000..	11 745	1.7
$40,000 to $49,999 ..... farms..	152	2.7
$1,000..	6 570	2.7
$50,000 to $99,999 ..... farms..	323	1.7
$1,000..	21 637	1.7
$100,000 to $249,999 ..... farms..	229	–
$1,000..	34 613	–
$250,000 to $499,999 ..... farms..	105	–
$1,000..	35 956	–
$500,000 or more ..... farms..	114	–
$1,000..	361 078	–
Sales by commodity or commodity group:		
Crops, including nursery and greenhouse crops ..... farms..	2 034	.6
$1,000..	393 361	.1
Grains ..... farms..	–	–
$1,000..	–	–
Corn for grain ..... farms..	–	–
$1,000..	–	–
Wheat ..... farms..	–	–
$1,000..	–	–
Soybeans ..... farms..	–	–
$1,000..	–	–
Sorghum for grain ..... farms..	–	–
$1,000..	–	–
Barley ..... farms..	–	–
$1,000..	–	–
Oats ..... farms..	–	–
$1,000..	–	–
Other grains ..... farms..	–	–
$1,000..	–	–
Cotton and cottonseed ..... farms..	–	–
$1,000..	–	–
Tobacco ..... farms..	–	–
$1,000..	–	–
Hay, silage, and field seeds ..... farms..	7	11.0
$1,000..	(D)	(D)
Vegetables, sweet corn, and melons ..... farms..	386	1.4
$1,000..	32 718	.5
Fruits, nuts, and berries ..... farms..	963	.9
$1,000..	(D)	(D)
Nursery and greenhouse crops ..... farms..	763	1.1
$1,000..	80 731	.3
Other crops ..... farms..	243	1.8
$1,000..	108 517	.1
Livestock, poultry, and their products ..... farms..	375	1.4
$1,000..	93 787	.1
Poultry and poultry products ..... farms..	42	4.0
$1,000..	17 950	.1
Dairy products ..... farms..	16	–
$1,000..	29 058	–
Cattle and calves ..... farms..	212	1.7
$1,000..	26 786	.3
Hogs and pigs ..... farms..	84	3.3
$1,000..	6 066	1.2
Sheep, lambs, and wool ..... farms..	17	6.4
$1,000..	112	7.9
Other livestock and livestock products (see text) ..... farms..	104	2.7
$1,000..	13 816	.4
Value of agricultural products sold directly to individuals for human consumption (see text) ..... farms..	218	1.9
$1,000..	4 023	1.5

Item	Total	Relative standard error of estimate (percent)
FARM PRODUCTION EXPENSES[1]		
Total farm production expenses ..... farms..	2 295	.9
$1,000..	384 375	.1
Average per farm ..... dollars..	167 484	.9
Livestock and poultry purchased ..... farms..	197	1.9
$1,000..	5 996	.5
Feed for livestock and poultry ..... farms..	315	1.6
$1,000..	35 104	.1
Commercially mixed formula feeds ..... farms..	198	1.8
$1,000..	22 581	.2
Seeds, bulbs, plants, and trees ..... farms..	869	1.2
$1,000..	10 144	.2
Commercial fertilizer ..... farms..	1 920	.9
$1,000..	24 552	.2
Agricultural chemicals ..... farms..	1 844	.9
$1,000..	16 435	.2
Petroleum products ..... farms..	2 227	.9
$1,000..	14 889	.2
Electricity ..... farms..	1 213	.9
$1,000..	8 510	.1
Hired farm labor ..... farms..	1 132	.9
$1,000..	149 571	.1
Contract labor ..... farms..	407	1.5
$1,000..	4 487	1.1
Repair and maintenance ..... farms..	1 991	.9
$1,000..	30 105	.1
Customwork, machine hire, and rental of machinery and equipment ..... farms..	416	1.4
$1,000..	2 479	.6
Interest ..... farms..	740	1.0
$1,000..	12 729	.4
Secured by real estate ..... farms..	389	1.4
$1,000..	6 561	.8
Not secured by real estate ..... farms..	416	1.2
$1,000..	6 168	.3
Cash rent ..... farms..	1 022	1.0
$1,000..	11 162	.4
Property taxes ..... farms..	1 649	.9
$1,000..	3 498	.7
All other farm production expenses ..... farms..	2 285	.9
$1,000..	54 713	.1
NET CASH RETURN FROM AGRICULTURAL SALES FOR THE FARM UNIT (SEE TEXT)[1]		
All farms ..... number..	2 295	.9
$1,000..	102 772	.3
Average per farm ..... dollars..	44 781	.9
Farms with net gains[2] ..... number..	1 986	.9
$1,000..	129 539	.2
Average net gain ..... dollars..	65 226	1.0
Farms with net losses ..... number..	309	1.5
$1,000..	26 767	.3
Average net loss ..... dollars..	86 624	1.6
GOVERNMENT PAYMENTS AND OTHER FARM-RELATED INCOME		
Government payments ..... farms..	74	2.6
$1,000..	534	2.2
Other farm-related income[1] ..... farms..	181	2.2
$1,000..	3 486	1.6
Customwork and other agricultural services ..... farms..	88	3.4
$1,000..	1 289	4.1
Gross cash rent or share payments ..... farms..	65	3.0
$1,000..	1 903	.5
Forest products, excluding Christmas trees and maple products ..... farms..	7	10.5
$1,000..	136	8.8
Other farm-related income sources ..... farms..	36	3.8
$1,000..	157	3.6
COMMODITY CREDIT CORPORATION LOANS		
Total ..... farms..	–	–
$1,000..	–	–

See footnotes at end of table.

Table D. Reliability Estimates of State Totals for Farms With Sales of $10,000 or More: 1997—Con.

[For meaning of abbreviations and symbols, see introductory text]

Item		Total	Relative standard error of estimate (percent)
LAND IN FARMS ACCORDING TO USE			
Total cropland	farms	2 089	.6
	acres	237 334	.2
Harvested cropland	farms	2 037	.6
	acres	93 012	.1
Cropland:			
Pasture or grazing only	farms	124	2.6
	acres	23 108	1.8
Total woodland	farms	77	3.3
	acres	95 551	(L)
Pastureland and rangeland other than cropland and woodland pastured	farms	226	1.7
	acres	856 130	.1
Land in house lots, ponds, roads, wasteland, etc.	farms	989	.9
	acres	123 093	.1
Irrigated land	farms	1 165	.8
	acres	74 149	.1
Harvested cropland irrigated	farms	1 149	.8
	acres	68 481	.1
Pasture and other land irrigated	farms	52	3.4
	acres	5 668	.3
Land under Conservation Reserve or Wetlands Reserve Programs	farms	–	–
	acres	–	–
VALUE OF LAND AND BUILDINGS[1]			
Estimated market value of land and buildings	farms	2 295	.9
	$1,000	2 604 817	.3
Average per farm	dollars	1 134 997	.9
Average per acre	dollars	1 985	.3
VALUE OF MACHINERY AND EQUIPMENT[1]			
Estimated market value of all machinery and equipment	farms	2 295	.9
	$1,000	166 555	.3
Average per farm	dollars	72 573	.9
AGRICULTURAL CHEMICALS[1]			
Commercial fertilizer	farms	1 895	.9
	acres on which used	127 158	.1
TENURE OF OPERATOR			
All operators	farms	2 295	.6
	acres	1 312 108	.1
Full owners	farms	910	1.0
	acres	170 125	.1
Part owners	farms	433	1.2
	acres	977 646	.1
Tenants	farms	952	1.0
	acres	164 337	.5
OWNED AND RENTED LAND			
Land owned	farms	1 348	.7
	acres	732 788	.1
Owned land in farms	farms	1 343	.7
	acres	671 368	(L)
Land rented or leased from others	farms	1 388	.8
	acres	655 867	.2
	landlords	2 117	.8
Rented or leased land in farms	farms	1 385	.8
	acres	640 740	.2
Land rented or leased to others	farms	115	2.2
	acres	76 547	.5
OPERATOR CHARACTERISTICS			
Operators by place of residence:			
On farm operated		1 220	.8
Not on farm operated		900	1.0
Not reported		175	2.1
Operators by principal occupation:			
Farming		1 744	.7
Other		551	1.4
Operators by days worked off farm:			
Any		915	1.1
200 days or more		488	1.5
Operators by sex:			
Male		1 986	.6
Female		309	1.8
Average age of operator	years	52.9	.9

Item		Total	Relative standard error of estimate (percent)
FARMS BY TYPE OF ORGANIZATION			
Individual or family (sole proprietorship)	farms	1 715	.7
	acres	220 843	.4
Partnership	farms	173	2.2
	acres	63 353	.2
Corporation:			
Family held	farms	294	1.2
	acres	(D)	(D)
More than 10 stockholders	farms	17	4.6
10 or less stockholders	farms	277	1.3
Other than family held	farms	87	2.0
	acres	521 935	(L)
More than 10 stockholders	farms	15	2.5
10 or less stockholders	farms	72	2.4
Other—cooperative, estate or trust, institutional, etc.	farms	26	4.0
	acres	(D)	(D)
HIRED FARM LABOR[1]			
Hired workers by days worked:			
150 days or more	farms	674	.8
	workers	6 821	.2
Less than 150 days	farms	862	1.1
	workers	4 243	.9
INJURIES AND DEATHS			
Farm-related injuries:			
Operator and family members	farms	28	5.1
	number	42	5.3
Hired workers	farms	83	1.2
	number	256	.5
Farm-related deaths:			
Operator and family members	farms	–	–
	number	–	–
Hired workers	farms	1	–
	number	(D)	(D)
FARMS BY SIZE			
1 to 9 acres		1 205	.9
10 to 49 acres		744	1.0
50 to 69 acres		71	2.8
70 to 99 acres		34	3.3
100 to 139 acres		30	4.5
140 to 179 acres		23	5.0
180 to 219 acres		12	6.6
220 to 259 acres		9	6.0
260 to 499 acres		50	3.6
500 to 999 acres		25	5.1
1,000 to 1,999 acres		28	–
2,000 acres or more		64	–
FARMS BY NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM			
Oilseed and grain farming (1111)		–	–
Vegetable and melon farming (1112)		329	1.5
Fruit and tree nut farming (1113)		804	1.0
Greenhouse, nursery, and floriculture production (1114)		683	1.1
Other crop farming (1119)		189	2.1
Beef cattle ranching and farming (112111)		125	2.1
Cattle feedlots (112112)		13	7.2
Dairy cattle and milk production (11212)		14	–
Hog and pig farming (1122)		61	3.8
Poultry and egg production (1123)		19	4.7
Sheep and goat farming (1124)		6	9.8
Animal aquaculture and other animal production (1125, 1129)		52	3.9
LIVESTOCK			
Cattle and calves inventory	farms	231	1.6
	number	166 017	.3
Beef cows	farms	189	1.8
	number	86 151	.3
Milk cows	farms	21	3.2
	number	8 328	(L)
Cattle and calves sold	farms	212	1.7
	number	62 544	.3
	$1,000	26 786	.3
Hogs and pigs inventory	farms	90	3.1
	number	26 405	2.4
Hogs and pigs sold	farms	84	3.3
	number	36 048	1.4
	$1,000	6 066	1.2
Sheep and lambs of all ages inventory	farms	28	5.6
	number	(D)	(D)
Sheep and lambs sold	farms	16	6.4
	number	2 105	4.4
Horses and ponies inventory	farms	183	1.9
	number	2 733	1.6
Horses and ponies sold	farms	31	4.7
	number	128	4.1

See footnotes at end of table.

Table D. **Reliability Estimates of State Totals for Farms With Sales of $10,000 or More: 1997**—Con.

[For meaning of abbreviations and symbols, see introductory text]

Item		Total	Relative standard error of estimate (percent)
POULTRY			
Layers and pullets 13 weeks old and older inventory (see text)	farms	36	4.6
	number	723 458	(L)
Layers 20 weeks old and older	farms	35	4.6
	number	712 377	(L)
Broilers and other meat-type chickens sold	farms	5	–
	number	478 552	–
SELECTED CROPS HARVESTED			
Sugarcane for sugar	farms	6	8.2
	acres	(D)	(D)
	tons	(D)	(D)
Pineapples harvested	farms	12	–
	acres	12 950	–
	tons	347 888	–
Vegetables harvested for sale (see text)	farms	387	1.4
	acres	6 220	.6
Land in orchards	farms	1 017	.9
	acres	32 627	.3

[1]Data are based on a sample of farms.
[2]Farms with total production expenses equal to market value of agricultural products sold are included as farms with gains.

Table E. **Reliability Estimates of Percent Change in State Totals: 1992 to 1997**

[For meaning of abbreviations and symbols, see introductory text]

Item	All farms		Farms with sales of $10,000 or more	
	Percent change from 1992 to 1997	Standard error of estimate	Percent change from 1992 to 1997	Standard error of estimate
Farms ..... number	2.6	1.8	10.5	1.8
Land in farms ..... acres	–9.4	.2	–13.3	.1
Average size of farm ..... acres	–11.7	1.5	–21.5	1.3
Estimated market value of land and buildings[1]:				
Average per farm ..... dollars	–12.4	1.7	–22.6	1.4
Average per acre ..... dollars	–.8	.7	–1.3	.4
Estimated market value of all machinery and equipment[1]:				
Average per farm ..... dollars	–27.2	1.4	–37.7	1.2
Farms by size:				
1 to 9 acres	1.3	2.0	14.5	2.5
10 to 49 acres	5.6	2.0	8.9	2.2
50 to 179 acres	1.6	2.5	4.6	2.8
180 to 499 acres	4.5	4.0	9.2	5.0
500 to 999 acres	26.5	8.2	–3.8	6.6
1,000 to 1,999 acres	6.5	–	–	–
2,000 acres or more	–8.2	–	–11.1	–
Total cropland ..... farms	3.1	1.8	12.0	1.9
acres	–.4	.5	–11.6	.3
Harvested cropland ..... farms	2.7	1.8	12.3	1.9
acres	–26.6	.2	–27.3	.2
Irrigated land ..... farms	.9	1.7	5.6	1.8
acres	–42.7	.1	–43.5	.1
Market value of agricultural products sold $1,000	–10.0	.2	–10.3	.2
Average per farm ..... dollars	–12.2	1.5	–18.8	1.3
Crops, including nursery and greenhouse crops $1,000	–11.5	.2	–11.8	.2
Livestock, poultry, and their products $1,000	–3.2	.2	–3.2	.2
Farms by value of sales:				
Less than $2,500	–8.5	2.0	(X)	(X)
$2,500 to $4,999	–1.5	2.6	(X)	(X)
$5,000 to $9,999	11.5	2.9	(X)	(X)
$10,000 to $24,999	14.6	2.5	14.6	2.4
$25,000 to $49,999	10.5	2.9	10.5	2.8
$50,000 to $99,999	11.0	3.2	11.0	3.2
$100,000 to $249,999	3.6	–	3.6	–
$250,000 to $499,999	–	–	–	–
$500,000 or more	.9	–	.9	–
Total farm production expenses[1] $1,000	–14.6	.8	–15.0	.7
Average per farm ..... dollars	–16.7	1.5	–23.1	1.4
Net cash return from agricultural sales for the farm unit (see text)[1] ..... farms	2.6	1.9	10.5	2.0
$1,000	15.4	.7	13.2	.7
Average per farm ..... dollars	12.5	2.2	2.4	2.0
Operators by principal occupation:				
Farming	4.3	1.7	13.5	1.9
Other	.5	2.2	2.0	2.6
Operators by days worked off farm:				
Any	–1.3	2.0	7.1	2.3
200 days or more	5.3	2.4	9.2	2.9
Livestock and poultry:				
Cattle and calves inventory ..... farms	–5.1	2.2	–9.4	2.3
number	–5.0	.5	–6.3	.4
Beef cows ..... farms	–4.6	2.3	–6.9	2.5
number	7.0	.6	6.7	.5
Milk cows ..... farms	–22.8	4.5	–4.5	3.8
number	–22.4	.1	–22.5	.1
Cattle and calves sold ..... farms	–5.6	2.2	–7.0	2.3
number	–19.4	.4	–20.4	.4
Hogs and pigs inventory ..... farms	–2.0	3.3	–17.4	3.6
number	3.0	2.8	.3	2.9
Hogs and pigs sold ..... farms	–5.0	3.5	–16.0	3.8
number	–20.4	1.6	–21.0	1.6
Sheep and lambs inventory ..... farms	67.7	9.9	12.0	8.9
number	–1.7	1.0	(D)	(D)
Layers and pullets 13 weeks old and older inventory (see text) ..... farms	–20.9	3.4	–29.4	4.5
number	–22.3	(L)	–22.4	(L)
Broilers and other meat-type chickens sold ..... farms	–35.7	6.0	–37.5	3.5
number	–60.2	(L)	–60.2	(L)
Selected crops harvested:				
Sugarcane for sugar ..... farms	–58.1	3.2	–76.9	2.0
acres	–50.0	(L)	(D)	(D)
tons	–47.6	(L)	(D)	(D)
Pineapples harvested ..... farms	28.6	–	20.0	–
acres	–16.2	–	–16.4	–
tons	–37.4	–	–37.5	–
Vegetables harvested for sale (see text) ..... farms	9.1	2.4	4.6	2.6
acres	27.7	2.3	28.2	2.4
Land in orchards ..... farms	9.8	2.1	42.0	3.2
acres	–1.8	.8	.9	.8

[1]Data are based on a sample of farms.

Table F. **Reliability Estimates for the State and County Totals: 1997**

[For meaning of abbreviations and symbols, see introductory text]

Geographic area	Farms		Land in farms		Average size of farm		Average market value of land and buildings per farm[1]		Estimated market value of all machinery and equipment[1]	
	Total (number)	Relative standard error of estimate (percent)	Total (acres)	Relative standard error of estimate (percent)	Total (acres)	Relative standard error of estimate (percent)	Value (dollars)	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)
Hawaii	**5 473**	**.7**	**1 439 071**	**.1**	**263**	**.8**	**632 281**	**.9**	**211 775**	**.4**
Hawaii	3 319	.8	870 012	.2	262	.8	574 464	1.1	73 008	.9
Honolulu	880	.7	79 927	.7	91	1.0	565 361	1.4	29 260	.9
Kauai	468	.9	197 042	.2	421	.9	847 704	2.0	37 960	.6
Maui	806	.7	292 090	.2	362	.7	818 342	1.4	71 547	.3

Geographic area	Average market value of all machinery and equipment per farm[1]		Market value of agricultural products sold		Average market value of agricultural products sold per farm		Farm production expenses[1]			
							Total farm production expenses			
							Farms		Value	
	Value (dollars)	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Value (dollars)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)
Hawaii	**38 709**	**1.0**	**496 935**	**.1**	**90 798**	**.8**	**5 471**	**.9**	**398 567**	**.1**
Hawaii	21 997	1.3	168 111	.2	50 651	.8	3 319	1.0	116 839	.3
Honolulu	33 250	1.5	142 965	.1	162 460	.7	879	1.2	112 599	.1
Kauai	81 111	1.9	57 474	.2	122 808	.9	467	1.8	58 505	.2
Maui	88 989	1.3	128 385	.1	159 287	.7	806	1.3	110 624	.1

Farm production expenses[1]—Con.

Geographic area	Livestock and poultry purchased				Feed for livestock and poultry				Seeds, bulbs, plants, and trees			
	Farms		Value		Farms		Value		Farms		Value	
	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)
Hawaii	**479**	**1.6**	**6 471**	**.5**	**845**	**1.3**	**35 749**	**.2**	**1 508**	**1.0**	**10 348**	**.2**
Hawaii	249	2.2	2 201	1.1	412	1.8	6 837	.4	771	1.4	2 592	.8
Honolulu	63	3.4	2 801	.3	134	2.7	22 107	.2	343	1.8	5 073	.2
Kauai	61	4.4	186	5.1	109	3.3	2 116	.4	123	3.2	109	5.1
Maui	106	3.1	1 284	1.1	190	2.4	4 689	.7	271	1.8	2 573	.4

Farm production expenses[1]—Con.

Geographic area	Commercial fertilizer				Agricultural chemicals				Petroleum products			
	Farms		Value		Farms		Value		Farms		Value	
	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)
Hawaii	**4 051**	**.9**	**25 653**	**.2**	**3 834**	**.9**	**17 187**	**.2**	**5 055**	**.9**	**16 335**	**.3**
Hawaii	2 636	1.0	7 847	.5	2 506	1.0	4 195	.6	3 065	1.0	4 549	.6
Honolulu	635	1.4	5 241	.3	583	1.4	4 324	.3	818	1.3	2 532	.6
Kauai	283	2.2	4 134	.4	280	2.2	2 748	.3	429	1.9	4 480	.2
Maui	497	1.4	8 430	.1	465	1.4	5 920	.1	743	1.3	4 774	.3

Farm production expenses[1]—Con.

Geographic area	Electricity				Hired farm labor				Contract labor			
	Farms		Value		Farms		Value		Farms		Value	
	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)
Hawaii	**2 067**	**.9**	**8 810**	**.2**	**1 652**	**.9**	**150 682**	**.1**	**679**	**1.3**	**4 881**	**1.0**
Hawaii	1 172	1.1	2 545	.4	1 054	1.1	40 918	.2	494	1.6	3 119	1.5
Honolulu	428	1.5	1 791	.4	256	1.4	40 232	.1	64	3.4	597	1.7
Kauai	169	2.6	730	.5	108	3.0	27 061	.1	27	5.6	564	.6
Maui	298	1.6	3 744	.1	234	1.7	42 470	.1	94	3.0	601	1.2

See footnotes at end of table.

Table F. **Reliability Estimates for the State and County Totals: 1997**—Con.

[For meaning of abbreviations and symbols, see introductory text]

Geographic area	Farm production expenses[1]—Con.											
	Repair and maintenance				Customwork, machine hire, and rental of machinery and equipment				Interest			
	Farms		Value		Farms		Value		Farms		Value	
	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)
Hawaii	**4 020**	**.8**	**31 918**	**.2**	**738**	**1.3**	**2 718**	**.6**	**1 036**	**1.0**	**13 964**	**.5**
Hawaii	2 425	1.0	8 277	.4	472	1.6	1 057	1.3	645	1.3	5 337	.9
Honolulu	640	1.3	4 424	.4	88	2.9	354	.8	159	1.8	2 758	.8
Kauai	342	2.0	6 361	.2	75	3.9	465	1.5	74	3.5	1 829	.8
Maui	613	1.3	12 855	.1	103	2.7	842	.4	158	2.0	4 040	1.0

Geographic area	Farm production expenses[1]—Con.											
	Cash rent				Property taxes paid				All other farm production expenses			
	Farms		Value		Farms		Value		Farms		Value	
	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)
Hawaii	**1 620**	**1.0**	**11 923**	**.4**	**4 166**	**.9**	**5 196**	**.8**	**4 841**	**.8**	**56 733**	**.2**
Hawaii	915	1.2	3 865	.7	2 608	1.0	2 360	1.1	2 889	1.0	21 141	.3
Honolulu	352	1.7	3 645	.8	549	1.4	880	2.0	814	1.3	15 838	.2
Kauai	149	2.8	2 275	.4	356	2.0	842	1.8	410	1.9	4 606	.5
Maui	204	2.0	2 138	.4	653	1.4	1 115	.9	728	1.3	15 149	.2

Geographic area	Net cash return from agricultural sales for the farm unit (see text)[1]				Total cropland				Harvested cropland			
	Farms		Value		Farms		Acres		Farms		Acres	
	Number	Relative standard error of estimate (percent)	Total ($1,000)	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)
Hawaii	**5 473**	**.9**	**98 368**	**.3**	**4 882**	**.8**	**292 107**	**.3**	**4 594**	**.8**	**100 094**	**.2**
Hawaii	3 319	1.0	51 272	.5	3 035	.8	102 991	.5	2 897	.8	32 410	.4
Honolulu	880	1.2	30 366	.4	777	.8	29 237	.5	749	.8	15 355	.3
Kauai	468	1.8	–1 031	7.8	386	1.1	(D)	(D)	343	1.3	20 086	.1
Maui	806	1.3	17 761	.5	684	.8	(D)	(D)	605	.9	32 243	.1

Geographic area	Irrigated land				Livestock and poultry							
	Farms		Acres		Cattle and calves inventory				Beef cows inventory			
					Farms		Total		Farms		Total	
	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)
Hawaii	**2 241**	**.8**	**76 971**	**.2**	**829**	**1.3**	**181 732**	**.4**	**625**	**1.4**	**93 711**	**.4**
Hawaii	857	1.2	7 425	.5	484	1.6	126 968	.5	370	1.8	70 796	.4
Honolulu	629	.9	16 303	.2	45	3.9	11 312	.7	30	5.2	1 763	2.3
Kauai	275	1.5	18 212	.2	121	2.8	11 440	1.4	88	3.4	(D)	(D)
Maui	480	1.1	35 031	.4	179	2.2	32 012	.7	137	2.5	(D)	(D)

Geographic area	Livestock and poultry—Con.											
	Milk cows inventory				Hogs and pigs inventory				Sheep and lambs inventory			
	Farms		Total		Farms		Total		Farms		Total	
	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)
Hawaii	**44**	**4.0**	**8 389**	**.1**	**248**	**2.2**	**29 440**	**2.2**	**104**	**3.4**	**22 541**	**.5**
Hawaii	23	6.6	1 992	.2	88	3.8	3 186	3.8	82	3.8	4 142	2.5
Honolulu	8	–	4 802	–	73	3.8	19 463	3.3	7	12.2	211	4.5
Kauai	8	9.8	(D)	(D)	24	6.9	2 423	1.6	5	14.4	(D)	(D)
Maui	5	9.8	(D)	(D)	63	3.8	4 368	2.3	10	10.2	(D)	(D)

See footnotes at end of table.

Table F. **Reliability Estimates for the State and County Totals: 1997**—Con.

[For meaning of abbreviations and symbols, see introductory text]

Geographic area	Livestock and poultry—Con.							
	Layers 20 weeks old and older inventory				Broilers and other meat-type chickens sold			
	Farms		Total		Farms		Total	
	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)
Hawaii	**136**	**2.9**	**714 924**	**(L)**	**9**	**5.3**	**478 672**	**(L)**
Hawaii	69	4.2	61 267	.2	1	–	(D)	(D)
Honolulu	19	6.9	569 649	(L)	3	11.0	(D)	(D)
Kauai	11	11.2	(D)	(D)	2	–	(D)	(D)
Maui	37	5.2	(D)	(D)	3	11.5	60	11.5

Geographic area	Selected crops harvested											
	Sugarcane for sugar						Pineapples harvested					
	Farms		Acres		Quantity		Farms		Acres		Quantity	
	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Tons	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Tons	Relative standard error of estimate (percent)
Hawaii	**13**	**6.5**	**31 483**	**(L)**	**2 873 712**	**(L)**	**27**	**–**	**12 992**	**–**	**348 428**	**–**
Hawaii	3	16.5	3	16.5	225	16.5	10	–	12	–	27	–
Honolulu	4	17.2	12	18.2	424	21.8	2	–	(D)	(D)	(D)	(D)
Kauai	2	–	(D)	(D)	(D)	(D)	6	–	10	–	86	–
Maui	4	–	(D)	(D)	(D)	(D)	9	–	(D)	(D)	(D)	(D)

Geographic area	Selected crops harvested—Con.							
	Vegetables harvested for sale (see text)				Land in orchards			
	Farms		Acres		Farms		Acres	
	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)
Hawaii	**657**	**1.3**	**6 549**	**.6**	**2 786**	**.9**	**37 906**	**.4**
Hawaii	195	2.3	1 689	1.4	2 102	.9	27 900	.4
Honolulu	239	1.8	2 982	.8	240	1.9	1 966	1.0
Kauai	67	4.1	135	7.3	176	2.2	5 053	.5
Maui	156	2.0	1 742	1.0	268	1.7	2 988	.8

[1]Data are based on a sample of farms.