Appendix C.
Statistical Methodology

MAIL LIST MODEL

Classification analysis was performed to predict the probability that an addressee on the 1992 mail list operated a farm, and thereby separated the preliminary mail list into probable farm and probable nonfarm classes. The analysis was used to reduce the preliminary census mail list of 3.78 million records to a final mail list size of 3.55 million records. All 3.55 million addresses on the final mail list received a census of agriculture report form.

Records from the 1987 final census mail list were used to build a 1992 prediction model for the 1992 analysis. Classification and Regression Trees (CART) software analyzed characteristics of known 1987 farm and nonfarm operations to determine which were most useful in predicting farm and nonfarm classes. Record characteristics such as the source of the mail list record, number of source lists on which the record appeared, expected value of agricultural sales, and geographic location were used to separate mail list records into model groups. (Sources included the previous agriculture census mail list, the Internal Revenue Service administrative records, U.S. Department of Agriculture, and special commodity lists.) The proportion of 1987 census farm records in each model group was calculated to provide an estimate of the probability that an addressee in the group operated a farm.

After the model groups were defined, each address record on the 1992 preliminary 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 according to the classification tree methodology. The model, followed by analyst reviews, was used to remove 229,700 records from the preliminary mail list (those in model groups with the lowest farm probability), and thereby designated the 3.55 million records with the highest farm probability to receive the census report form. This procedure was used to obtain a more complete census enumeration of farm operations without excessive respondent burden and data collection cost.

CENSUS SAMPLE DESIGN

Each of the 3.55 million name and address records on the census mail list was designated to receive one of three different types of report forms. The three forms were the nonsample form, the screener form, and the sample form. Sections 1 through 20 and 27 through 32 of the sample form are identical to sections on the nonsample form. The sample form, sections 21 through 26, contains additional questions on usage of fertilizers and chemicals, farm production expenditures, value of machinery and equipment, value of land and buildings, and farm-related income. The screener form is identical to the nonsample form with questions added in section 1 to allow quick identification of nonfarm addresses. These three 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. Addresses were selected into the sample with certainty (1) if they were expected to have large total value of agricultural products sold or large acreage, (2) if they were multiunit operations (i.e., separate farms in more than one location), (3) if they had other special characteristics, or (4) if they were in a county with less than 100 farms in 1987. Other addresses in counties containing 100 to 199 farms in 1987 were systematically sampled at a rate of 1 in 2, and other addresses in counties containing 200 farms or more in 1987 were systematically sampled at a rate of 1 in 6. This differential sampling scheme was used to provide reliable data for the sample sections of the report form for all counties. When a nonsample large farm was identified during processing, a supplemental form that contained the additional sample data inquiries was mailed.

To determine which mail list records would receive the screener form, all mail list records not designated for the sample were sorted by model group farm probability as specified by the mail list model. The 412,000 mail list records in the model groups with the lowest probability of being farms and with an expected total value of agricultural product sales less than $25,000 were designated to receive the screener report form. The remaining mail list records received the nonsample report form.

Whole Farm Nonresponse Estimation

A statistical estimation procedure was used to account for nonrespondent farm operators to the census. We excluded large and unique farm operations that received

intensive telephone followup during census processing, assuming complete response from them. A stratified systematic sample of remaining census nonrespondents were contacted by enumerators using a computer-assisted telephone interview system. Five sample strata were defined based on expected value of sales, previous census status, and whether the record was identified by the mail list model to receive the screener report form. The nonresponse survey telephone interview was designed to provide sufficient information to determine the farm status of each record.

In situations where the nonresponse survey case could not be contacted, the contact person refused to cooperate, or when no phone number could be obtained, a census screener report form was sent by certified mail.

Estimates of the proportion of census nonrespondents that operated farms were made for each stratum in the State using survey results and applied to the total number of census nonrespondents in that stratum. The number of census nonrespondents that operated farms for each county by stratum was then derived. This estimation procedure is based on the assumption that the distribution of farms in a stratum by county is the same for census nonrespondents as for census respondents.

Certain census respondent farms which exhibited ''rare'' commodities were designated as ''ineligible'' to represent census nonrespondent farms and were excluded from the nonresponse weighting operation. The procedure explained below was performed with only the eligible respondent cases: Within each stratum in a county, a noninteger nonresponse weight was calculated and assigned to each eligible respondent farm record. 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 to the number of eligible census respondent farms. Stratum controls were established to ensure that this weight was never greater than 2.0. The noninteger nonresponse weight was used in the calculation of the final weight for the sample items. The noninteger nonresponse weight was randomly rounded to an integer weight of either 1 or 2 for each record for tabulating the complete count items for publication.

Table A quantifies the effect of the nonresponse estimation procedure on selected census data items. The percentages in these tables are the 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 these tables do not reflect the effect of item nonresponse to individual census data items. The effect of item nonresponse is discussed in the Census Nonsampling Error section.

Table A. **Percent of State Totals Contributed by Whole Farm Nonresponse Estimation: 1992**

Item	Percent of total
Farms ---- number	19.0
Land in farms ---- acres	12.1
Estimated market value of land and buildings[1] ---- $1,000	11.8
Market value of agricultural products sold ---- $1,000	3.9
Harvested cropland ---- acres	10.2
Corn for grain or seed ---- acres	21.5
Wheat for grain ---- acres	–
Livestock and poultry inventory:	
Cattle and calves ---- number	10.9
Hogs and pigs ---- number	6.0
Hens and pullets of laying age ---- number	.6

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

CENSUS SAMPLING ERROR

The sample for the 1992 Census of Agriculture is only one of a large number of possible samples of the same size that could have been selected using the same sample design. Sample refers to the sample for both the nonresponse survey and the selection of farms to receive the sample report forms. Estimates derived from all the possible samples would differ from each other only by random variation. In Rhode Island, 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 and thus is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples. The percent relative standard error of an estimate is defined as 100 times the standard error of the estimate divided by the value of the estimate.

If all possible samples were selected, each of the samples were surveyed under essentially the same conditions, and an estimate and its standard error were 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 average value of all possible samples.

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 average value of all possible samples.

The following example illustrates the computations necessary for producing a confidence interval 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 .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 figure obtained from a complete enumeration. 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. In Rhode Island, both complete count and sample count items were asked of all farm operators. 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. Sample count items were included under the following section headings: farm production expenditures, fertilizer and chemical usage, farm machinery and equipment, value of land and buildings, and farm-related income.

Table B provides the generalized reliability estimates of the estimated number of farms in a county reporting complete count and sample count items. These are derived from regression equations. The 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 all counties in the State.

Table B. **Reliability Estimates for Number of Farms in a County Reporting a Complete Count Item or Sample Count Item: 1992**

Farms	Relative standard error of estimate (percent)
COMPLETE COUNT ITEM	
Number of farms reporting:	
25	5.4
50	3.0
75	1.6
100	1.4
150	1.1
200	1.0
300	.8
500	(X)
750	(X)
1,000	(X)
1,500	(X)
2,000	(X)
SAMPLE COUNT ITEM	
Number of farms reporting:	
25	6.3
50	4.4
75	3.5
100	3.0
150	2.4
200	2.0
300	1.5
500	(X)
750	(X)
1,000	(X)
1,500	(X)
2,000	(X)

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. Both parts of the table reflect the 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 percent standard error for percent change in State totals from 1987 to 1992. 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 1992 and the 1987 estimate for that characteristic to the 1987 estimate. This ratio is multiplied by 100 to obtain the percent change. The percent standard error of a percent change estimate, then, 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 (1) the total number of farms, (2) the number of large farms included with certainty, (3) the size classifications of the farms sampled, (4) the amount of nonresponse, (5) the general agricultural characteristics, and (6) the specific characteristic being measured.

CENSUS NONSAMPLING ERROR

The accuracy of the census counts are 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 on specific operations. Nonsampling errors arise from incompleteness of the census mail list, duplication in the mail list, incorrect data reporting, errors in editing of reported data, and errors in imputation for missing data. These specific nonsampling errors are further discussed in this section. Evaluation studies are conducted to measure the extent of certain nonsampling errors such as coverage error and classification error.

Census Coverage

The main objective of the census of agriculture is to obtain a complete and accurate enumeration of U.S. farms with accurate data on all aspects of the agricultural operation. However, the high cost and availability of resources for enumeration place restrictions on feasible data collection methodologies. The past six agriculture censuses have been conducted by mail enumeration with telephone contact for selected nonrespondents. The completeness of such an enumeration thus depends to a large extent on the coverage of farm operations by the census mail list.

The past five censuses of agriculture have included approximately 91 percent of farms in the United States and approximately 96 percent of agriculture production. Complete enumeration of agricultural operations satisfying the farm definition of $1,000 or more in agricultural sales is complicated by fluctuations in agricultural operations qualifying for enumeration, the variety of arrangements under which farms are operated, the multiplicity of names used by an operation, the number of operations in which an operator participates, the accuracy of data reporting, and other factors. A new mail list is compiled for each census because no current single list of agricultural operations is comprehensive.

An evaluation of census coverage has been conducted for each census of agriculture since 1945. The evaluation provides estimates of the completeness of census farm count and major census data items. In addition, the evaluation helps to identify problems in the census enumeration and provide information that can form the basis for improvements. The results of the 1992 Coverage Evaluation program will be published in volume 2, Subject Series (Part 2): Coverage Evaluation.

The evaluation of coverage for the 1992 census was designed to measure four components of error in the census mail list and in farm classification. Mail list error includes two components of error, a measurement of farms not on the census mail list (undercount) and a measurement of farms enumerated more than once in the census (overcount). Classification error includes two components of error, a measurement of farms classified as nonfarms in the census (undercount) and of nonfarms classified as farms in the census (overcount). Classification error arises from reporting and processing errors. Mail list undercount dominates all coverage errors. Net coverage error is defined as the difference between undercounted and overcounted farms. Measurements of these errors, as well as a description of the complete coverage program, will be available in the Coverage Evaluation report.

Mail List Coverage

A major problem with mail enumeration for the census of agriculture is the difficulty encountered in compiling a complete mail list. The percentage of farms included on the census mail list varies considerably by State. Several reasons have contributed to farm operator names not being included on the census mail list—the operation may have been started after the mail list was developed, the operation may be so small as not to appear in any of the agriculture-related source lists used in compiling the census list, or the operation may have been falsely classified as a nonfarm prior to mailout. A large proportion of the farms not included on the mail list are small in both acres and sales of agricultural products.

The 1992 Census of Agriculture Coverage Evaluation used the area segment sample of the 1992 June Agricultural Survey (JAS) of the National Agricultural Statistical Service (NASS) to estimate farms not on the census mail list. The Census Bureau contracted with NASS to augment the JAS data collection. The survey data collected by NASS was protected under the confidentiality of title 13, U.S. Code. These JAS survey records were matched to the census mail list. Records that did not match were mailed a census of agriculture report form to estimate mail list coverage. Estimates of farms not on the census mail list are computed using a capture-recapture dual frame estimator which will be described in the Coverage Evaluation report mentioned earlier.

Table G provides coverage evaluation estimates for one component of coverage error associated with the census of agriculture; that is, the error due to farms not on the census mail list. Also provided are estimates of selected characteristics of farms not on the mail list, estimates of characteristics of farms not on the mail list as a percentage of total farms in the State, and the percent relative standard error associated with each estimate. The estimate of total farms in the State is based on census farm count plus the estimated number of farms not on the census mail list. This estimate of total farms in the State was not adjusted for the components of error associated with classification and list duplication error. Estimates of these errors will be made at the regional, rather than the State level, and will be provided in the Coverage Evaluation report mentioned earlier.

Respondent and Enumerator Error

Incorrect or incomplete responses to the mailed census report form or to the questions posed by a telephone enumerator introduce error into the census data. Such incorrect information can lead, in some cases, to incorrect classification of farms. This type of reporting error is measured by the Classification Error Survey discussed later in this section. To reduce all types of reporting error, detailed instructions for completing the report form were provided to each addressee. Questions were phrased as clearly as possible based on tests of the census report form and each respondent's answers were checked for completeness and consistency.

Item Nonresponse

As information flows from data collection to tabulation, various types of item nonresponses are identified on the census report forms. Nonresponse to particular questions

on the census report form that logically should be present may create a type of nonsampling error in both complete count and sample count data. When information from reporting farms is used to edit or impute for item nonresponse, the data may be biased due to characteristics of the nonreporting respondents differing from those reporting the item. Any attempt to correct the data items may not completely reflect this difference either at the element level (individual farm operation) or on the average.

Processing Error

All phases of processing for each report form are sources for the introduction of nonsampling error. The processing of the report forms includes clerical screening for farm activity, computerized check-in of report forms and follow-up of nonrespondents, keying and transmittal of completed report forms, computerized editing of inconsistent and missing data, review and correction of individual records referred from the computer edit, review and correction of tabulated data, and electronic data processing. These operations undergo a number of quality control checks to ensure as accurate an application as possible, yet some errors are not detected and corrected.

Classification Error

An evaluation study of classification errors was conducted in the 1992 Census of Agriculture as part of the census coverage evaluation program. A sample of census mail list respondents was selected, and these addresses were reenumerated to determine whether they were a farm or nonfarm. A farm status determination was made based on the evaluation report form and compared with the census farm status which was based on the data reported on the report form. Differences in status were reconciled.

In past censuses, the proportion of farms undercounted due to classification errors was higher for farms with small values of sales. For the 1987 census, the classification error rate was higher for (1) farms with small values of sales, (2) farms with a small number of acres, (3) full-owner farms than part-owner or tenant farms, (4) operators with principal occupation other than farming, and (5) males than females. Results from the 1992 Classification Error Survey will be published in the Coverage Evaluation report.

EDITING DATA AND IMPUTATION FOR ITEM NONRESPONSE

The Census of Agriculture Complex Edit and Imputation System performs the following functions:

- Ensuring reasonable relationships between/among data items, values for various sizes of farms, and combinations of commodities.
- Ensuring necessary consistencies are present. There are more than 70 distinct consistency requirements.
- Ensuring geographic, legal, and physical constraints are met.

The system must perform these and similar functions for 900 data keycodes for sample records and 850 data keycodes for nonsample records.

For the 1992 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 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 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 were 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 classification 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. The computer records were 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 some 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.

After the initial computer edit, keyed reports not meeting the census farm definition were reviewed to ensure that the data were keyed correctly. Edit referrals were generated for about 25 percent of the reports included as farms; they were reviewed for keying accuracy 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 was reedited.

Table C. **Reliability Estimates of State Totals for All Farms: 1992**

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

Item		Total	Relative standard error of estimate (percent)
FARMS AND LAND IN FARMS			
Farms	number	649	1.2
Land in farms	acres	49 601	1.4
Average size of farm	acres	76	1.8
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD			
Total sales (see text)	farms	649	1.2
	$1,000	39 512	.3
Average per farm	dollars	60 882	1.2
Farms by value of sales:			
Less than $1,000 (see text)	farms	107	3.6
	$1,000	28	5.8
$1,000 to $2,499	farms	68	4.5
	$1,000	111	4.7
$2,500 to $4,999	farms	115	3.5
	$1,000	420	3.5
$5,000 to $9,999	farms	85	3.9
	$1,000	590	4.0
$10,000 to $19,999	farms	76	3.5
	$1,000	1 045	3.5
$20,000 to $24,999	farms	23	6.4
	$1,000	512	6.4
$25,000 to $39,999	farms	36	4.8
	$1,000	1 075	4.7
$40,000 to $49,999	farms	13	8.0
	$1,000	564	8.0
$50,000 to $99,999	farms	49	3.4
	$1,000	3 360	3.2
$100,000 to $249,999	farms	45	–
	$1,000	7 143	–
$250,000 to $499,999	farms	12	–
	$1,000	4 296	–
$500,000 or more	farms	20	–
	$1,000	20 369	–
Sales by commodity or commodity group:			
Crops, including nursery and greenhouse crops	farms	424	1.4
	$1,000	27 431	.4
Grains	farms	12	8.1
	$1,000	(D)	(D)
Corn for grain	farms	8	10.4
	$1,000	25	5.8
Wheat	farms	–	–
	$1,000	–	–
Soybeans	farms	–	–
	$1,000	–	–
Sorghum for grain	farms	–	–
	$1,000	–	–
Barley	farms	–	–
	$1,000	–	–
Oats	farms	1	–
	$1,000	(D)	(D)
Other grains	farms	4	12.2
	$1,000	(D)	(D)
Cotton and cottonseed	farms	–	–
	$1,000	–	–
Tobacco	farms	–	–
	$1,000	–	–
Hay, silage, and field seeds	farms	159	2.6
	$1,000	1 010	3.2
Vegetables, sweet corn, and melons	farms	126	2.6
	$1,000	2 461	1.4
Fruits, nuts, and berries	farms	91	3.2
	$1,000	2 322	1.7
Nursery and greenhouse crops	farms	158	2.3
	$1,000	19 501	.4
Other crops	farms	23	4.8
	$1,000	(D)	(D)
Livestock, poultry, and their products	farms	279	1.9
	$1,000	12 082	.7
Poultry and poultry products	farms	52	4.6
	$1,000	4 758	.3
Dairy products	farms	41	3.2
	$1,000	5 024	1.4
Cattle and calves	farms	162	2.5
	$1,000	880	2.5
Hogs and pigs	farms	41	5.8
	$1,000	744	4.4
Sheep, lambs, and wool	farms	53	4.8
	$1,000	49	6.0
Other livestock and livestock products (see text)	farms	63	4.2
	$1,000	626	2.4
Value of agricultural products sold directly to individuals for human consumption (see text)	farms	127	2.9
	$1,000	1 578	1.8

Item		Total	Relative standard error of estimate (percent)
FARM PRODUCTION EXPENSES[1]			
Total farm production expenses	farms	649	1.7
	$1,000	32 436	.5
Average per farm	dollars	49 978	1.8
Livestock and poultry purchased	farms	147	2.9
	$1,000	1 130	1.3
Feed for livestock and poultry	farms	288	2.4
	$1,000	4 320	.8
Commercially mixed formula feeds	farms	153	2.8
	$1,000	3 323	.6
Seeds, bulbs, plants, and trees	farms	286	1.9
	$1,000	1 348	.7
Commercial fertilizer	farms	408	1.8
	$1,000	1 332	.8
Agricultural chemicals	farms	307	1.9
	$1,000	904	.8
Petroleum products	farms	607	1.7
	$1,000	1 487	.8
Electricity	farms	441	1.7
	$1,000	733	.7
Hired farm labor	farms	237	1.8
	$1,000	9 076	.3
Contract labor	farms	55	3.7
	$1,000	508	1.3
Repair and maintenance	farms	560	1.7
	$1,000	2 406	.8
Customwork, machine hire, and rental of machinery and equipment	farms	112	2.7
	$1,000	260	1.2
Interest expense	farms	196	2.1
	$1,000	1 473	1.6
Secured by real estate	farms	145	2.5
	$1,000	1 193	1.8
Not secured by real estate	farms	82	2.8
	$1,000	280	1.4
Cash rent	farms	141	2.2
	$1,000	909	.5
Property taxes	farms	595	1.8
	$1,000	2 119	1.7
All other farm production expenses	farms	587	1.7
	$1,000	4 431	.5
NET CASH RETURN FROM AGRICULTURAL SALES FOR THE FARM UNIT (SEE TEXT) [1]			
All farms	number	649	1.7
	$1,000	7 077	1.0
Average per farm	dollars	10 904	2.0
Farms with net gains [2]	number	296	1.8
	$1,000	9 755	.5
Average net gain	dollars	32 956	1.9
Farms with net losses	number	353	2.4
	$1,000	2 678	2.2
Average net loss	dollars	7 588	3.2
GOVERNMENT PAYMENTS AND OTHER FARM-RELATED INCOME			
Government payments	farms	60	2.7
	$1,000	197	2.4
Other farm-related income [1]	farms	148	2.9
	$1,000	1 020	3.3
Customwork and other agricultural services	farms	45	4.9
	$1,000	431	3.4
Gross cash rent or share payments	farms	36	5.0
	$1,000	73	6.6
Forest products and Christmas trees	farms	53	4.9
	$1,000	215	7.8
Other farm-related income sources	farms	40	4.5
	$1,000	301	7.3
COMMODITY CREDIT CORPORATION LOANS			
Total	farms	–	–
	$1,000	–	–

See footnotes at end of table.

TIPS [UPF] BATCH_1391 [ACEN,C_ARLEDGE] 5/12/94 11:43 AM MACHINE: EPCV23 DATA:VOL1_TIPS_APX_15.TIPS;1 * 5/ 9/94 08:40:00 TAPE: NOreel FRAME: 1
TSF:TIPS92-08405776.DAT;1 5/ 9/94 08:41:05 UTF:TIPS93-08405776.DAT;1 5/ 9/94 08:41:05 META:VOL1_TIPS96_APX_15.DAT;6 5/ 9/94 08:41:52

Table C. **Reliability Estimates of State Totals for All Farms: 1992** —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	591	1.2
	acres	24 411	1.1
Harvested cropland	farms	517	1.3
	acres	18 136	1.1
Farms by acres harvested:			
1 to 9 acres	farms	215	2.4
	acres	698	3.1
10 to 19 acres	farms	82	3.8
	acres	1 069	3.9
20 to 29 acres	farms	51	4.7
	acres	1 173	4.6
30 to 49 acres	farms	58	3.9
	acres	2 150	4.0
50 to 99 acres	farms	75	2.5
	acres	5 186	2.4
100 to 199 acres	farms	22	4.4
	acres	(D)	(D)
200 to 499 acres	farms	12	–
	acres	3 794	–
500 to 999 acres	farms	2	–
	acres	(D)	(D)
1,000 acres or more	farms	–	–
	acres	–	–
Cropland:			
Pasture or grazing only	farms	243	2.1
	acres	3 775	2.7
Other cropland	farms	146	2.3
	acres	2 500	3.0
Total woodland	farms	339	1.8
	acres	17 812	2.4
Pastureland and rangeland other than cropland and woodland pastured	farms	85	3.5
	acres	1 895	5.8
Land in house lots, ponds, roads, wasteland, etc.	farms	404	1.6
	acres	5 483	2.5
Irrigated land	farms	132	2.2
	acres	2 979	.7
Acres irrigated:			
1 to 9 acres	farms	95	3.0
	acres	(D)	(D)
10 to 49 acres	farms	23	3.8
	acres	583	3.5
50 to 99 acres	farms	7	–
	acres	532	–
100 to 199 acres	farms	5	–
	acres	629	–
200 to 499 acres	farms	1	–
	acres	(D)	(D)
500 to 999 acres	farms	1	–
	acres	(D)	(D)
1,000 acres or more	farms	–	–
	acres	–	–
Harvested cropland irrigated	farms	129	2.2
	acres	2 961	.7
Pasture and other land irrigated	farms	5	12.3
	acres	18	12.0
Land under federal acreage reduction programs:			
Diverted under annual commodity programs	farms	–	–
	acres	–	–
Conservation Reserve or Wetlands Reserve Programs	farms	9	6.8
	acres	462	.9
VALUE OF LAND AND BUILDINGS [1]			
Estimated market value of land and buildings	farms	649	1.7
	$1,000	312 677	1.4
Average per farm	dollars	481 783	2.2
Average per acre	dollars	6 304	2.2
VALUE OF MACHINERY AND EQUIPMENT [1]			
Estimated market value of all machinery and equipment	farms	649	1.7
	$1,000	24 479	1.4
Average per farm	dollars	37 718	2.2
AGRICULTURAL CHEMICALS [1]			
Commercial fertilizer	farms	404	1.8
	acres on which used	14 835	1.2

Item		Total	Relative standard error of estimate (percent)
TENURE OF OPERATOR			
All operators	farms	649	1.2
	acres	49 601	1.4
Full owners	farms	421	1.6
	acres	25 498	2.2
Part owners	farms	162	2.1
	acres	20 473	1.9
Tenants	farms	66	3.6
	acres	3 630	3.1
OWNED AND RENTED LAND			
Land owned	farms	583	1.3
	acres	37 446	1.7
Owned land in farms	farms	583	1.3
	acres	36 663	1.7
Land rented or leased from others	farms	228	1.8
	acres	13 372	1.6
	landlords	584	2.0
Rented or leased land in farms	farms	228	1.8
	acres	12 938	1.6
Land rented or leased to others	farms	38	5.2
	acres	1 217	9.1
OPERATOR CHARACTERISTICS			
Operators by place of residence:			
On farm operated		514	1.4
Not on farm operated		98	2.8
Not reported		37	5.3
Operators by principal occupation:			
Farming		333	1.4
Other		316	2.0
Operators by days worked off farm:			
Any		323	1.9
200 days or more		202	2.5
Operators by sex:			
Male	farms	559	1.2
	acres	45 405	1.4
Female	farms	90	3.6
	acres	4 196	3.6
Average age of operator	years	53.4	1.7
FARMS BY TYPE OF ORGANIZATION			
Individual or family (sole proprietorship)	farms	529	1.4
	acres	35 296	1.8
Partnership	farms	42	4.5
	acres	5 316	3.7
Corporation:			
Family held	farms	72	2.8
	acres	(D)	(D)
More than 10 stockholders	farms	1	–
10 or less stockholders	farms	71	2.9
Other than family held	farms	1	35.0
	acres	(D)	(D)
More than 10 stockholders	farms	–	–
10 or less stockholders	farms	1	35.0
Other—cooperative, estate or trust, institutional, etc.	farms	5	10.7
	acres	516	4.2
HIRED FARM LABOR			
Hired workers by days worked:			
150 days or more	farms	121	1.8
	workers	565	.7
Less than 150 days	farms	197	2.1
	workers	770	1.6
INJURIES AND DEATHS			
Farm-related injuries:			
Operator and family members	farms	5	15.1
	number	6	16.2
Hired workers	farms	9	–
	number	11	–
Farm-related deaths:			
Operator and family members	farms	–	–
	number	–	–
Hired workers	farms	–	–
	number	–	–

See footnotes at end of table.

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Table C. **Reliability Estimates of State Totals for All Farms: 1992** —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	128	3.1
	acres	488	3.8
10 to 49 acres	farms	237	2.2
	acres	5 692	2.4
50 to 69 acres	farms	70	3.7
	acres	4 056	3.7
70 to 99 acres	farms	59	4.2
	acres	4 814	4.3
100 to 139 acres	farms	61	3.7
	acres	7 182	3.7
140 to 179 acres	farms	25	5.3
	acres	3 916	5.4
180 to 219 acres	farms	28	5.1
	acres	5 491	5.0
220 to 259 acres	farms	5	8.5
	acres	(D)	(D)
260 to 499 acres	farms	24	4.7
	acres	8 179	4.3
500 to 999 acres	farms	10	5.1
	acres	5 840	5.5
1,000 to 1,999 acres	farms	2	–
	acres	(D)	(D)
2,000 acres or more	farms	–	–
	acres	–	–
FARMS BY STANDARD INDUSTRIAL CLASSIFICATION			
Cash grains (011)	farms	2	24.3
	acres	(D)	(D)
Field crops, except cash grains (013)	farms	112	3.2
	acres	12 127	2.6
Vegetables and melons (016)	farms	72	3.8
	acres	4 563	5.4
Fruits and tree nuts (017)	farms	60	4.0
	acres	2 852	5.6
Horticultural specialties (018)	farms	136	2.4
	acres	8 640	1.9
General farms, primarily crop (019)	farms	13	10.2
	acres	(D)	(D)
Livestock, except dairy, poultry, and animal specialties (021)	farms	126	3.2
	acres	8 933	5.3
Dairy farms (024)	farms	41	3.2
	acres	7 578	2.4
Poultry and eggs (025)	farms	21	6.6
	acres	1 554	6.6
Animal specialties (027)	farms	60	4.2
	acres	1 827	6.5
General farms, primarily livestock and animal specialties (029)	farms	6	14.8
	acres	394	14.5
LIVESTOCK			
Cattle and calves inventory	farms	208	2.3
	number	6 057	1.7
Beef cows	farms	133	3.0
	number	967	4.4
Milk cows	farms	55	3.5
	number	2 565	1.7
Cattle and calves sold	farms	162	2.5
	number	2 509	1.7
	$1,000	880	2.5
Hogs and pigs inventory	farms	48	5.2
	number	5 488	3.3
Hogs and pigs sold	farms	41	5.8
	number	6 011	5.0
	$1,000	744	4.4
Sheep and lambs of all ages inventory	farms	62	4.6
	number	1 355	11.1
Sheep and lambs sold	farms	49	5.1
	number	771	6.6
Horses and ponies inventory	farms	152	2.7
	number	1 015	3.2
Horses and ponies sold	farms	24	6.9
	number	108	5.9
POULTRY			
Chickens 3 months old or older inventory	farms	83	3.8
	number	242 307	.3
Hens and pullets of laying age	farms	83	3.8
	number	242 095	.3
Broilers and other meat-type chickens sold	farms	5	16.2
	number	(D)	(D)
CROPS HARVESTED			
Corn for silage or green chop	farms	72	3.0
	acres	2 949	2.3
	tons, green	49 638	1.8
Irish potatoes	farms	19	5.7
	acres	1 310	.2
	cwt	374 808	.1
Hay—alfalfa, other tame, small grain, wild, grass silage, green chop, etc. (see text)	farms	245	2.1
	acres	7 614	2.3
	tons, dry	15 864	2.6
Vegetables harvested for sale (see text)	farms	126	2.6
	acres	1 868	2.6
Land in orchards	farms	72	3.6
	acres	664	4.5

[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 of less than $1,000.

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Table D. Reliability Estimates of State Totals for Farms With Sales of $10,000 or More: 1992

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

Item	Total	Relative standard error of estimate (percent)
FARMS AND LAND IN FARMS		
Farms — number	274	1.2
Land in farms — acres	32 379	1.3
Average size of farm — acres	118	1.8
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD		
Total sales (see text) — farms	274	1.2
$1,000	38 364	.3
Average per farm — dollars	140 014	1.3
Farms by value of sales:		
$10,000 to $19,999 — farms	76	3.5
$1,000	1 045	3.5
$20,000 to $24,999 — farms	23	6.4
$1,000	512	6.4
$25,000 to $39,999 — farms	36	4.8
$1,000	1 075	4.7
$40,000 to $49,999 — farms	13	8.0
$1,000	564	8.0
$50,000 to $99,999 — farms	49	3.4
$1,000	3 360	3.2
$100,000 to $249,999 — farms	45	–
$1,000	7 143	–
$250,000 to $499,999 — farms	12	–
$1,000	4 296	–
$500,000 or more — farms	20	–
$1,000	20 369	–
Sales by commodity or commodity group:		
Crops, including nursery and greenhouse crops — farms	216	1.5
$1,000	26 677	.4
Grains — farms	9	7.7
$1,000	(D)	(D)
Corn for grain — farms	5	9.7
$1,000	(D)	(D)
Wheat — farms	–	–
$1,000	–	–
Soybeans — farms	–	–
$1,000	–	–
Sorghum for grain — farms	–	–
$1,000	–	–
Barley — farms	–	–
$1,000	–	–
Oats — farms	1	–
$1,000	(D)	(D)
Other grains — farms	4	12.2
$1,000	(D)	(D)
Cotton and cottonseed — farms	–	–
$1,000	–	–
Tobacco — farms	–	–
$1,000	–	–
Hay, silage, and field seeds — farms	59	3.2
$1,000	692	4.3
Vegetables, sweet corn, and melons — farms	77	2.7
$1,000	2 347	1.4
Fruits, nuts, and berries — farms	54	3.6
$1,000	2 218	1.7
Nursery and greenhouse crops — farms	105	2.4
$1,000	19 303	.4
Other crops — farms	18	4.7
$1,000	(D)	(D)
Livestock, poultry, and their products — farms	105	2.2
$1,000	11 687	.7
Poultry and poultry products — farms	23	5.1
$1,000	4 723	.3
Dairy products — farms	38	2.8
$1,000	5 011	1.4
Cattle and calves — farms	73	2.5
$1,000	698	2.8
Hogs and pigs — farms	18	7.4
$1,000	707	4.6
Sheep, lambs, and wool — farms	8	11.1
$1,000	3	14.9
Other livestock and livestock products (see text) — farms	18	6.6
$1,000	545	2.5
Value of agricultural products sold directly to individuals for human consumption (see text) — farms	48	3.6
$1,000	1 404	1.9

Item	Total	Relative standard error of estimate (percent)
FARM PRODUCTION EXPENSES[1]		
Total farm production expenses — farms	274	1.6
$1,000	29 478	.4
Average per farm — dollars	107 583	1.6
Livestock and poultry purchased — farms	66	3.2
$1,000	1 025	1.2
Feed for livestock and poultry — farms	103	2.5
$1,000	4 020	.8
Commercially mixed formula feeds — farms	73	2.8
$1,000	3 209	.6
Seeds, bulbs, plants, and trees — farms	164	1.7
$1,000	1 306	.6
Commercial fertilizer — farms	216	1.7
$1,000	1 195	.7
Agricultural chemicals — farms	190	1.8
$1,000	866	.8
Petroleum products — farms	271	1.6
$1,000	1 305	.7
Electricity — farms	228	1.6
$1,000	655	.7
Hired farm labor — farms	169	1.7
$1,000	8 866	.3
Contract labor — farms	33	3.2
$1,000	491	1.3
Repair and maintenance — farms	259	1.6
$1,000	2 065	.7
Customwork, machine hire, and rental of machinery and equipment — farms	74	2.6
$1,000	229	.8
Interest expense — farms	129	1.8
$1,000	1 246	1.3
Secured by real estate — farms	89	2.3
$1,000	980	1.5
Not secured by real estate — farms	62	2.3
$1,000	266	1.4
Cash rent — farms	102	2.0
$1,000	857	.4
Property taxes — farms	249	1.6
$1,000	1 267	1.6
All other farm production expenses — farms	271	1.6
$1,000	4 086	.5
NET CASH RETURN FROM AGRICULTURAL SALES FOR THE FARM UNIT (SEE TEXT) [1]		
All farms — number	274	1.6
$1,000	8 886	.5
Average per farm — dollars	32 430	1.7
Farms with net gains [2] — number	197	1.7
$1,000	9 551	.5
Average net gain — dollars	48 483	1.8
Farms with net losses — number	77	3.2
$1,000	665	2.9
Average net loss — dollars	8 639	4.3
GOVERNMENT PAYMENTS AND OTHER FARM-RELATED INCOME		
Government payments — farms	40	1.4
$1,000	173	1.4
Other farm-related income [1] — farms	57	3.3
$1,000	529	3.4
Customwork and other agricultural services — farms	17	6.9
$1,000	352	3.6
Gross cash rent or share payments — farms	14	5.6
$1,000	26	4.5
Forest products and Christmas trees — farms	14	8.2
$1,000	91	10.0
Other farm-related income sources — farms	22	4.1
$1,000	59	10.2
COMMODITY CREDIT CORPORATION LOANS		
Total — farms	–	–
$1,000	–	–

See footnotes at end of table.

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Table D. **Reliability Estimates of State Totals for Farms With Sales of $10,000 or More: 1992**—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	259	1.3
acres	17 840	1.1
Harvested cropland — farms	250	1.3
acres	14 170	1.1
Cropland:		
Pasture or grazing only — farms	79	2.5
acres	(D)	(D)
Total woodland — farms	134	2.0
acres	9 997	2.2
Pastureland and rangeland other than cropland and woodland pastured — farms	33	4.6
acres	1 222	8.1
Land in house lots, ponds, roads, wasteland, etc. — farms	160	1.7
acres	3 320	2.3
Irrigated land — farms	92	2.2
acres	2 904	.7
Harvested cropland irrigated — farms	92	2.2
acres	(D)	(D)
Pasture and other land irrigated — farms	2	–
acres	(D)	(D)
Land under federal acreage reduction programs:		
Diverted under annual commodity programs — farms	–	–
acres	–	–
Conservation Reserve or Wetlands Reserve Programs — farms	8	5.3
acres	(D)	(D)
VALUE OF LAND AND BUILDINGS [1]		
Estimated market value of land and buildings — farms	274	1.6
$1,000	193 927	1.3
Average per farm — dollars	707 764	2.0
Average per acre — dollars	5 989	1.9
VALUE OF MACHINERY AND EQUIPMENT [1]		
Estimated market value of all machinery and equipment — farms	274	1.6
$1,000	17 613	1.3
Average per farm — dollars	64 282	2.0
AGRICULTURAL CHEMICALS [1]		
Commercial fertilizer — farms	215	1.7
acres on which used	12 301	1.1
TENURE OF OPERATOR		
All operators — farms	274	1.2
acres	32 379	1.3
Full owners — farms	137	2.1
acres	12 846	2.3
Part owners — farms	103	2.0
acres	16 604	1.8
Tenants — farms	34	4.1
acres	2 929	2.9
OWNED AND RENTED LAND		
Land owned — farms	240	1.4
acres	22 296	1.5
Owned land in farms — farms	240	1.4
acres	22 069	1.6
Land rented or leased from others — farms	137	1.7
acres	10 582	1.5
landlords	426	2.2
Rented or leased land in farms — farms	137	1.7
acres	10 310	1.5
Land rented or leased to others — farms	17	5.6
acres	499	9.1
OPERATOR CHARACTERISTICS		
Operators by place of residence:		
On farm operated	200	1.6
Not on farm operated	60	2.7
Not reported	14	7.4
Operators by principal occupation:		
Farming	202	1.4
Other	72	3.4
Operators by days worked off farm:		
Any	90	2.9
200 days or more	52	4.0
Operators by sex:		
Male	248	1.3
Female	26	5.7
Average age of operator — years	54.0	1.8

Item	Total	Relative standard error of estimate (percent)
FARMS BY TYPE OF ORGANIZATION		
Individual or family (sole proprietorship) — farms	195	1.6
acres	20 042	1.9
Partnership — farms	22	5.7
acres	4 287	3.4
Corporation:		
Family held — farms	56	2.7
acres	(D)	(D)
More than 10 stockholders — farms	1	–
10 or less stockholders — farms	55	2.8
Other than family held — farms	–	–
acres	–	–
More than 10 stockholders — farms	–	–
10 or less stockholders — farms	–	–
Other—cooperative, estate or trust, institutional, etc. — farms	1	–
acres	(D)	(D)
HIRED FARM LABOR		
Hired workers by days worked:		
150 days or more — farms	103	1.5
workers	543	.7
Less than 150 days — farms	133	2.0
workers	652	1.3
INJURIES AND DEATHS		
Farm-related injuries:		
Operator and family members — farms	3	16.3
number	(D)	(D)
Hired workers — farms	9	–
number	11	–
Farm-related deaths:		
Operator and family members — farms	–	–
number	–	–
Hired workers — farms	–	–
number	–	–
FARMS BY SIZE		
1 to 9 acres	31	5.2
10 to 49 acres	79	3.1
50 to 69 acres	35	4.6
70 to 99 acres	21	4.8
100 to 139 acres	36	3.3
140 to 179 acres	17	4.6
180 to 219 acres	19	4.5
220 to 259 acres	5	8.5
260 to 499 acres	21	4.9
500 to 999 acres	8	–
1,000 to 1,999 acres	2	–
2,000 acres or more	–	–
FARMS BY STANDARD INDUSTRIAL CLASSIFICATION		
Cash grains (011)	1	–
Field crops, except cash grains (013)	30	4.1
Vegetables and melons (016)	39	4.3
Fruits and tree nuts (017)	30	4.5
Horticultural specialties (018)	92	2.6
General farms, primarily crop (019)	4	9.6
Livestock, except dairy, poultry, and animal specialties (021)	19	7.2
Dairy farms (024)	38	2.8
Poultry and eggs (025)	10	5.5
Animal specialties (027)	7	10.7
General farms, primarily livestock and animal specialties (029)	4	17.0
LIVESTOCK		
Cattle and calves inventory — farms	79	2.5
number	4 618	1.6
Beef cows — farms	37	4.2
number	363	5.8
Milk cows — farms	40	2.8
number	2 524	1.7
Cattle and calves sold — farms	73	2.5
number	2 063	1.8
$1,000	698	2.8
Hogs and pigs inventory — farms	20	6.7
number	5 226	3.4
Hogs and pigs sold — farms	18	7.4
number	5 652	5.3
$1,000	707	4.6
Sheep and lambs of all ages inventory — farms	8	11.1
number	115	12.8
Sheep and lambs sold — farms	7	12.7
number	57	14.1
Horses and ponies inventory — farms	39	4.2
number	294	6.2
Horses and ponies sold — farms	9	9.9
number	72	7.6

See footnotes at end of table.

TIPS [UPF] BATCH_1391 [ACEN,C_ARLEDGE] 5/12/94 11:43 AM MACHINE: EPCV23 DATA:VOL1_TIPS_APX_15.TIPS;1 * 5/ 9/94 08:40:00 TAPE: NOreel FRAME: 5
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Table D. **Reliability Estimates of State Totals for Farms With Sales of $10,000 or More: 1992**—Con.

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

Item		Total	Relative standard error of estimate (percent)
POULTRY			
Chickens 3 months old or older inventory	farms	21	5.8
	number	(D)	(D)
Hens and pullets of laying age	farms	21	5.8
	number	238 387	.2
Broilers and other meat-type chickens sold	farms	4	16.4
	number	(D)	(D)
CROPS HARVESTED			
Corn for silage or green chop	farms	48	2.7
	acres	2 464	2.0
	tons, green	42 973	1.3
CROPS HARVESTED—Con.			
Irish potatoes	farms	13	5.7
	acres	1 298	.1
	cwt	372 405	(L)
Hay—alfalfa, other tame, small grain, wild, grass silage, green chop, etc. (see text)	farms	96	2.3
	acres	4 364	3.0
	tons, dry	10 604	3.4
Vegetables harvested for sale (see text)	farms	77	2.7
	acres	1 753	2.7
Land in orchards	farms	38	4.3
	acres	579	5.1

[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 of less than $1,000.

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Table E. **Reliability Estimates of Percent Change in State Totals: 1987 to 1992**

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

Item	All farms		Farms with sales of $10,000 or more	
	Percent change from 1987 to 1992	Standard error of estimate	Percent change from 1987 to 1992	Standard error of estimate
Farms—number	–7.4	1.5	9.6	1.6
Land in farms—acres	–15.5	1.7	11.4	2.0
Average size of farm—acres	–9.5	2.4	1.7	2.3
Estimated market value of land and buildings [1]:				
Average per farm—dollars	14.6	6.0	5.6	2.8
Average per acre—dollars	32.8	10.4	4.7	5.2
Estimated market value of all machinery and equipment [1]:				
Average per farm—dollars	5.0	3.7	–14.9	2.3
Farms by size:				
1 to 9 acres	–2.3	4.0	14.8	7.0
10 to 49 acres	–5.2	2.9	12.9	4.4
50 to 179 acres	–10.8	2.5	2.8	2.9
180 to 499 acres	–13.6	4.2	15.4	5.2
500 to 999 acres	–9.1	5.9	–	–
1,000 to 1,999 acres	–	–	–	–
2,000 acres or more	–	–	–	–
Total cropland—farms	–1.0	1.7	15.1	1.8
acres	–6.5	1.6	–1.2	1.4
Harvested cropland—farms	–1.1	1.8	17.4	1.9
acres	–2.0	1.7	1.7	1.5
Irrigated land—farms	25.7	3.5	17.9	3.1
acres	–14.7	.9	–15.2	.9
Market value of agricultural products sold—$1,000	4.6	.6	4.7	.5
Average per farm—dollars	12.9	2.0	–4.4	1.5
Crops, including nursery and greenhouse crops—$1,000	2.8	.5	2.4	.5
Livestock, poultry, and their products—$1,000	8.8	1.6	10.6	1.5
Farms by value of sales:				
Less than $2,500	–39.7	1.6	(X)	(X)
$2,500 to $4,999	45.6	7.7	(X)	(X)
$5,000 to $9,999	3.7	5.6	(X)	(X)
$10,000 to $24,999	25.3	5.8	25.3	5.8
$25,000 to $49,999	19.5	6.7	19.5	6.7
$50,000 to $99,999	–10.9	4.6	–10.9	4.6
$100,000 to $249,999	4.7	–	4.7	–
$250,000 to $499,999	–20.0	–	–20.0	–
$500,000 or more	17.6	–	17.6	–
Total farm production expenses [1]—$1,000	9.1	2.2	11.5	1.9
Average per farm—dollars	18.0	3.0	–5.6	2.1
Net cash return from agricultural sales for the farm unit (see text) [1]—farms	–7.5	2.1	18.1	2.5
$1,000	–4.9	3.1	–5.2	2.1
Average per farm—dollars	2.8	4.1	–19.8	2.5
Operators by principal occupation:				
Farming	–3.5	2.0	4.1	1.8
Other	–11.2	2.4	28.6	5.5
Operators by days worked off farm:				
Any	–18.2	4.4	12.5	6.5
200 days or more	–22.9	4.3	23.8	7.9
Livestock and poultry:				
Cattle and calves inventory—farms	–17.8	2.5	–1.3	3.5
number	–12.6	2.4	–12.4	2.3
Beef cows—farms	–14.7	3.5	37.0	9.2
number	–14.7	5.2	–3.7	9.0
Milk cows—farms	–21.4	3.8	–25.9	3.1
number	–13.8	2.7	–13.9	2.6
Cattle and calves sold—farms	–21.4	2.6	–7.6	3.3
number	–23.0	2.3	–23.1	2.3
Hogs and pigs inventory—farms	–18.6	5.7	–	8.3
number	16.3	5.8	23.3	6.3
Hogs and pigs sold—farms	–16.3	6.4	–10.0	7.9
number	20.5	8.3	25.0	8.7
Sheep and lambs inventory—farms	–18.4	5.0	–11.1	12.0
number	–18.4	10.2	38.6	18.8
Chickens 3 months old or older inventory—farms	–13.5	4.4	23.5	9.7
number	17.7	1.5	(D)	(D)
Broilers and other meat-type chickens sold—farms	–16.7	17.9	33.3	30.9
number	(D)	(D)	(D)	(D)
Selected crops harvested:				
Corn for grain or seed—farms	77.8	23.3	266.7	61.0
acres	73.7	16.0	(D)	(D)
bushels	48.7	15.8	(D)	(D)
Corn for silage or green chop—farms	–6.5	4.2	–2.0	4.2
acres	46.9	5.5	40.2	5.2
tons, green	47.0	5.3	44.9	5.2
Irish potatoes—farms	–13.6	6.9	–18.8	5.8
acres	–7.1	1.9	–6.8	1.9
cwt	44.2	3.3	44.4	3.3
Hay—alfalfa, other tame, small grain, wild, grass silage, green chop, etc. (see text)—farms	–15.8	2.4	3.2	3.1
acres	–6.3	3.2	3.0	4.1
tons, dry	12.3	4.1	23.1	5.3
Vegetables harvested for sale (see text)—farms	27.3	5.1	35.1	5.2
acres	–4.1	4.1	–1.8	3.5
Land in orchards—farms	–13.3	4.4	15.2	7.4
acres	–22.5	5.5	–11.2	7.5

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

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Table F. **Reliability Estimates for the State and County Totals: 1992**

[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)
Rhode Island	**649**	**1.2**	**49 601**	**1.4**	**76**	**1.8**	**481 783**	**2.2**	**24 479**	**1.4**
Bristol	27	.9	1 468	1.7	54	1.9	666 476	4.2	930	3.2
Kent	70	1.4	5 636	2.7	81	3.0	520 721	6.1	2 111	4.2
Newport	120	1.1	9 631	2.6	80	2.8	676 582	4.0	5 462	2.9
Providence	232	1.3	12 408	2.2	53	2.6	303 354	3.7	6 938	3.0
Washington	200	1.2	20 458	2.2	102	2.5	533 319	3.4	9 037	1.6

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)
Rhode Island	**37 718**	**2.2**	**39 512**	**.3**	**60 882**	**1.2**	**649**	**1.7**	**32 436**	**.5**
Bristol	34 456	5.0	2 095	1.2	77 595	1.5	27	3.8	1 453	1.2
Kent	30 156	6.0	2 501	1.6	35 723	2.1	70	4.3	1 985	2.5
Newport	45 519	4.2	11 710	.5	97 584	1.2	120	3.1	9 708	.7
Providence	29 904	3.9	8 388	.8	36 156	1.5	232	2.5	7 180	1.1
Washington	45 187	3.0	14 819	.3	74 093	1.3	200	2.5	12 110	.6

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)
Rhode Island	**147**	**2.9**	**1 130**	**1.3**	**288**	**2.4**	**4 320**	**.8**	**286**	**1.9**	**1 348**	**.7**
Bristol	6	7.7	(D)	(D)	9	7.3	162	.3	18	4.3	17	2.1
Kent	12	9.7	(D)	(D)	32	5.9	186	3.4	29	6.0	44	3.7
Newport	24	7.3	191	5.6	47	5.3	694	3.8	60	3.6	691	.3
Providence	50	4.7	617	1.0	100	3.6	1 800	.5	94	3.2	130	4.7
Washington	55	4.5	252	2.5	100	3.6	1 479	1.1	85	3.1	466	1.2

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)
Rhode Island	**408**	**1.8**	**1 332**	**.8**	**307**	**1.9**	**904**	**.8**	**607**	**1.7**	**1 487**	**.8**
Bristol	22	3.8	51	.3	16	4.8	22	1.2	27	3.8	71	1.1
Kent	36	5.5	117	3.9	33	6.1	107	1.8	65	4.5	125	4.4
Newport	81	3.5	457	1.3	69	3.5	263	.8	114	3.1	399	1.3
Providence	145	2.8	174	2.8	98	3.0	158	3.9	219	2.4	314	1.8
Washington	124	2.8	533	1.1	91	3.0	354	.7	182	2.6	578	.9

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)
Rhode Island	**441**	**1.7**	**733**	**.7**	**237**	**1.8**	**9 076**	**.3**	**55**	**3.7**	**508**	**1.3**
Bristol	21	3.6	23	3.4	6	7.7	(D)	(D)	1	32.5	(D)	(D)
Kent	40	5.6	37	4.0	27	5.9	(D)	(D)	5	9.4	(D)	(D)
Newport	86	3.2	183	1.2	60	3.3	4 098	.1	10	8.6	49	.6
Providence	153	2.6	184	1.9	73	3.1	1 131	1.5	21	6.1	77	4.7
Washington	141	2.7	307	.9	71	3.0	2 880	.3	18	6.4	274	2.0

See footnotes at end of table.

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Table F. **Reliability Estimates for the State and County Totals: 1992** —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 expense			
	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)
Rhode Island	**560**	**1.7**	**2 406**	**.8**	**112**	**2.7**	**260**	**1.2**	**196**	**2.1**	**1 473**	**1.6**
Bristol	27	3.8	97	1.4	7	6.6	7	7.2	11	3.0	37	2.3
Kent	57	4.6	202	2.8	15	7.6	79	.9	14	7.2	71	6.7
Newport	103	3.2	573	1.1	17	5.3	34	2.9	36	4.3	280	3.7
Providence	208	2.5	455	2.2	30	5.3	46	4.6	63	3.8	301	4.5
Washington	165	2.7	1 079	1.0	43	4.6	93	1.9	72	3.3	785	1.8

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)
Rhode Island	**141**	**2.2**	**909**	**.5**	**595**	**1.8**	**2 119**	**1.7**	**587**	**1.7**	**4 431**	**.5**
Bristol	12	3.9	87	.2	23	4.2	68	1.8	26	3.7	123	4.3
Kent	11	10.3	19	8.9	65	4.5	279	5.9	61	4.5	264	2.4
Newport	42	4.2	288	.7	103	3.3	424	3.4	104	3.2	1 083	.8
Providence	27	4.5	116	1.8	215	2.5	632	2.9	215	2.5	1 046	1.4
Washington	49	3.6	399	.7	189	2.6	715	2.4	181	2.6	1 915	.5

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)
Rhode Island	**649**	**1.7**	**7 077**	**1.0**	**591**	**1.2**	**24 411**	**1.1**	**517**	**1.3**	**18 136**	**1.1**
Bristol	27	3.8	(D)	(D)	26	1.6	1 227	1.6	25	1.7	876	.8
Kent	70	4.3	(D)	(D)	61	2.2	2 319	4.9	55	2.8	1 844	5.7
Newport	120	3.1	2 002	1.7	114	1.3	6 864	2.0	103	1.7	5 229	1.8
Providence	232	2.5	1 208	3.5	207	1.5	4 716	2.0	186	1.6	3 763	2.1
Washington	200	2.5	2 709	1.2	183	1.4	9 285	1.4	148	1.8	6 424	1.2

Geographic area	Irrigated land				Livestock and poultry							
					Cattle and calves inventory				Beef cows inventory			
	Farms		Acres		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)
Rhode Island	**132**	**2.2**	**2 979**	**.7**	**208**	**2.3**	**6 057**	**1.7**	**133**	**3.0**	**967**	**4.4**
Bristol	7	8.7	43	1.4	11	4.5	416	1.1	6	7.6	69	2.7
Kent	17	8.0	228	.9	19	6.3	598	7.5	10	9.9	191	13.4
Newport	19	2.5	441	.1	38	4.7	1 742	3.6	17	7.9	135	14.5
Providence	43	3.9	310	5.8	76	3.6	1 222	3.0	56	4.5	339	6.5
Washington	46	3.5	1 957	.6	64	3.5	2 079	2.1	44	4.6	233	5.6

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)
Rhode Island	**55**	**3.5**	**2 565**	**1.7**	**48**	**5.2**	**5 488**	**3.3**	**62**	**4.6**	**1 355**	**11.1**
Bristol	4	8.7	172	.4	1	35.0	(D)	(D)	2	17.5	(D)	(D)
Kent	6	11.2	175	1.2	8	10.8	574	19.6	4	14.6	46	15.3
Newport	16	7.4	990	3.6	7	13.2	(D)	(D)	11	10.9	(D)	(D)
Providence	12	8.0	392	2.0	19	8.2	4 071	3.4	23	7.5	809	17.9
Washington	17	5.0	836	2.6	13	10.1	222	13.7	22	7.0	305	9.3

See footnotes at end of table.

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Table F. **Reliability Estimates for the State and County Totals: 1992** —Con.

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

Geographic area	Livestock and poultry —Con.							
	Hens and pullets of laying age 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)
Rhode Island	**83**	**3.8**	**242 095**	**.3**	**5**	**16.2**	**(D)**	**(D)**
Bristol	3	15.1	84	17.4	–	–	–	–
Kent	10	9.3	3 225	17.5	–	–	–	–
Newport	9	12.8	(D)	(D)	1	47.1	(D)	(D)
Providence	32	5.6	132 548	.1	2	22.1	(D)	(D)
Washington	29	6.1	(D)	(D)	2	24.3	(D)	(D)

Geographic area	Selected crops harvested											
	Corn for grain or seed						Corn for silage or green chop					
	Farms		Acres		Quantity		Farms		Acres		Quantity	
	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Bushels	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Tons, green	Relative standard error of estimate (percent)
Rhode Island	**16**	**7.8**	**172**	**7.6**	**11 280**	**6.7**	**72**	**3.0**	**2 949**	**2.3**	**49 638**	**1.8**
Bristol	1	50.0	(D)	(D)	(D)	(D)	4	–	133	–	2 161	–
Kent	1	–	(D)	(D)	(D)	(D)	12	8.4	335	9.4	5 325	10.2
Newport	3	15.7	38	17.4	1 780	22.2	20	5.9	1 283	4.2	20 172	2.9
Providence	1	–	(D)	(D)	(D)	(D)	15	7.1	379	3.7	5 732	2.7
Washington	10	10.1	77	14.0	5 050	12.5	21	4.9	819	2.3	16 248	1.9

Geographic area	Selected crops harvested —Con.											
	Irish potatoes						Hay—alfalfa, other tame, small grain, wild, grass silage, green chop, etc. (see text)					
	Farms		Acres		Quantity		Farms		Acres		Quantity	
	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Hundredweight	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)	Tons, dry	Relative standard error of estimate (percent)
Rhode Island	**19**	**5.7**	**1 310**	**.2**	**374 808**	**.1**	**245**	**2.1**	**7 614**	**2.3**	**15 864**	**2.6**
Bristol	–	–	–	–	–	–	10	5.0	387	1.6	670	3.6
Kent	–	–	–	–	–	–	28	5.2	935	9.6	2 350	9.7
Newport	8	6.9	825	.2	233 423	.2	46	4.1	1 647	5.2	2 775	7.9
Providence	2	22.1	(D)	(D)	(D)	(D)	89	3.1	2 419	3.4	4 729	3.2
Washington	9	9.2	(D)	(D)	(D)	(D)	72	3.2	2 226	3.1	5 340	3.7

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)
Rhode Island	**126**	**2.6**	**1 868**	**2.6**	**72**	**3.6**	**664**	**4.5**
Bristol	13	3.0	(D)	(D)	3	20.3	2	22.4
Kent	9	11.1	(D)	(D)	8	11.2	48	15.2
Newport	21	6.4	359	5.2	14	8.6	127	17.8
Providence	38	4.6	276	6.6	33	4.3	451	4.0
Washington	45	4.3	612	4.1	14	9.1	36	8.5

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

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Table G. New England States' Estimates of the Not on the Mail List Component of Farm Coverage Error: 1992

[Detail may not add to total due to rounding. For meaning of abbreviations and symbols, see introductory text]

Item	Census published farms		Not on mail list [1]		Percent not on mail list [1]	
	Total (number)	Relative standard error of estimate (percent)	Total (number)	Relative standard error of estimate (percent)	Total (percent)	Standard error of percent
Farms ---- number	22 991	.4	5 422	12.5	19.1	2.0
Land in farms ---- acres	3 857 438	.3	314 720	21.7	7.5	1.4
Average size of farm ---- acres	167.8	.5	58.0	16.8	(X)	(X)
Farms by size:						
Less than 10 acres	2 843	.8	1 229	29.5	30.2	6.6
10 to 49 acres	5 597	.6	2 491	18.7	30.8	4.0
Less than 50 acres	8 440	.6	3 720	15.3	30.6	3.3
50 acres or more	14 551	.4	1 702	22.2	10.5	2.1
50 to 99 acres	3 800	.6	688	37.4	15.3	5.1
100 to 179 acres	3 874	.6	674	32.6	14.8	4.2
180 acres or more	6 877	.4	339	48.6	4.7	2.1
Harvested cropland ---- farms	19 644	.4	3 927	14.9	16.7	2.1
acres	1 312 694	.2	63 683	19.9	4.6	.9
Farms by value of sales:						
Less than $1,000	3 770	.8	2 192	20.0	36.8	4.7
$1,000 to $2,499	3 041	.8	1 238	29.1	28.9	5.8
Less than $2,500	6 811	.7	3 431	16.0	33.5	3.6
$2,500 or more	16 180	.4	1 991	19.8	11.0	1.9
$2,500 to $9,999	5 776	.6	1 218	25.8	17.4	3.7
$10,000 or more	10 404	.3	773	34.7	6.9	2.3
Market value of agricultural products sold ---- $1,000	1 686 781	.1	27 166	30.0	1.6	.5
Farms by standard industrial classification:						
Crops (01)	12 093	.5	2 221	19.3	15.5	2.5
Livestock (02)	10 898	.4	3 201	17.2	22.7	3.1
Farms by type of organization:						
Individual or family	19 403	.4	4 857	13.0	20.0	2.1
Partnership or corporation	3 368	.5	460	50.0	12.0	5.0
Other	220	1.8	–	(X)	–	(X)
Farms by tenure of operator:						
Full owners	14 362	.5	3 963	15.0	21.6	2.6
Part owners and tenants	8 629	.4	1 457	23.3	14.4	2.8
Part owners	7 037	.4	1 148	25.8	14.0	3.0
Tenants	1 592	.8	309	48.2	16.2	6.7
Operators by place of residence:						
On farm operated	18 979	.4	4 837	13.2	20.3	2.2
Not on farm operated	2 824	.6	281	45.6	9.1	3.8
Not reported	1 188	.9	303	61.6	20.3	9.5
Operators by principal occupation:						
Farming	12 774	.4	1 971	23.6	13.4	2.8
Other	10 217	.6	2 925	17.3	22.3	3.0
Operators by sex:						
Male	19 820	.4	4 825	13.1	19.6	2.1
Female	3 171	.7	597	34.5	15.9	4.6
Operators by race:						
White	22 909	.4	4 895	13.3	17.6	1.9
Black and other races	82	3.6	–	(X)	–	(X)
Operators by years on present farm:						
4 years or less	2 150	.9	1 129	29.7	34.4	6.7
5 years or more	17 693	.4	3 339	15.7	15.9	2.2
Average years on present farm	19.6	.6	16.0	13.3	(X)	(X)
Not reported	3 148	.6	954	29.7	23.3	5.3
Average age of operator	53.2	.6	53.4	4.3	(X)	(X)

Note: These estimates do not account for incorrectly classified farms or farms appearing more than once in the census and are subject to change in the 1992 Coverage Evaluation publication. See appendix C text for further explanation.

Note: New England States include Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

[1]Estimates are based on a sample survey conducted independently of census data collection.

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