Appendix A.
Census of Agriculture Methodology

The purpose of a census is to enumerate all objects with a defined characteristic. For the census of agriculture, that goal is to account for "any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year." To do this, NASS creates a Census Mail List (CML) of agricultural operations that potentially meet the farm definition, collects agricultural information from those operations, reviews the data, corrects or completes the requested information, and combines the data to provide information on the characteristics of farm operations and farm operators at the national, State, and county levels. In this appendix, these census processes are described.

THE CENSUS POPULATION

The Census Mail List

The National Agricultural Statistics Service (NASS) maintains a list of farmers and ranchers from which the Census Mail List (CML) is compiled. The goal is to build as complete a list as possible of agricultural places that meet the farm definition. The CML compilation begins with the list used to define sampling populations for NASS surveys conducted for the agricultural estimates program. Each record on the list includes name, address, and telephone number plus additional information that is used to efficiently administer the census of agriculture and agricultural estimates programs.

NASS builds and improves the list on an ongoing basis by obtaining outside source lists. Sources include State and federal government lists, producer association lists, seed grower lists, pesticide applicator lists, veterinarian lists, marketing association lists, and a variety of other agriculture-related lists. NASS also obtains special commodity lists to address specific list deficiencies. These outside source lists are matched to the NASS list using record linkage programs. Most names on newly acquired lists are already on the NASS list. Records not on the NASS list are treated as potential farms until NASS can confirm their existence as a qualifying farm. Staff in NASS field offices routinely contact these potential farms to determine whether they meet the farm definition. For the 2012 Census of Agriculture, NASS made a concerted effort to work with Community-Based Organizations not only to improve list coverage for minorities but also to increase census awareness and participation.

List building activities for developing the 2012 CML started in 2009 by updating list information from respondents to the 2007 Census of Agriculture. Between 2010 and 2012, NASS conducted a series of National Agricultural Classification Surveys (NACS) on approximately 1.7 million records, which included nonrespondents from the 2007 census and newly added records from outside list sources. The NACS report forms collected information that was used to determine whether an operation met the farm definition. If the definition was met, the operation was added to the NASS list and subsequently to the CML. Addressees that were nonrespondents to a NACS were also added to the CML and identified with a special status code.

Measures were taken to improve name and address quality. Additional record linkage programs were run to detect and remove duplicate records both within each State and across States. List addresses were processed through the United States Postal Service's National Change of Address Registry and the Locatable Address Conversion System to ensure they were correct and complete. Records on the list with missing or invalid phone numbers were matched against a nationally available telephone database to obtain as many phone numbers as possible. To reduce costs, operations with characteristics that indicated they were unlikely to be farms, according to the farm definition, were

removed from the list.

The official CML for the 2012 Census of Agriculture was established on September 1, 2012. The list contained 3,009,641 records. There were 2,387,326 records that were thought to meet the NASS farm definition and 622,315 potential farm records, which included NACS nonrespondents, other records added to the CML by the NASS field offices after the record linkage process, and late adds to the CML that were not included in any previous NACS or State screening survey.

Not on the Mail List (NML)

Extensive efforts are directed toward developing a CML that includes all farms in the U.S. However, some farms are not on the list, and some agricultural operations on the list are not farms. NASS uses its June Agricultural Survey (JAS) to quantify the number and types of farms not on the CML. The tracts in the JAS that are not on the CML are said to be in the Not on the Mail List (NML) domain. If a tract in the NML domain is determined to be a farm during the census, it is an NML farm. The NML farms are used to estimate the undercoverage associated with the census.

The NASS area frame, which is used for the JAS, covers all land in the U.S. and includes all farms. The land in the U.S. is stratified by characteristics of the land. A probability sample of segments is drawn within each stratum for the JAS. Segments of approximately equal size are delineated within each stratum and designated on aerial photographs. The JAS sample of segments is allocated to strata to provide accurate measures of acres planted to widely grown crops, farm numbers, and inventories of cattle. Sampled segments in the JAS are personally enumerated. Each operation identified within a segment boundary is known as a tract.

The 2012 JAS sample was increased to improve the farm counts for operations that produced specialty commodities or had socially disadvantaged or minority operators. The total sample consisted of 14,376 segments of which 3,291 were additional segments added to facilitate the use of the JAS as an Agricultural Coverage Evaluation Survey (ACES). The additional segments were added based upon multivariate sample allocations to target specific items at the U.S. level. The 2012 JAS consisted of sample segments from all States, with the exception of Alaska where NASS does not maintain an area frame.

During the JAS prescreening operation, each tract is identified as either agricultural or non-agricultural. Each JAS agricultural tract is identified as a farm or non-farm in June based on the farm definition. Non-agricultural tracts are further classified into categories; with farm potential, with unknown farm potential, or with no farm potential. The names and addresses collected in the 2012 JAS were matched to the CML. Those from the JAS 2012 survey that did not match were determined to be in the NML domain and sent a yellow census report form so that they could be differentiated from the green report form sent to those addressees on the CML. Instructions on the census report form directed any respondent who received duplicate forms to complete the CML form and to mail all duplicate forms back together. Those who returned a CML and an NML form had been misclassified as NML and were removed from the NML domain.

The initial NML mailout consisted of 36,021 records. An additional 403 June area tracts linked to Census records that were Undeliverable as Addressed (UAA) were later added to the NML domain. A total of 36,424 NML records were summarized of which 5,565 records were truly NML and in-scope.

The farm/nonfarm status of each NML domain operation was determined based on the reported data in the census form. An operation in the NML domain that was determined to be a farm is referred to as an NML farm. Characteristics of NML farms and their operators provided a measure of the undercoverage of farms on the CML. The percentage of farms not represented on the CML varied considerably by State. In general, NML farms tended to be small in acreage, production, and sales of agricultural products. Farm operations were missing from the CML for various reasons, including the possibility that the operation started after development of the CML, the operation was so small that it did not appear in any agriculture-related source list, or the operation was misclassified as a nonfarm prior to census mailout. The CML was used with the NML in

a capture-recapture framework to represent all farming operations across all States in the JAS sample.

DATA COLLECTION OUTREACH AND PROMOTIONAL EFFORTS

NASS planned and executed a multi-phase strategic communications campaign for the 2012 Census of Agriculture, to increase the level of awareness and response among all U.S. agricultural producers.

- Phase 1 ran from October 2011 − July 2012. It raised awareness about the census and list building, encouraged producers to sign up in response to NASS mailings and at community, association, and other stakeholder meetings where NASS partners reached out.
- Phase 2 ran from July 2012 − December 2012. It notified farm operators and agricultural organizations that the census would be mailed in December, and encouraged communications regarding the census.
- Phase 3 ran from December 2012 – July 2013. It focused on census data collection with messaging urging response, reminding operators that it's-not-too-late-to-respond, and thank-you messaging.
- Phase 4 began in February 2014. It communicated information about the data release plan, which has four phases:

    - Phase A (November 2012 − December 2013) focused on thanking farmers for their participation in the census and partners for their leadership.
    - Phase B (January 2014 – February 2014) drew attention to the preliminary census release.
    - Phase C (February 2014 through May 2014) focused on the final census release.
    - Phase D (ongoing) continues to focus on the census findings as they are released.

As part of the plan, NASS targeted selective communications and outreach efforts on beginning and minority farm operators. All of these efforts were accomplished through an integrated communications program that focused on four primary areas: partnership building, local-level outreach, public relations, and paid media. External support was provided by a private agricultural communications agency.

The unifying force behind the 2012 communications campaign was the theme "There's Strength in Numbers." This was accompanied by supporting messages and artwork that created a consistent look and feel for all census communications. All messages and materials served the purpose of inspiring action: *Grow Your Farm Future - Shape Your Farm Programs - Boost Your Rural Services - Fill out your Census of Agriculture - Do your part to be counted - There's strength in numbers.*

Partnership and Local-Level Outreach

At the national level, NASS officials met with leaders from dozens of key agricultural organizations, State departments of agriculture, and other USDA agencies, to successfully secure their support in promoting the census among their constituencies. Stakeholders partnered with NASS to promote the 2012 Census of Agriculture through publications, special mailings, speeches, social media, websites, and other communications. In addition, through grassroots-level outreach and efforts, NASS partnered with a number of community-based organizations to reach minority and limited-resource farmers and ranchers. All national-level outreach was encouraged and mirrored at the regional, State, and local levels. Among the highlights of these partnership efforts was the production of more than 40 television and radio public service announcements (PSAs) featuring the U.S. Secretary of Agriculture, State secretaries, directors, and commissioners of agriculture and leaders from community-based organizations. The PSAs, available in both English and Spanish, encouraged farmers and ranchers to respond to the 2012 Census of Agriculture.

Coverage of American Indian and Alaska Native Farm Operators

To maximize coverage of American Indian and Alaska Native farm operators, special procedures were followed in the census. A concerted effort was made to get individual reports from every American Indian and Alaska Native farm operator in the country. If this was not possible within some reservations, a single reservation-level census report was obtained from knowledgeable reservation officials. These reports covered agricultural activity

on the entire reservation. NASS reviewed these data and removed duplication with any data reported by American Indian or Alaska Native farm operators who responded on an individual census report form. Additionally NASS obtained, from knowledgeable reservation officials, the count of American Indian and Alaska Native farm operators (on reservations) who were not counted through individual census report forms, but whose agricultural activity was included in the reservation-level report form.

This information is summarized in Table D, **American Indian and Alaska Native Operators: 2012**, providing the number of farm operators (for up to three operators per farm) reported as American Indian or Alaska Native in the race category, either as a single race or in combination with other races, on the individual census report forms, plus the total number of American Indian or Alaska Native operators farming on reservations as reported by reservation officials. The count from the individual report forms is summarized in the "Individually reported" column. It includes operators on or off reservations. The "Other" column provides counts of operators on reservations as reported by a reservation or tribal official. The "Total" column is simply a sum of the "Individually reported" and the "Other" columns. Tables in other parts of the publication count the reservation-level reports as single farms.

Public Relations

In the public relations arena, NASS and the contractor worked with internal and external stakeholders to equip them with communications tools and resources to deliver the census communications message to their audiences. NASS utilized its Intranet to deliver materials to the 12 regional and 46 field offices and created a "Partner to Promote the Census" portal on the census website to deliver public relations materials and tools to external stakeholders. The materials included, but were not limited to: customizable news releases, feature stories, newsletter articles, blogs; drop-in advertisements; website buttons and banners; PowerPoint templates; brochures; and more. In addition, at the national level NASS issued a dozen news releases citing department and agency spokespeople and published timely and relevant pieces to the USDA blog highlighting the census. These public relations efforts at the national, State, and local levels helped ensure that NASS's message about the census was continually in the media, including print and online publications, a variety of social media, radio, and some television programs. Media outlets included both those specializing in agriculture and more general outlets.

Paid Media

For the 2012 Census of Agriculture, NASS placed special emphasis on reaching new and beginning farmers, while continuing efforts to improve its reach within previously under-represented populations. Even with increasingly limited budgets and resources, NASS was able to apply a portion of funds towards paid media. Strategically, NASS purchased limited print and online advertising in areas where there was the potential for high concentrations of under-represented populations and new and beginning farmers and ranchers.

DATA COLLECTION

Method of Enumeration

Data collection was accomplished primarily by mailout/mailback, but supplemented with Electronic Data Reporting (EDR) on the Internet, and personal enumeration for special classes of records in the census operations. Personal enumeration (interviewing) involved the use of both Computer-Assisted Telephone Interviewing (CATI) and Computer-Assisted Personal Interviewing (CAPI). Enumerators at the NASS National Operations Center in St. Louis, MO conducted CATI data collection. In addition, enumerators under contract with NASS through the National Association of State Departments of Agriculture (NASDA) conducted phone and personal interviews with respondents. For the 2012 Census of Agriculture, NASS implemented a pre-notification strategy in an effort to increase awareness, improve overall responses, and encourage respondents to report early to avoid continued correspondence. All records in the initial mailout received either a postcard or pre-recorded voice message announcing the census mail packets were coming.

Report Forms

There were seven regionalized versions of the report forms used for the 2012 Census of Agriculture. The report form versions were designed to facilitate reporting crops most commonly grown within each report form region. Additionally, an American Indian report form was developed to facilitate reporting for operations on reservations in Arizona, New Mexico, and Utah. The regional report form numbers are: 12-A101, 12-A102, 12-A103, 12-A104, 12-A105, 12-A106 and 12-A107 (HI). The American Indian report form is 12-A200. All of the forms allowed respondents to write in specific commodities that were not listed on their form.

Report Form Mailings

Pre-notification by postcard or pre-recorded message began December 10, 2012. Approximately 3.0 million mail packets were mailed in December 2012. Each packet contained a cover letter, instruction sheet, a labeled report form, and a return envelope. The Census Bureau's National Processing Center (NPC) in Jeffersonville, IN was contracted to perform mail packet preparation, initial mailout, and two follow-up mailings to nonrespondents.

The initial mailout was followed by a thank-you reminder postcard that was delivered in January 2013 to all operations that received mail packets. First follow-up mail packets were mailed in mid-February 2013 to approximately 1.0 million nonrespondents. Second follow-up mail packets were mailed in mid-March 2013 to approximately 750,000 nonrespondents.

Personal Follow-up

Operating concurrently with NPC's mail data collection efforts, NASS telephone call centers targeted selected groups of census nonrespondents for telephone enumeration. NASS field offices targeted selected groups of census records for in-person enumeration. These efforts were referred to as:

- Suspicious Out of Scope Follow-up
- Criteria Record Follow-up
- Must Case Follow-up
- American Indian and Alaska Native Farm Operator Follow-up
- Low Response County Follow-up
- Last Call Nonresponse Follow-up
- Not on Mail List (NML) Follow-up

Suspicious Out-of-Scope Follow-up. The Suspicious Out-of-Scope Follow-up was a phone follow-up that began in February 2013 and was conducted through May 2013. It included records that mailed their form back with a response that they were no longer farming. These operations had reported agricultural information in another survey during 2012. The operations were re-contacted with a CATI instrument to either verify the respondent was not farming or complete a census report form.

Criteria Record Follow-up. Nonrespondents and refusals to the National Agricultural Classification Surveys received unique coding on the CML and are referred to collectively as Criteria Records for follow-up data collection. These Criteria Records typically had a lower probability of meeting the farm definition and were less likely to respond. It was critical to identify those records in this group that represented farms to provide coverage of the small farm population. Small farms make up a significant portion of the overall U.S. farm population.

For the 2012 Census of Agriculture, 276,043 Criteria Records were included in the Census Mail List (CML). A sample of 23,739 Criteria Records was selected for targeted data collection efforts. The sampled records were first contacted by telephone using the census CATI instrument beginning in February 2013 after the initial mail returns were processed. Certified mail to 18,831 respondents was used for those who could not be contacted by telephone. Data collection resulted in 10,887 returns from both telephone and certified mail. The in-scope rate from the returns was applied to the remaining criteria records during replication, which is described in the next sub-section.

Must Case Follow-up. Must cases were known large operations, the absence of which could have significantly affected the accuracy of census results. For the 2012 Census of Agriculture, 118,533 records were categorized as Must cases. Each active Must operation was accounted for by mail receipt, phone interview, or personal enumeration; if an operation was no longer in operation, its nonfarm status was

documented. CATI calling of nonrespondent Must cases was undertaken by call centers from March 2013 through May 2013, after the initial and first follow-up mailing. Following the CATI calling, the remaining nonresponse Must cases were assigned to field offices for personal enumeration. Because of the potential importance of Must cases, they were all accounted for and therefore not eligible for nonresponse weighting adjustment.

American Indian and Alaska Native Farm Operator Follow-up. The American Indian report form (12-A200) was mailed to all operations in Arizona, New Mexico and Utah thought to have an American Indian or Alaska Native operator. It was included in the initial mailout, but due to poor mail response a personal enumeration data collection strategy was utilized with no additional mail follow-up. A concerted effort was made to get individual reports from every American Indian and Alaska Native farm operator in the country. If this was not possible within a reservation, a single reservation-level census report was obtained from knowledgeable reservation officials. These reports covered agricultural activity on the entire reservation. The NASS reviewed these data and removed any duplicate data reported by American Indian or Alaska Native farm operators from that reservation who responded on an individual census report form. Additionally NASS obtained, from knowledgeable reservation officials, the count of American Indian and Alaska Native farm operators (on the reservations) who were not counted through individual census report forms, but whose agricultural activity was included in the reservation-level report form.

Low Response County Follow-up. The Low Response County (LRC) follow-up activity was used to increase the response rate in all counties to at least 75 percent. CATI was used for this follow-up activity. NASS utilized an adaptive design technique to identify particular records for telephone contact, in an effort to increase coverage on minority operations and operations known to produce specialty commodities. In early April 2013, NASS identified nonresponse cases in counties with a response rate of less than 75 percent. Nonresponse records in these counties were then prioritized so that minority operations and specialty commodity producers were the primary records delivered to phone enumerators. Nonrespondent telephone contact information was transmitted electronically to NASS call centers and incorporated into their CATI instrument. CATI follow-up activities began in mid-April 2013 and continued through mid-June 2012. Automated procedures were employed biweekly to ensure that the record selection procedures were targeting counties that would meet the goals of increasing minority operation coverage and to monitor the number of respondents needed to reach the 75 percent county response rate. When the required number of completions was achieved for a given county, LRC activity was suspended in that county.

Last Call Nonresponse Follow-up. The Last Call Nonresponse Follow-up activity was utilized to increase the national response rate to 80 percent. All remaining nonresponse records with an expected value of sales greater than $50,000 in counties that had not achieved a 75-percent response rate were eligible for this phone follow-up activity. CATI was used for this activity and began in mid-July 2013 and lasted until August 1, 2013. Automated procedures were employed to monitor the number of respondents needed and completed. When a 75 percent response rate was achieved for a given county, follow-up in that county was suspended. NASS achieved its goal of an 80-percent national response rate utilizing Last Call Nonresponse Follow-up.

Not on the Mail List (NML) Follow-up. To account for farming operations not on the CML, NASS used its 2012 JAS supplemented sample from the NASS area frame. The NASS area frame covers all land in the U.S. with the exception of Alaska and includes all farms. As previously described, the NASS conducted a record linkage operation between the CML records and the records from the 2012 JAS. Those 2012 JAS records that did not match records on the CML were designated as "Not on the Mail List (NML)" records. These records were mailed a yellow census form so that it could be differentiated from the green forms mailed to CML records. The NML records were mailed at the same time as the census mailing and received the same follow-up procedures as the census mailing through the first follow-up in mid-February 2013. Beginning in March 2013, CATI was used for nonresponse follow-up for NML nonrespondents.

Replication

Replication is utilized to improve efficiency and reduce respondent burden. To adjust for nonresponse associated with criteria records in the 2007 Census of Agriculture, NASS replicated a set of respondents determined to be in-scope from the last mailing of the Agricultural Identification Survey (AIS), conducted in December 2006. The replicated records represented operations that were relatively small in size and homogeneous in nature. Replicated records were assumed to be in-scope, based on their AIS reported data.

For the 2012 Census of Agriculture, a first mailing was sent to the criteria records, a subpopulation consisting of all of the approximately 74,000 respondents to the 2011 NACS mailing. This included pre-notification using a pre-recorded message, the first mailing, and the thank-you reminder post card. No further follow-up efforts were conducted on this subpopulation. As in 2007, the agricultural operations in this subpopulation were relatively small in size and homogeneous in nature. The responses from the criteria records were used to estimate the in-scope rate for the 20,168 nonrespondents from this subpopulation.

Records were selected randomly for replication or coding as out-of-scope based on the estimated in-scope rate. The use of the in-scope rate after one mailing is supported by analysis of 2007 census data, which indicated the early in-scope rate was a reasonable proxy for the in-scope rate for the subpopulation of criteria records that did not respond to the NACS immediately preceding the census mailing. Of the 20,168 NACS records with no response, 16,762 records were selected to be in-scope.

Data relationships between the 2012 responses and their respective NACS data were applied to the NACS data for the nonrespondents selected to be in-scope to derive values to seed replication. Then replication was conducted through imputation.

Criteria records with no response to the December 2011 NACS were excluded in the capture-recapture adjustments for coverage, response, or correct classification. The in-scope records were each given an initial weight of one. However, for calibration, the replicated in-scope records were eligible for a coverage adjustment.

REPORT FORM PROCESSING

Data Capture

The Census Bureau's National Processing Center (NPC) in Jeffersonville, IN was contracted to process returned mail packets. NASS staff on site at the NPC provided technical guidance and monitored NPC processing activities. All report forms returned to the NPC were immediately checked in, using bar codes printed on the mailing label, and removed from follow-up report form mailings. All forms with any data were scanned and an image was made of each page of a report form. Optical Mark Recognition (OMR) was used to capture categorical responses and to identify the other answer zones in which some type of mark was present.

Data entry operators keyed data from the scanned images using OMR results that highlighted the areas of the report forms with respondent entries. The keyer evaluated the contents and captured pertinent responses. Ten percent of the captured data were keyed a second time for quality control. If differences existed between the first keyed value and the second, an adjudicator handled resolution. The decision of the adjudicator was used to grade the performance of the keyers, who were required to maintain a certain accuracy level.

The images and the captured data were transferred to NASS's centralized network and became available to field offices and headquarters on a flow basis. The images were available for use in all stages of review. Images were computer generated for reports obtained from the telephone interviews and the Internet.

Editing Data

Captured data were processed through a computer formatting program, which verified that records were valid – that the record identification number was on the list of census records, that the reported counties of operation and production were valid, and other related criteria. Rejected records were referred to

analysts for correction. Accepted records were sent to a complex computer batch edit process. Each execution of the computer edit in batch mode consisted of records from only one State and flowed as the data were received from the NPC, the NASS Electronic Data Reporting (EDR) web utility, or the Computer-Assisted Telephone Interview (CATI) applications.

The computer edit determined whether a reporting operation met the qualifying criteria to be counted as a farm (in-scope). The edit examined each in-scope record for reasonableness and completeness and determined whether to accept the recorded value for each data item or to take corrective action. Such corrective actions included removing erroneously reported values, replacing an unreasonable value with one consistent with other reported data, or providing a value for an overlooked item. To the extent possible, the computer edit determined a replacement value. Strategies for determining replacement values are discussed in the next section. Operations failing to meet the qualifying criteria were categorized as out-of-scope for the census; that is, they were classified as being a nonfarm. Out-of-scope records that NASS had reason to believe might be in-scope (indications of recent and/or significant agricultural activity reported on NASS surveys, for example) were referred to analysts for verification.

The edit systematically checked reported data section-by-section with the overall objective of achieving an internally consistent and complete report. NASS subject-matter experts had previously defined the criteria for acceptable data. Problems that could not be resolved within the edit were referred to an analyst for intervention. Prior to the census mailout, NASS established a group of 90 analysts in a Census Editing Unit in the National Operations Center in St. Louis, MO who examined the scanned images, consulted additional sources of information, and determined an appropriate action. Field office analysts also participated using an interactive version of the edit program to submit corrected data and immediately re-edit the record to ensure a satisfactory solution.

Imputing Data

The edit determined the best value to impute for reported responses that were deemed unreasonable and for required responses that were absent. If an item could not be calculated directly from other current responses, the edit determined whether acreage, production or inventory items had been reported for that farm on a recent NASS crop or livestock survey. For operators who had not changed in five years, demographic variables such as race and sex were taken from the previous census. Administrative data from the Farm Service Agency were used for a few items, such as Conservation Reserve Program acreage. When deterministic edit logic and previously-reported data sources proved inadequate, data from a reporting farm of similar type, size, and location (a donor farm) were considered. In cases where automated imputation was unable to provide a consistent report, the record was referred to an analyst for resolution.

Separate system processes were established to efficiently provide data from a similar farm to the edit when donor imputation was required. The farm characteristics used to define similarity between a recipient record and its donor record were determined dynamically by the edit logic. Euclidean distance was used for similarity computations, with each contributing similarity characteristic scaled appropriately. The most similar farm based on this criterion (the "nearest neighbor") was identified and returned to the edit for use as a donor. The calculated distance between the centroids of the principal counties of production of the donor and recipient was always included as one of the measures of similarity.

To provide donors to the automated edit, a pool of successfully edited records was maintained for each section of the report form. These donor pools began with 2007 census data, reconfigured to emulate 2012 data and then edited using 2012 logic. Data from the 2010 Census Content Test were similarly remapped and edited before being added to the original donor pools. As 2012 records were successfully processed, they were added to the donor pools, which maintained the most recent data for each farm. Donor pools were updated approximately every other week, as determined by edit processing schedules. After several updates, all initial data records were dropped, leaving only 2012 records in the donor pools. After each update, donor pool records were grouped into strata containing farms in the same state of similar type and size, using a data-

driven algorithm to define strata. Certain American Indian farms were treated as a separate group, effectively having their own donor pool.

In response to each donor request issued by the edit, a dedicated system process would search the appropriate stratum and respond with the most similar donor, while giving preference to more recent donors. In relatively rare instances where it was unable to provide a donor, the donor selection process issued an appropriate failure message to the edit. Imputation failures occurred for several different reasons. The requirement that an imputed value be positive could have ruled out all available donors, as could have the necessity for the donor record to satisfy a particular constraint – say, that the donor record has cattle, but no milk cows. In general, an imputation failure occurred if there was no satisfactory donor in the same profile as the report being edited. Records with imputation failures were either held until more records were available in the donor pool or referred to an analyst. In addition, when such a failure occurred in finding a donor for expenditure data, a program provided values from a table of donor pool averages in lieu of values from an individual donor, wherever possible. This 'failover' utility was new for the 2012 census imputation process, and significantly reduced the number of imputation failures among the expenditure and labor variables. During the early stages of editing, records requiring imputation for production (and hence yields) of field crops or hay, land values, or certain expenditure variables were set aside or "parked." These records were edited when the donor pools contained only 2012 records, ensuring that 2012 data were used in imputations for these variables.

After receiving a donor's data, the edit substituted the values into the edited record. In many cases, the donor record's data value was scaled using another data field specified in the edit logic. In such cases, the size of the auxiliary field's value in the edited record, relative to its value in the donor record, was used to inflate or reduce the donor record's value for the imputed field. The imputed data were then validated by the same edit logic to which reported data were subject. Since imputation was conducted independently for each occurrence, reports requiring multiple imputations may have drawn from multiple donors.

Data Analysis

The complex edit ensured the full internal consistency of the record. Successfully completing the edit did not provide insight as to whether the report was reasonable compared to other reports in the county. Analysts were provided an additional set of tools, in the form of listings and graphs, to review record-level data across farms. These examinations revealed extreme outliers, large and small, or unique data distribution patterns that were possibly a result of reporting, recording, or handling errors. Potential problems were researched and, when necessary, corrections were made and the record interactively edited again.

When NASS summarizes the census of agriculture, it assigns the data from an individual report to the "principal" county. The principal county is based on the operator's response to a census question and is the one county in which the majority of agricultural products are produced. Because some large operations have significant production in multiple counties, some reports were broken up into multiple source counties, to more accurately allocate the data. Similarly, large farms operating in more than one State were treated as distinct, state-specific operations. A separate report form was completed for each county or State and a separate record was added.

ACCOUNTING FOR UNDERCOVERAGE, NONRESPONSE, AND MISCLASSIFICATION

Although much effort was expended making the CML as complete as possible, the CML did not include all U.S. farms, resulting in list undercoverage. Some farm operators who were on the CML did not respond to the census, despite numerous attempts to contact them. In addition, although each operation was classified as a farm or a nonfarm based on the responses to the census report form, some were misclassified; that is, some nonfarms were classified as farms and some farms were classified as nonfarms. NASS's goal was to produce agricultural census totals for publication that were fully adjusted for list undercoverage, nonresponse and misclassification at the county level.

In the 2007 Census of Agriculture, adjustments for undercoverage and nonresponse were estimated independently. In 2007, as in earlier censuses, the NASS area frame was used to adjust for undercoverage. This process assumed that the area frame provided complete coverage and that all operations were correctly classified as farm/nonfarm. To determine the extent of undercoverage in 2007, the CML records were matched to the area-frame tracts designated as agricultural, non-agricultural with potential, or non-agricultural with potential unknown in June. The area-frame tracts that did not match a CML record were designated as being in the Not on the Mail List (NML) domain. In 2007, tracts that were determined to be non-agricultural without potential during the pre-screening phase of the June Agricultural Survey (JAS) were not considered in the NML domain construction. The NML domain tracts were sent a census form and, if a tract was associated with a farm, then that farm contributed to the correction for undercoverage.

To adjust for nonresponse in 2007, each responding CML record was given a probability of being a farm using a classification tree. The inverse of this probability became the nonresponse weight for that record. For undercoverage, the adjustment provided State-level values. A State-level estimate was based on the weighted sum of the responders with an adjustment for the non-responders within that State plus the State-level undercoverage adjustment. Because State-level farm count estimates based on this two-step process sometimes had high standard errors and apparent biases, the national-level adjusted estimates were smoothed across States, producing initial State-level farm operation coverage targets.

Research following the 2007 Census of Agriculture led to the realization that some area-frame operations were misclassified as farm/nonfarm, which was in conflict with the previous assumption that the JAS farm classification was the accurate classification. Further, because nonresponse could only occur if the operation was on the CML, undercoverage and nonresponse were dependent. Thus in 2012, NASS used capture-recapture methodology to adjust for undercoverage, nonresponse, and misclassification. To implement capture-recapture methods, two independent surveys were required. The 2012 Census of Agriculture (based on the CML) and the 2012 JAS (based on the area frame) were those two surveys. Historically, NASS has been careful to maintain the independence of these two surveys.

A second assumption was that the proportion of JAS farms with a given set of characteristics captured by the census was equal to the proportion of U.S. farms with those same characteristics captured by the census.

For a farm to be identified as a farm, and thus captured by the census, it must be on the CML, respond to the census report form and, based on the census response, be classified as a farm; that is, the capture probability π_C is of interest:

$$\pi_C = \pi(\text{CML, Responded, Farm on Census}|\text{Farm})$$

Two types of classification error can occur. First, a farm can be misclassified as a nonfarm. This type of misclassification is accounted for in determining the probability of capture π_C. The second type of classification error results when a response to the census is classified as a farm operation when it does not meet the definition of a farm. That is, some farms on the CML may be misclassified from their census report response and may be nonfarms. To account for the misclassification of nonfarms as farms, the probability of a farm on the census being classified correctly must be estimated; that is,

$$\pi_{CCFC} = \pi(\text{Farm} \mid \text{Farm on Census})$$

where *CCFC* represents Correct Census Farm Classification. To adjust for undercoverage, nonresponse, and misclassification, each CML record classified as a farm based on its response to the census report form was given a weight of the ratio of the estimated probability of correct classification of a farm on the census and the estimated probability of capture ($\hat{\pi}_{CCFC} / \hat{\pi}_C$ where the hat symbol ($\hat{}$) denotes an estimate). To estimate the number of farms with a given set of characteristics, the weights of CML records responding as farms on the census and having that set of characteristics were summed. This estimator is

referred to as the capture-recapture estimator *(CR)*:

$$CR = \sum_{i \in F} \frac{\hat{\pi}_{CCFC,i}}{\hat{\pi}_{C,i}}$$

where F is the set of all CML records classified as farms based on their responses to the census questionnaire.

To estimate the capture and correct census farm classification probabilities, a matched dataset consisting of JAS records and census records was created. Records in the 2012 JAS sample were matched to the 2012 census using probabilistic record linkage. The CML records that matched with JAS tracts represent the Census sample. Note: The Census Sample is a subset of the CML records and includes only those records matching a JAS tract. Both agricultural and non-agricultural tracts were included in the matched dataset. (This differs from the 2007 processes, which considered only the agricultural tracts and non-agricultural tracts with potential or with potential unknown. It also included CML records that responded to the census as a farm or nonfarm and CML records that did not respond to the census.)

Resolving Farm Status

The farm status based on census responses to either the CML or NML census data collection and the JAS agreed in most cases; these records are referred to as having resolved farm status. However, in other cases, a record was identified as a farm (nonfarm) on the JAS and as a nonfarm (farm) by the census through either the CML or the NML. Such records are said to have conflicting or unresolved farm status. An operation identified as a farm is referred to as in-scope; one identified as a nonfarm is referred to as out-of-scope. From the set of matched records, three groups with conflicting farm status were identified: 1) in-scope JAS records that were out-of-scope on the census and 2) census in-scope and JAS out-of-scope records, and 3) in-scope JAS records that did not have a census response. The records with conflicting farm status were sent to regional field offices for review. In each case, efforts were made to determine whether (1) the status had changed between June and December when the census was conducted, (2) the JAS farm status was correct, (3) the census farm status was correct, (4) the records were incorrectly matched, or (5) the farm status could not be resolved. Not all of the records with conflicting farm status could be resolved. In 2012, 11.6 percent of the records in the Census Sample had unresolved farm status. Of these, 18.9 percent were from nonresponse to the census report form.

The probability an operation is a farm was estimated for the records with unresolved farm status. Using the 2012 matched dataset, a logistic model of the probability an operation is a farm based on the records with resolved farm status was developed; that is, the operations where the farm (or nonfarm) status agreed between the JAS and the census were used to develop a missing data model, which was then used to resolve farm status. The final missing data model was used to impute the probability that each of the agricultural operations with unresolved farm status is a farm. For the resolved farms and nonfarms, the probability of the operation being a farm was 1 and 0, respectively. Five-fold cross-validation was used to develop and to compare competing models. The accuracy of the model was thereby not overstated due to fitting and evaluating the model on the same set of data. To ensure that each of the cross-validation samples covered the U.S., the five cross-validation samples of JAS segments were drawn within State-stratum combinations. Characteristics of the JAS tracts were considered as potential covariates in the model. Because limited information is available for JAS nonfarm tracts, county-level socio-demographic variables from the most recent U.S. population census were also considered. The sample weight associated with each JAS tract was multiplied by the probability of being a farm. This adjusted weight was used in all subsequent modeling.

Capture Probabilities

Recall that, for a farm to be identified as a farm, and thus captured, by the census, it must be on the CML, respond to the census report form and, based on the census response, be classified as a farm. These adjustments are dependent so that the probability of capture π_C may be written as

$\pi_C = \pi$(CML, Responded, Farm on Census|Farm)= π(CML|Farm)π(Responded|CML, Farm)π(Farm on Census|CML, Responded, Farm)

The probability of capturing a farm depends on the characteristics of the farm. Using five-fold cross-validation, three logistic models were developed based on the matched dataset. The first model estimated the probability of a farm being on the CML. The second model estimated the probability that a farm on the CML responded to the census report form. The final model estimated the probability that a farm that was on the CML and responded to the census was identified as a farm based on its response. The probability that a farm is captured by the census of agriculture is then the product of the three conditional probabilities that a farm is on the CML, responds, and is identified as a farm.

Note 1: Responses were required for Must cases. These operations were only included in modeling the probability of a farm being on the CML. Consequently, the weight associated with a Must record was the reciprocal of the probability of a farm being on the CML.

Note 2: Two sets of models were created. One set estimated the probability of capture for Texas farms. The other set provided estimated capture probabilities for farms in the remaining States, except for Alaska.

Note 3: Because Alaska is not included in the JAS and thus has no area frame, the Alaskan agricultural operations were not included in the capture-recapture process. No adjustments were made for undercoverage or misclassification. To account for nonresponse, the CML records were divided into three groups: (1) the Must records, (2) the Criteria Records, and (3) the remaining CML records. The must records received a weight of one, thereby receiving no adjustment for nonresponse. The probability of response for each of the other two groups was the proportion of responders within the group. Each record within the group was then given a weight equal to the reciprocal of the probability of response.

Misclassification

An operation is misclassified if (1) it meets the definition of a farm, but is classified as a nonfarm on the census or (2) it does not meet the definition of a farm, but is classified as a farm on the census. The first type of misclassification is accounted for when modeling the probability of capture. An adjustment is still needed for the misclassification of nonfarms as farms. As with farm status and capture, the probability of this misclassification depends on an operation's characteristics. Thus, a final logistic model was developed. Given that an operation was classified as a farm on the CML, the probability of its being a farm was modeled based on its characteristics. Five-fold cross-validation was used to ensure that the model was not over-fitted.

CALIBRATION

Each operation identified as being in-scope on the CML was given a weight equal to the probability of misclassification divided by the probability of capture. This weight accounted for undercoverage, nonresponse, and both types of misclassification.

The record weighting processes were initially applied at the State level to produce adjusted estimates of farm numbers and land in farms for 63 different categories of 8 characteristics of the farm operation or the farm operator -- value of agricultural sales (8); age (2); female; race (4); Hispanic origin of principal farm operator ; 4 sales categories for each of 10 major commodities (40); and farm type groups (7). The State-level number of farms and land in farms were two additional adjusted estimates, resulting in 65 categories. To reduce the intercensal variation at the State level, the State targets were smoothed by averaging the 2012 estimates from capture-recapture and the published 2007 state estimates with the restrictions that the smoothed targets were within one standard error of the capture-recapture estimates. The smoothed State targets were rescaled so that they summed to the national capture-recapture estimates.

These State estimates were general purpose in that they did not provide any control over expected levels of commodity production of the individual farm operation. As a result of this limitation, the

procedures could have over-adjusted or under-adjusted for commodity production. To address this, a second set of variables, known as commodity targets, was added to the calibration algorithm. These targets were commodity totals from administrative sources or from NASS surveys of nonfarm populations (e.g. USDA Farm Service Agency program data, Agricultural Marketing Service market orders, livestock slaughter data, cotton ginning data). The introduction of these commodity coverage targets strengthened the overall adjustment procedure by ensuring that major commodity totals remained within reasonable bounds of established benchmarks. Commodity coverage targets with acceptable ranges were established by subject-matter experts for each State, with New England treated as a State.

Each State was calibrated separately. The calibration algorithm addressed commodity coverage. The algorithm was controlled by the 65 State farm operation coverage targets and the State commodity coverage targets. To ensure that the calibration process converged with so many constraints, it was desirable to provide some tolerance ranges for each target. Although full calibration to a single point estimate would assure that the weighted total among census respondents equaled its target for each calibration variable in either set, it was not always possible to calibrate to such a large number of target values while ensuring that farm weights were within a reasonable range and not less than one. Because of this and because calibration targets are estimates themselves subject to uncertainty, NASS allowed some tolerance in the determination of the adjusted weights. Rather than forcing the total for each calibration variable computed using the adjusted weights to equal a specific amount, NASS allowed the estimated total to fall within a tolerance range. This tolerance strategy made it possible for the calibration algorithm to produce a set of satisfactory, adjusted weights.

Ranges for the farm operation coverage targets were determined differently from the commodity targets. The State target for number of farms had no tolerance range. The tolerance range for the 64 other State farm operation coverage targets was the estimated smoothed State total for the variable plus or minus one-half of the standard error of the capture-recapture estimate. This choice limited the cumulative deviation from the estimated total for a variable when State totals were summed to a U.S. level total. The commodity target tolerance ranges were determined by subject-matter experts, based on the amount of confidence in the source, and usually were less than plus or minus two percent of the target. Ranges were not necessarily symmetric around the target value.

Census data collection was assumed to be complete for very large and unique farms with their weight being controlled to 1 during the calibration adjustment process. For all other farms, adjustment weights were obtained using truncated linear calibration which forced the final census record weights to fall in the interval [1,6]. Adjustments began with the nonresponse and misclassification adjusted weights. Through calibration, a second stage weight that simultaneously satisfied all farm operation coverage and commodity coverage calibration targets was obtained. Calibration was seldom able to adjust weights so that all State targets were met. Within the calibration process, the highest priority for meeting a target was given to the number of farms, total land in farms, and top cash-receipt commodities accounting for 80 percent of the State's production. All remaining targets associated with commodities and characteristics of farms and farm operators had equal priority. If a value within the tolerance range of any variable could not be achieved in a given State, the variable was removed as a target in that State and the calibration algorithm was rerun.

Weight computations in the final algorithms were performed to several decimals. Thus, the fully-adjusted weights were non-integer numbers. To ensure that all subdomains for which NASS publishes summed to their grand total, fully-adjusted weights were integerized. This eliminated the need for rounding individual cell values and ensured that marginal totals always added correctly to the grand total. As an example of how the integerization process worked, assume there were five census records in a county with final noninteger coverage weights of 2.2, for a total of 11. The integerization process randomly selected four of these records and rounded their final weight down to 2.0 and rounded the fifth record up to 3.0, for a total of 11.

The proportions of selected census data items that

are due to coverage, response, and classification adjustments are displayed in Tables A and C.

DISCLOSURE REVIEW

After tabulation and review of the aggregates, a comprehensive disclosure review was conducted. NASS is obligated to withhold, under Title 7, U.S. Code, any total that would reveal an individual's information or allow it to be closely estimated by the public. Cell suppression was used to protect the cells that were determined to be sensitive to a disclosure of information. Farm counts are not considered sensitive and are not subject to disclosure controls.

Based on agency standards, data cells were determined to be sensitive to a disclosure of information if they violated either of two criteria rules. The threshold rule was violated if the data cell contained less than three operations. For example, if only one farmer produced turkeys in a county, NASS could not publish the county total for turkey inventory without disclosing that individual's information. The dominance rule was violated if the distribution of the data within the cell allowed a data user to estimate any respondent's data too closely. For example, if there are many farmers producing turkeys in a county and some of them were large enough to dominate the cell total, NASS could not publish the county total for turkey inventory without risking disclosing an individual respondent's data. In both of these situations, the data were suppressed and a "(D)" was placed in the cell in the census publication table. These data cells were referred to as primary suppressions.

Since most items were summed to marginal totals, primary suppressions within these summation relationships were protected by ensuring that there were additional suppressions within the linear relationship that provided adequate protection for the primary. A detailed computer routine selected additional data cells for suppression to ensure all primary suppressions were properly protected in all linear relationships in all tables. These data cells were referred to as complementary suppressions. These cells were not themselves sensitive to a disclosure of information but were suppressed to protect other primary suppressions. A "(D)" was also placed in the cell of the census publication table to indicate a complementary suppression. A data user could not determine whether a cell with a (D) represented a primary or a complementary suppression.

Field office analysts reviewed all complementary suppressions to ensure no cells had been withheld that were vital to the data users. In instances where complimentary suppressions were deemed critically important to a State or county, analysts requested an override and a different complementary cell was chosen.

CENSUS QUALITY

The purpose of the census of agriculture is to account for "any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year." To accomplish this, NASS develops a CML that contains identifying information for operations that have an indication of meeting the census definition, develops procedures to collect agricultural information from those records, establishes criteria for analyst review of the data, creates computer routines to correct or complete the requested information, and provides census estimates of the characteristics of farms and farm operators with associated measures of uncertainty.

It is not likely that either the CML includes all operations that meet the definition of a farm or that all those that do meet the definition of a farm respond to the census inquiry. The goal is to publish data with a high level of quality. There are many ways to measure the quality of a census.

One of the first indicators used is a measure of the response to the census data collection as it has generally been thought that a high response rate indicates more complete coverage of the population of interest. This is a valid assumption if the enumeration list, the CML here, has complete coverage of the population of interest. In the case of the census of agriculture, the definition requiring advance knowledge of sales makes achieving a high level of coverage difficult. To ensure that the census of agriculture is as complete as possible, records are included that might not meet the census definition of a farm – in fact, almost 50 percent more records than the anticipated number of qualifying farm operations

were included in the 2012 CML. A second indicator of quality then is the coverage of the farm population by the CML. Other indicators of quality relate to the accuracy and completeness of the data, and the validity of the procedures used in processing the data.

In some cases, NASS was able to produce measures of quality – such as the response rate to the data collection, the coverage of the census mail list, and the variability of the final adjusted estimates. In other cases, measures were not produced but descriptions of procedures that NASS used to reduce errors from the procedures were subsequently provided.

Census Response Rate

The response rate is one indicator of the quality of a data collection. It is generally assumed that if a response rate is close to a full participation level of 100 percent, the potential for nonresponse bias is small, although this has been questioned recently in the literature. Because the CML contains both farm and nonfarm records, the response rate is an indicator of replying to the census data collection effort, but does not reflect whether those responding met the farm definition. The response rate for the 2012 Census of Agriculture CML is 80.1 percent as compared with a response rate of 85.2 percent for the 2007 Census of Agriculture and 88.0 for the 2002 Census of Agriculture.

The 2012 Census of Agriculture response rate used the fourth response rate formula from the American Association of Public Opinion Research Response Rate Standard Definitions manual:

$$RR\ 4 = \frac{C_{adj}}{C_{adj} + R + NC + O + Replicated + e(U)}(100)$$

where

C_{adj} = number of fully and partially completed records, excluding replicated records
R = number of explicit refusals
NC = number of non-contacted operations
O = number of other types of nonrespondents
Replicated = number of replicated records
U = number of operations of unknown eligibility
e(U) = estimated number of operations of unknown eligibility assumed to be eligible

Records were classified into the above variables based on the combination of their active status (AS) codes, in-scope status, and replication status. Active status refers to the eligibility status of records for selection on the CML. All replicated records were considered to be a form of nonresponse and were classified into other nonrespondents; in-scope status was considered immaterial.

Certain active status classifications indicated records of unknown agricultural status. These classifications included records to be removed from the CML but had data from outside sources indicating agricultural activity, new records from outside data sources, nonrespondents and refusals to the NACS, records for regional office handling only, and records with Farm Service Agency or Conservation Reserve Program data on operations that are not owned by the principal operator. These records were stratified (grouped) based on their probabilities of being in-scope had they responded. The estimated number of in-scope nonrespondents was calculated for the hth stratum (group) by the following formula:

$$e(U_h) = \left(\frac{C_{in-scope,h}}{C_h}\right)U_h$$

where

$e(U_h)$ = estimated number of operations of unknown eligibility assumed to be eligible in the *h*th group
$C_{in\text{-}scope,h}$ = the number of completed and in-scope census records in the *h*th group
C_h = the number of completed census records in the *h*th group
U_h = number of operations of unknown eligibility in the *h*th group

Census Coverage

As a side-product of the statistical adjustment used to account for undercoverage, nonresponse of farms on the CML, and misclassification of responses to the census, the proportion of the adjustments due to each of those factors can be derived. The percentages of final census estimates due to adjustments for

undercoverage, nonresponse, and misclassification as well as the total percent adjustment for selected items are displayed in Tables A and C.

MEASURED ERRORS IN THE CENSUS PROCESS

Although the census of agriculture does not inherently rely on a sample, it uses statistical procedures in compiling the CML, in its data collection procedures, in data editing and processing, and in compiling the final data. Additionally, it uses statistical procedures to both measure errors in the various processes and in making adjustments for those errors in the final data. One example is the statistical process used to account for undercoverage, nonresponse of farms on the CML, and misclassification of responses to the census. The basis of the undercoverage adjustment is the capture-recapture procedure that uses the area sample enumeration from the June Agricultural Survey. The largest contribution to error in the census estimates is due to the adjustments for nonresponse, undercoverage, misclassification, calibration and integerization.

Variability in Census Estimates due to Statistical Adjustment

In conducting the 2012 Census of Agriculture, efforts were initiated to measure error associated with the adjustments for farm operations that were not on the CML, for farm operations that were on the CML but did not respond to the census report form , for farms and nonfarms that were misclassified as nonfarms and farms, respectively, for calibration, and for integerization. These error measurements were developed from the standard error of the estimates at the national, State, and county levels and were expressed as coefficients of variation (CVs) at the national and State levels and as generalized coefficients of variation (GCVs) at the county levels.

The standard error of an estimate is an estimate of the standard deviation of the sampling distribution of the estimator. Because Texas and Alaska were modeled separately from the other States, the variances of a national-level data item for these two States were computed separately and added to the variance of that data item for the rest of the U.S. The standard error was then the square root of the total variance. In each case, standard errors were computed using the group jackknife approach. To conduct the jackknifing, k mutually exclusive and exhaustive groups of JAS segments were formed. The groups were selected using a stratified random design so that each group reflected the survey design, including State and agricultural strata within a State. In turn, each group, $j = 1, 2, \ldots, k$, was deleted and the capture-recapture estimate $CR_i^{(j)}$ was computed for each data item i at the specified geographical level, such as nation, State, or county, using the remaining $(k - 1)$ groups. Estimates of the variance and standard error associated with the capture-recapture estimate CR_i are then, respectively,

$$\sigma_i^2 = \frac{k-1}{k}\sum_{j=1}^{k}(CR_i^{(j)} - CR_i)^2; \qquad SE(CR_i) = \sqrt{\sigma_i^2}$$

Increasing k improves the estimate of the variance but, as k increases, the observations become too sparse to reflect the survey design and to provide country-wide coverage. Based on 2007 data, $k = 10$ was determined to be the largest number of groups that could be formed and still have each group provide adequate coverage within all States and agricultural strata. Thus, 10 jackknife groups were used to provide standard errors for 2012 State and national estimates. To capture the additional variability from calibration and integerization, the standard errors were computed using the calibrated, integerized capture-recapture estimates from the jackknife groups. For the estimate of the number of farms with a given set of characteristics, only the CML records with those characteristics were used to obtain the overall estimate as well as the estimates from each jackknife group.

When the constraints of the calibration process produced an artificially small standard error, the more conservative capture-recapture standard error was used. Note that the jackknife groups must only be constructed once, and different subsets of the records were used to compute estimates and standard errors for the data items.

The CV is a measure of the relative amount of error

associated with the sample estimate:

$$CV = \frac{SE\ (CR_i)}{CR_i} 100\ \%$$

where *SE(CRi)* is the standard error of the capture-recapture estimate for data item *i*. This relative measure allows the reliability of a range of estimates to be compared. For example, the standard error is often larger for large population estimates than for small population estimates, but the large population estimates may have a smaller CV, indicating a more reliable estimate. For county-level estimates, a generalized coefficient of variation (GCVs) was determined for each estimate within a State. A generalized variance function relates a function of the variance of an estimator to a function of the estimator. Within a State, the standard error of an estimate for a data item was often found to be linearly related to the estimate of that item with an intercept of zero. Based on this modeled relationship, the GCV is the slope of the line relating the standard error to the estimate, multiplied times 100 to represent the GCV as a percentage.

The standard error is the product of the CV (or GCV for county estimates) and the estimate divided by 100. As an example, if the GCV for a State is 25 percent and a county's estimate is 4, then the standard error is 25(4)/100 = 1. The standard error of an estimated data item from the census provides a measure of the error variation in the value of that estimated data item based on the possible outcomes of the census collection, including variants as to who was on the CML, who returned a census form, who was misclassified either as a farm or as a nonfarm, and the uncertainty associated with calibration and integerization. With 95 percent confidence, an estimate is within two standard errors of the true value being estimated. For this example, with 95 percent confidence, the estimate of 4 is within 2(1) = 2 of the true county value.

Table B presents the fully adjusted estimates with the coefficient of variation for selected items.

NONMEASURED ERRORS IN THE CENSUS PROCESS

As noted in the previous section, sampling errors can be introduced from the coverage, nonresponse and misclassification adjustment procedures. This error is measureable. However, nonsampling errors are imbedded in the census process that cannot be directly measured as part of the design of the census but must be contained to ensure an accurate count. Extensive efforts were made to compile a complete and accurate mail list for the census, to elicit response to the census, to design an understandable report form with clear instructions, to minimize processing errors through the use of quality control measures, to reduce matching error associated with the capture-recapture estimation process, and to minimize error associated with identification of a respondent as a farm operation (referred to as classification error). The weight adjustment and tabulation processes recognize the presence of nonsampling errors; however, it is assumed that these errors are small and that, in total, the net effect is zero. In other words, the positive errors cancel the negative errors.

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. Steps were taken in the design and execution of the census of agriculture to reduce errors from respondent reporting. Poor instructions and ambiguous definitions lead to misreporting. Respondents may not remember accurately, may give rounded numbers, or may record an item in the wrong cell. To reduce reporting and recording errors, the report form was tested prior to the census using industry accepted cognitive testing procedures. 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. Computer-assisted telephone interviewing software included immediate integrity checks of recorded responses so suspect data could be verified or corrected. In addition, each respondent's answers were checked for completeness and consistency by the complex edit and imputation system.

Processing Error

Processing of each census report form was another potential source of nonsampling error. All mail

returns that included multiple reports, respondent remarks, or that were marked out of business and report forms with no reported data were sent to an analyst for verification and appropriate action. Integrity checks were performed by the imaging system and data transfer functions. Standard quality control procedures were in place that required that randomly selected batches of data keyed from image be re-entered by a different operator to verify the work and evaluate key entry operators. All systems and programs were thoroughly tested before going on-line and were monitored throughout the processing period.

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 results were as accurate as possible.

Item Nonresponse

All item nonresponse actions provide another opportunity to introduce measurement errors. Regardless of whether it was previously reported data, administrative data, the nearest neighbor algorithm, or manually imputed by an analyst, some risk exists that the imputed value does not equal the actual value. Previously reported and administrative data were used only when they related to the census reference period. A new nearest neighbor was randomly selected for each incident to eliminate the chance of a consistent bias.

Record Matching Error

The process of building and expanding the CML involves finding new list sources and checking for names not on the list. An automated processing system compared each new name to the existing CML names and "linked" like records for the purpose of preventing duplication. New names with strong links to a CML name were discarded and those with no links were added as potential farms. Names with weak links, possible matches, were reviewed by staff to determine whether the new name should be added. Despite this thorough review, some new names may have been erroneously added or deleted. Additions could contribute to duplication (overcoverage) whereas deletions could contribute to undercoverage. As a result, some names received more than one report form, and some farm operators did not receive a report form. Respondents were instructed to complete one form and return all forms so the duplication could be removed.

Another chance for error came when comparing June Agricultural Survey tract operator names to the CML. Area operators whose names were not found on the CML were part of the measure of list incompleteness, or NML. Mistakes in determining overlap status resulted in overcounts (including a tract whose operator was on the CML) or undercounts (excluding a tract whose operator was not on the CML). All tracts determined to not be on the list were triple checked to eliminate, or at least minimize, any error. NML tract operators were mailed a report form printed in a different color. In order to attempt to identify duplication, all respondents who received multiple report forms were instructed to complete the CML version and return all forms so duplication could be removed.

Records in the 2012 JAS were matched to the 2012 census using probabilistic record linkage. The records of operations with unresolved farm status were reviewed by the field offices. If farm status could not be resolved, the probability of an operation being a farm was imputed using a missing data model. The uncertainty associated with this estimate, with the exception of model uncertainty, was accounted for, but errors not found through this process were not.

Model Uncertainty Error

Five logistic models were developed in the process of adjusting the farm numbers for undercoverage,

nonresponse, and misclassification. One model estimated the probability of an agricultural operation with unresolved farm status being a farm. The remaining four models estimated the probability of coverage, response, and correct classification of farms and of nonfarms. Each model was fit independently by two people. For some models, both statisticians obtained the same model. Although the covariates in the two selected models differed some for the other logistic models, the estimated probabilities were similar, but not identical. The reported standard errors account for the variability in the parameter estimates of the selected models, but not for the additional variation due to model uncertainty. They also do not account for any bias associated with a model.

Table A. **Summary of State Coverage, Nonresponse, and Misclassification Adjustments: 2012**

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

Item	Total	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
Farms ..... number	248,809	7,373	36.7	12.5	16.8	7.4
Land in farms ..... acres	130,153,438	3,008,411	19.8	4.9	11.2	3.7
Farms by size:						
1 to 9 acres ..... farms	20,825	4,361	40.7	21.8	15.4	3.5
acres	101,929	21,281	41.1	21.5	15.6	4.1
10 to 49 acres ..... farms	72,856	5,958	37.8	17.3	12.3	8.2
acres	1,786,005	134,585	37.3	16.7	12.0	8.6
50 to 69 acres ..... farms	19,018	643	40.5	9.9	20.7	9.8
acres	1,099,790	37,297	40.4	9.9	20.7	9.9
70 to 99 acres ..... farms	19,480	677	39.6	9.3	20.5	9.8
acres	1,613,249	55,955	39.5	9.3	20.4	9.7
100 to 139 acres ..... farms	20,550	705	39.3	9.2	21.2	8.9
acres	2,369,174	81,277	39.2	9.2	21.1	8.9
140 to 179 acres ..... farms	14,820	479	37.5	8.9	19.7	8.9
acres	2,340,631	75,545	37.5	8.9	19.6	8.9
180 to 219 acres ..... farms	10,449	355	36.7	8.3	19.9	8.5
acres	2,069,377	70,509	36.7	8.3	19.9	8.5
220 to 259 acres ..... farms	7,287	232	36.4	8.0	20.2	8.2
acres	1,733,051	55,057	36.3	8.0	20.1	8.2
260 to 499 acres ..... farms	24,266	992	35.8	6.8	21.6	7.4
acres	8,636,826	360,041	35.7	6.7	21.7	7.3
500 to 999 acres ..... farms	17,309	876	33.6	8.7	19.2	5.6
acres	11,970,791	606,903	33.3	8.7	19.1	5.6
1,000 to 1,999 acres ..... farms	11,139	442	30.4	5.4	19.0	6.1
acres	15,325,128	614,589	30.0	5.3	18.7	6.1
2,000 acres or more ..... farms	10,810	546	18.8	4.4	10.8	3.6
acres	81,107,487	2,569,139	11.2	3.3	6.2	1.7
Irrigated land use:						
Harvested cropland ..... farms	15,184	795	32.1	8.2	18.5	5.4
acres	4,174,843	214,881	20.6	1.8	15.3	3.5
Pastureland and other land ..... farms	4,142	193	39.6	13.1	20.3	6.3
acres	314,320	36,000	26.5	4.2	18.0	4.4
Market value of agricultural products sold $1,000	25,375,581	2,666,227	14.2	1.9	10.7	1.6
Farms by value of sales:						
Less than $1,000 ..... farms	80,196	5,706	39.5	17.4	14.0	8.1
$1,000	9,827	1,014	39.5	21.3	12.1	6.0
$1,000 to $2,499 ..... farms	32,579	1,989	40.4	15.1	16.0	9.3
$1,000	54,202	3,366	40.3	14.9	15.9	9.4
$2,500 to $4,999 ..... farms	29,961	1,260	36.9	11.9	15.3	9.7
$1,000	107,126	4,425	36.8	11.8	15.2	9.8
$5,000 to $9,999 ..... farms	32,144	1,518	37.0	9.9	17.0	10.1
$1,000	227,341	10,633	36.8	9.8	17.0	10.1
$10,000 to $19,999 ..... farms	25,156	932	34.2	9.4	21.6	3.2
$1,000	352,121	12,976	34.1	9.3	21.6	3.2
$20,000 to $24,999 ..... farms	6,625	256	32.9	8.4	21.1	3.5
1,000	146,500	5,645	32.8	8.4	21.0	3.5
$25,000 to $39,999 ..... farms	11,250	663	34.0	7.4	21.4	5.2
$1,000	351,993	20,567	34.0	7.4	21.4	5.2
$40,000 to $49,999 ..... farms	4,255	243	32.6	6.2	21.4	5.0
$1,000	188,725	10,773	32.5	6.2	21.3	5.0
$50,000 to $99,999 ..... farms	9,154	449	31.2	6.0	20.6	4.6
$1,000	634,276	30,990	31.1	5.9	20.6	4.6
$100,000 to $249,999 ..... farms	7,631	667	31.5	3.0	23.0	5.6
$1,000	1,189,664	102,713	31.1	2.9	22.7	5.5
$250,000 to $499,999 ..... farms	3,846	277	27.7	2.6	19.9	5.3
$1,000	1,368,530	94,885	27.7	2.6	19.9	5.2
$500,000 to $999,999 ..... farms	2,788	330	24.1	0.6	21.6	2.0
$1,000	1,953,417	213,166	23.6	0.6	21.1	2.0
$1,000,000 or more ..... farms	3,224	207	19.1	1.2	16.3	1.6
$1,000	18,791,859	2,626,340	9.0	1.3	7.1	0.6
Net cash farm income of operations (see text):						
Farms with gains of [1] -						
Less than $1,000 ..... farms	10,647	396	36.6	13.1	15.0	8.6
$1,000	4,989	182	36.6	12.8	15.0	8.8
$1,000 to $4,999 ..... farms	21,640	599	35.4	10.3	16.6	8.5
$1,000	58,062	1,496	35.3	10.1	16.8	8.4
$5,000 to $9,999 ..... farms	11,976	301	34.7	8.9	19.0	6.7
$1,000	85,736	2,171	34.5	8.9	18.9	6.7
$10,000 to $24,999 ..... farms	13,212	427	33.5	8.2	19.5	5.8
$1,000	212,215	7,117	33.5	8.1	19.6	5.8
$25,000 to $49,999 ..... farms	7,467	291	33.3	6.5	20.2	6.6
$1,000	262,795	10,136	33.3	6.5	20.2	6.6
$50,000 or more ..... farms	13,771	1,009	29.6	2.8	22.3	4.5
$1,000	4,620,778	260,723	20.5	1.7	16.2	2.5
Farms with losses of -						
Less than $1,000 ..... farms	14,895	568	37.6	15.3	14.1	8.3
1,000	7,591	287	37.7	15.3	14.0	8.4
$1,000 to $4,999 ..... farms	53,748	2,232	38.4	15.7	14.6	8.1
1,000	154,719	6,382	38.6	15.6	14.8	8.2
$5,000 to $9,999 ..... farms	39,020	1,566	39.1	15.3	16.0	7.8
1,000	281,218	11,178	39.1	15.3	16.1	7.8
$10,000 to $24,999 ..... farms	38,534	1,304	38.6	13.8	17.2	7.6
1,000	600,350	19,297	38.5	13.5	17.4	7.5
$25,000 to $49,999 ..... farms	13,735	392	37.5	11.3	19.2	7.1
1,000	471,933	13,215	37.4	11.1	19.3	7.0
$50,000 or more ..... farms	10,164	297	31.6	7.7	18.5	5.4
1,000	1,763,026	67,044	25.2	5.0	16.2	4.0
Farms by legal status for tax purposes:						
Family or individual ..... farms	222,580	6,793	37.2	12.8	16.9	7.5
acres	82,792,493	2,117,710	23.2	5.4	13.4	4.4
Partnership ..... farms	16,660	415	33.5	9.6	17.2	6.7
acres	31,724,136	654,371	14.1	4.2	7.3	2.5

See footnote(s) at end of table.

--continued

Table A. **Summary of State Coverage, Nonresponse, and Misclassification Adjustments: 2012** (continued)

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

Item		Total	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
Farms by legal status for tax purposes: - Con.							
Corporation:							
Family held	farms	5,997	145	31.4	10.6	14.2	6.7
	acres	11,017,774	233,355	12.3	3.7	6.7	1.9
Other than family held	farms	862	37	35.7	10.6	19.2	5.9
	acres	1,891,991	88,280	9.2	3.0	5.2	1.0
Other - cooperative, estate or trust, institutional, etc.	farms	2,710	81	32.4	12.7	11.4	8.3
	acres	2,727,044	152,845	19.7	7.3	8.5	3.8
Tenure:							
Full owners	farms	179,783	5,865	37.2	14.3	15.2	7.7
	acres	54,686,331	1,446,567	22.7	7.9	10.1	4.7
Part owners	farms	54,297	2,007	34.4	6.6	21.1	6.6
	acres	58,764,138	1,743,525	17.5	2.6	12.0	3.0
Tenants	farms	14,729	964	40.0	8.7	24.9	6.4
	acres	16,702,969	675,717	17.9	2.6	13.0	2.3
Principal operator characteristics by-							
Sex of operator:							
Male	farms	210,357	6,049	35.5	11.6	17.3	6.6
	acres	117,984,460	2,867,491	18.9	4.4	11.3	3.2
Female	farms	38,452	4,746	43.6	16.7	15.3	11.6
	acres	12,168,978	1,019,600	28.0	9.8	10.6	7.6
Primary occupation:							
Farming	farms	104,769	2,713	34.5	11.3	15.9	7.3
Other	farms	144,040	5,028	38.4	13.3	17.5	7.6
Spanish, Hispanic, or Latino origin (see text)	farms	23,689	1,919	53.9	24.0	25.0	4.9
	acres	6,726,294	555,122	42.0	15.5	21.7	4.7
Race:							
American Indian or Alaska Native	farms	2,693	900	68.7	36.9	14.5	17.3
	acres	711,127	125,991	58.1	31.8	13.3	13.0
Asian	farms	718	81	51.3	23.5	22.0	5.8
	acres	120,405	11,851	45.2	20.5	18.2	6.5
Black or African American	farms	8,551	3,150	64.9	34.3	13.0	17.6
	acres	929,003	214,049	61.2	31.9	14.5	14.7
Native Hawaiian or Other Pacific Islander	farms	27	6	48.1	18.8	25.9	3.4
	acres	38,660	8,438	17.4	13.6	3.1	0.7
White	farms	235,449	6,692	35.3	11.2	17.2	6.9
	acres	127,955,718	2,865,376	19.2	4.6	11.1	3.5
More than one race reported	farms	1,371	59	36.0	11.9	15.0	9.1
	acres	398,525	25,131	24.7	6.1	12.4	6.2
Reporting primary occupation as farming by age group:							
Under 25 years	farms	413	91	63.4	21.8	39.1	2.5
25 to 34 years	farms	3,484	798	54.6	18.6	33.5	2.5
35 to 44 years	farms	5,931	943	38.2	9.1	23.8	5.3
45 to 54 years	farms	14,691	831	39.1	11.2	19.7	8.2
55 to 64 years	farms	25,774	1,108	32.6	13.3	14.8	4.5
65 years and over	farms	54,476	1,232	32.1	10.1	12.6	9.5
Reporting primary occupation as other than farming by age group:							
Under 25 years	farms	380	99	64.7	26.4	34.1	4.3
25 to 34 years	farms	5,814	1,752	57.8	23.1	31.7	3.0
35 to 44 years	farms	15,172	2,322	44.3	11.7	26.1	6.4
45 to 54 years	farms	37,997	2,311	43.4	12.8	21.4	9.3
55 to 64 years	farms	43,310	1,913	34.8	15.0	14.8	4.9
65 years and over	farms	41,367	817	32.5	11.6	10.3	10.6
All operators by age group [2]:							
Under 25 years	farms	4,158	245	45.8	18.5	19.7	7.7
25 to 34 years	farms	18,174	3,137	49.6	19.3	25.9	4.4
35 to 44 years	farms	37,447	4,231	40.8	11.8	22.6	6.5
45 to 54 years	farms	83,595	4,094	40.4	12.7	19.1	8.6
55 to 64 years	farms	103,698	3,795	33.6	14.1	14.2	5.3
65 to 74 years	farms	79,154	1,572	32.2	11.5	11.5	9.2
75 years and over	farms	44,838	810	31.9	9.9	11.4	10.6
Livestock and poultry:							
Cattle and calves inventory	farms	151,362	4,197	36.0	10.8	18.5	6.7
	number	11,159,747	772,863	18.2	3.5	12.8	2.0
Beef cows inventory	farms	133,924	3,469	35.7	10.3	18.7	6.6
	number	4,329,341	146,490	26.6	5.3	18.0	3.3
Milk cows inventory	frams	985	111	37.3	5.4	28.5	3.4
	number	434,928	26,315	4.0	0.2	3.7	0.1
Hog and pigs inventory	farms	4,905	456	49.6	21.1	22.7	5.8
	number	800,893	28,269	3.7	3.0	0.6	0.1
Layers inventory	farms	19,748	1,556	41.7	17.8	17.5	6.5
	number	20,902,244	7,461,055	9.5	1.7	6.7	1.0
Broilers sold	farms	1,566	193	36.0	12.1	20.9	2.9
	number	600,353,797	88,822,530	30.3	2.0	27.3	1.1
Aquaculture sold	farms	257	20	27.6	15.5	9.3	2.8
	$1,000	82,033	25,565	29.3	3.0	25.8	0.5
Selected crops harvested:							
Corn for grain	farms	4,045	389	29.7	2.5	24.9	2.3
	acres	1,620,460	122,468	19.4	1.2	16.5	1.7
Wheat, winter	farms	7,366	411	28.4	3.1	22.1	3.2
	acres	2,989,113	86,934	19.4	2.1	14.3	3.0
Wheat, durum	farms	-	-	-	-	-	-
	acres	-	-	-	-	-	-

See footnote(s) at end of table.

--continued

Table A. **Summary of State Coverage, Nonresponse, and Misclassification Adjustments: 2012** (continued)

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

Item		Total	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
Selected crops harvested: - Con.							
Wheat, spring	farms	49	8	32.7	4.9	24.2	3.6
	acres	4,856	1,087	23.9	3.7	16.1	4.2
Soybeans for beans	farms	451	59	29.9	1.9	26.1	2.0
	acres	107,909	8,532	21.1	1.2	18.0	1.9
Sorghum for grain	farms	4,521	324	30.1	2.8	24.2	3.1
	acres	1,898,726	64,333	25.4	2.6	18.9	3.9
Rice	farms	364	74	30.2	1.4	27.5	1.3
	acres	134,189	28,505	28.7	0.9	26.7	1.1
Cotton	farms	7,029	616	31.3	2.3	24.8	4.2
	acres	3,844,464	211,999	16.4	1.1	11.7	3.6
Peanuts	farms	552	35	28.4	4.7	17.1	6.6
	acres	148,795	15,006	27.4	2.3	17.2	7.8
Barley	farms	58	9	27.6	6.2	17.9	3.5
	acres	6,952	1,812	22.1	1.8	19.0	1.3
Oats	farms	809	40	33.6	5.9	23.0	4.7
	acres	74,446	3,971	39.1	4.7	27.8	6.5
Forage - land used for all hay and all haylage, grass silage, and greenchop (see text)	farms	86,456	2,261	34.1	10.4	16.7	7.0
	acres	5,069,579	202,117	29.3	6.4	17.3	5.5
Land in vegetables (see text)	farms	2,296	307	35.1	13.5	13.1	8.5
	acres	124,133	18,938	30.3	10.9	13.9	5.5
Potatoes	farms	577	71	32.9	16.1	8.2	8.7
	acres	22,535	6,327	29.7	25.7	1.9	2.1
Tomatoes in the open	farms	1,087	147	32.8	13.9	10.8	8.1
	acres	2,096	1,247	40.9	14.9	16.4	9.5
Sweet corn	farms	532	52	33.1	15.3	8.9	8.9
	acres	4,726	1,721	33.8	15.1	11.0	7.8
Lettuce	farms	102	21	33.3	12.9	14.9	5.6
	acres	340	258	28.4	2.0	21.5	4.9
Land in orchards	farms	6,966	238	28.2	11.8	7.9	8.5
	acres	204,305	15,008	23.7	5.5	8.7	9.5
Apples	farms	390	27	28.7	13.4	8.6	6.7
	acres	476	109	29.4	14.2	5.4	9.7
Grapes	farms	678	57	29.1	12.3	8.3	8.4
	acres	7,092	3,422	37.4	10.7	9.0	17.7
Oranges	farms	371	47	33.2	16.9	6.2	10.1
	acres	7,831	1,743	23.3	7.8	4.4	11.1
Almonds	farms	13	3	23.1	11.9	5.6	5.6
	acres	24	20	44.4	16.4	11.5	16.5
Land in berries	farms	595	43	30.9	12.0	10.4	8.4
	acres	2,048	409	30.9	7.0	11.9	12.1

[1] Farms with total production expenses equal to market value of agricultural products sold, government payments, and farm-related income are included as farms with gains of less than $1,000.
[2] Data were collected for a maximum of three operators per farm.

Table B. **Reliability Estimates of State Totals: 2012**

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

Item	Total	Coefficient of variation (percent)
Farms ..... number	248,809	3.0
Land in farms ..... acres	130,153,438	2.3
Farms by size:		
1 to 9 acres ..... farms	20,825	20.9
acres	101,929	20.9
10 to 49 acres ..... farms	72,856	8.2
acres	1,786,005	7.5
50 to 69 acres ..... farms	19,018	3.4
acres	1,099,790	3.4
70 to 99 acres ..... farms	19,480	3.5
acres	1,613,249	3.5
100 to 139 acres ..... farms	20,550	3.4
acres	2,369,174	3.4
140 to 179 acres ..... farms	14,820	3.2
acres	2,340,631	3.2
180 to 219 acres ..... farms	10,449	3.4
acres	2,069,377	3.4
220 to 259 acres ..... farms	7,287	3.2
acres	1,733,051	3.2
260 to 499 acres ..... farms	24,266	4.1
acres	8,636,826	4.2
500 to 999 acres ..... farms	17,309	5.1
acres	11,970,791	5.1
1,000 to 1,999 acres ..... farms	11,139	4.0
acres	15,325,128	4.0
2,000 acres or more ..... farms	10,810	5.1
acres	81,107,487	3.2
Irrigated land use:		
Harvested cropland ..... farms	15,184	5.2
acres	4,174,843	5.1
Pastureland and other land ..... farms	4,142	4.7
acres	314,320	11.5
Market value of agricultural products sold $1,000	25,375,581	10.5
Farms by value of sales:		
Less than $1,000 ..... farms	80,196	7.1
$1,000	9,827	10.3
$1,000 to $2,499 ..... farms	32,579	6.1
$1,000	54,202	6.2
$2,500 to $4,999 ..... farms	29,961	4.2
$1,000	107,126	4.1
$5,000 to $9,999 ..... farms	32,144	4.7
$1,000	227,341	4.7
$10,000 to $19,999 ..... farms	25,156	3.7
$1,000	352,121	3.7
$20,000 to $24,999 ..... farms	6,625	3.9
1,000	146,500	3.9
$25,000 to $39,999 ..... farms	11,250	5.9
$1,000	351,993	5.8
$40,000 to $49,999 ..... farms	4,255	5.7
$1,000	188,725	5.7
$50,000 to $99,999 ..... farms	9,154	4.9
$1,000	634,276	4.9
$100,000 to $249,999 ..... farms	7,631	8.7
$1,000	1,189,664	8.6
$250,000 to $499,999 ..... farms	3,846	7.2
$1,000	1,368,530	6.9
$500,000 to $999,999 ..... farms	2,788	11.8
$1,000	1,953,417	10.9
$1,000,000 or more ..... farms	3,224	6.4
$1,000	18,791,859	14.0
Net cash farm income of operations (see text):		
Farms with gains of [1] -		
Less than $1,000 ..... farms	10,647	3.7
$1,000	4,989	3.7
$1,000 to $4,999 ..... farms	21,640	2.8
$1,000	58,062	2.6
$5,000 to $9,999 ..... farms	11,976	2.5
$1,000	85,736	2.5
$10,000 to $24,999 ..... farms	13,212	3.2
$1,000	212,215	3.4
$25,000 to $49,999 ..... farms	7,467	3.9
$1,000	262,795	3.9
$50,000 or more ..... farms	13,771	7.3
$1,000	4,620,778	5.6
Farms with losses of -		
Less than $1,000 ..... farms	14,895	3.8
1,000	7,591	3.8
$1,000 to $4,999 ..... farms	53,748	4.2
1,000	154,719	4.1
$5,000 to $9,999 ..... farms	39,020	4.0
1,000	281,218	4.0
$10,000 to $24,999 ..... farms	38,534	3.4
1,000	600,350	3.2
$25,000 to $49,999 ..... farms	13,735	2.9
1,000	471,933	2.8
$50,000 or more ..... farms	10,164	2.9
1,000	1,763,026	3.8
Farms by legal status for tax purposes:		
Family or individual ..... farms	222,580	3.1
acres	82,792,493	2.6
Partnership ..... farms	16,660	2.5
acres	31,724,136	2.1
Corporation:		
Family held ..... farms	5,997	2.4
acres	11,017,774	2.1
Other than family held ..... farms	862	4.2
acres	1,891,991	4.7
Other - cooperative, estate or trust, institutional, etc. ..... farms	2,710	3.0
acres	2,727,044	5.6
Tenure:		
Full owners ..... farms	179,783	3.3
acres	54,686,331	2.6
Part owners ..... farms	54,297	3.7
acres	58,764,138	3.0
Tenants ..... farms	14,729	6.5
acres	16,702,969	4.0
Principal operator characteristics by-		
Sex of operator:		
Male ..... farms	210,357	2.9
acres	117,984,460	2.4
Female ..... farms	38,452	12.3
acres	12,168,978	8.4
Primary occupation:		
Farming ..... farms	104,769	2.6
Other ..... farms	144,040	3.5
Spanish, Hispanic, or Latino origin (see text) ..... farms	23,689	8.1
acres	6,726,294	8.3
Race:		
American Indian or Alaska Native ..... farms	2,693	33.4
acres	711,127	17.7
Asian ..... farms	718	11.3
acres	120,405	9.8
Black or African American ..... farms	8,551	36.8
acres	929,003	23.0
Native Hawaiian or Other Pacific Islander ..... farms	27	22.8
acres	38,660	21.8
White ..... farms	235,449	2.8
acres	127,955,718	2.2
More than one race reported ..... farms	1,371	4.3
acres	398,525	6.3
Reporting primary occupation as farming by age group:		
Under 25 years ..... farms	413	22.1
25 to 34 years ..... farms	3,484	22.9
35 to 44 years ..... farms	5,931	15.9
45 to 54 years ..... farms	14,691	5.7
55 to 64 years ..... farms	25,774	4.3
65 years and over ..... farms	54,476	2.3
Reporting primary occupation as other than farming by age group:		
Under 25 years ..... farms	380	26.1
25 to 34 years ..... farms	5,814	30.1
35 to 44 years ..... farms	15,172	15.3
45 to 54 years ..... farms	37,997	6.1
55 to 64 years ..... farms	43,310	4.4
65 years and over ..... farms	41,367	2.0
All operators by age group [2]:		
Under 25 years ..... farms	4,158	5.9
25 to 34 years ..... farms	18,174	17.3
35 to 44 years ..... farms	37,447	11.3
45 to 54 years ..... farms	83,595	4.9
55 to 64 years ..... farms	103,698	3.7
65 to 74 years ..... farms	79,154	2.0
75 years and over ..... farms	44,838	1.8
Livestock and poultry:		
Cattle and calves inventory ..... farms	151,362	2.8
number	11,159,747	6.9
Beef cows inventory ..... farms	133,924	2.6
number	4,329,341	3.4
Milk cows inventory ..... frams	985	11.3
number	434,928	6.1
Hog and pigs inventory ..... farms	4,905	9.3
number	800,893	3.5
Layers inventory ..... farms	19,748	7.9
number	20,902,244	35.7
Broilers sold ..... farms	1,566	12.3
number	600,353,797	14.8
Aquaculture sold ..... farms	257	7.9
$1,000	82,033	31.2
Selected crops harvested:		
Corn for grain ..... farms	4,045	9.6
acres	1,620,460	7.6

See footnote(s) at end of table.

--continued

Table B. **Reliability Estimates of State Totals: 2012** (continued)

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

Item		Total	Coefficient of variation (percent)
Selected crops harvested: - Con.			
Wheat, winter	farms	7,366	5.6
	acres	2,989,113	2.9
Wheat, durum	farms	-	-
	acres	-	-
Wheat, spring	farms	49	16.7
	acres	4,856	22.4
Soybeans for beans	farms	451	13.2
	acres	107,909	7.9
Sorghum for grain	farms	4,521	7.2
	acres	1,898,726	3.4
Rice	farms	364	20.4
	acres	134,189	21.2
Cotton	farms	7,029	8.8
	acres	3,844,464	5.5
Peanuts	farms	552	6.4
	acres	148,795	10.1
Barley	farms	58	15.2
	acres	6,952	26.1
Oats	farms	809	5.0
	acres	74,446	5.3
Forage - land used for all hay and all haylage, grass silage, and greenchop (see text)	farms	86,456	2.6
	acres	5,069,579	4.0
Selected crops harvested: - Con.			
Land in vegetables (see text)	farms	2,296	13.4
	acres	124,133	15.3
Potatoes	farms	577	12.3
	acres	22,535	28.1
Tomatoes in the open	farms	1,087	13.6
	acres	2,096	59.5
Sweet corn	farms	532	9.8
	acres	4,726	36.4
Lettuce	farms	102	20.5
	acres	340	75.9
Land in orchards	farms	6,966	3.4
	acres	204,305	7.3
Apples	farms	390	6.9
	acres	476	23.0
Grapes	farms	678	8.5
	acres	7,092	48.3
Oranges	farms	371	12.7
	acres	7,831	22.3
Almonds	farms	13	26.3
	acres	24	81.9
Land in berries	farms	595	7.2
	acres	2,048	19.9

[1] Farms with production expenses equal to market value of agricultural products sold, government payments, and farm-related income are included as farms with gains of less than $1,000.
[2] Data were collected for a maximum of three operators per farm.

Table C. **Summary of Coverage, Nonresponse, and Misclassification Adjustments by County: 2012**

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

Geographic area	Total (number)	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
ALL FARMS						
State Total						
Texas	248,809	7,373	36.7	12.5	16.8	7.4
Counties						
Anderson	2,001	66	37.9	13.3	16.4	8.3
Andrews	169	19	37.1	15.9	14.5	6.7
Angelina	975	34	37.2	11.7	18.8	6.7
Aransas	100	9	43.8	11.4	24.8	7.6
Archer	531	28	34.0	7.8	21.6	4.6
Armstrong	281	10	35.7	7.6	17.5	10.6
Atascosa	1,987	50	42.5	13.6	21.5	7.4
Austin	2,098	64	35.1	11.2	16.6	7.3
Bailey	494	25	37.3	7.1	20.7	9.4
Bandera	1,002	40	39.4	13.4	17.8	8.2
Bastrop	2,083	53	35.8	13.3	14.8	7.7
Baylor	277	28	34.6	4.5	21.7	8.5
Bee	974	26	37.2	12.3	18.0	6.8
Bell	2,533	94	36.8	14.1	15.5	7.2
Bexar	2,457	82	39.9	14.9	17.9	7.1
Blanco	792	16	32.7	13.4	11.4	7.9
Borden	114	5	28.6	9.9	7.9	10.9
Bosque	1,265	18	31.3	12.3	10.5	8.6
Bowie	1,619	60	36.9	12.6	16.2	8.0
Brazoria	3,091	234	43.4	16.8	20.1	6.5
Brazos	1,412	63	40.0	13.4	18.7	7.9
Brewster	202	11	30.6	12.8	12.4	5.4
Briscoe	282	9	30.8	6.7	11.7	12.5
Brooks	374	21	46.9	17.9	21.9	7.1
Brown	1,918	53	38.0	12.6	17.2	8.2
Burleson	1,429	47	34.0	12.4	14.2	7.5
Burnet	1,481	42	36.2	14.3	13.6	8.4
Caldwell	1,623	51	39.5	13.2	18.4	7.8
Calhoun	264	17	31.6	6.7	20.5	4.4
Callahan	992	24	33.8	10.5	15.5	7.9
Cameron	1,305	139	46.1	18.4	23.8	3.9
Camp	487	21	37.1	13.4	16.2	7.5
Carson	386	18	31.4	7.0	16.4	7.9
Cass	1,024	57	39.1	13.5	16.3	9.3
Castro	532	75	33.4	3.3	24.6	5.5
Chambers	734	69	43.3	12.2	24.7	6.4
Cherokee	1,574	54	37.5	10.6	19.9	7.1
Childress	383	17	36.0	6.6	20.6	8.8
Clay	861	24	30.2	8.3	14.6	7.3
Cochran	288	7	29.9	6.3	10.5	13.1
Coke	443	17	37.8	13.8	15.2	8.8
Coleman	906	20	32.7	9.4	15.3	8.0
Collin	2,264	114	35.7	14.7	13.7	7.3
Collingsworth	383	20	34.3	6.9	19.2	8.2
Colorado	1,575	38	31.0	11.4	12.7	6.9
Comal	1,104	53	37.2	13.0	17.0	7.3
Comanche	1,435	25	34.6	11.4	15.5	7.7
Concho	401	19	34.8	8.8	18.5	7.5
Cooke	1,946	40	32.9	11.4	14.4	7.1
Coryell	1,308	43	34.8	12.2	15.1	7.5
Cottle	264	9	32.1	7.4	13.0	11.7
Crane	27	4	20.6	5.9	11.8	2.9
Crockett	216	12	31.0	14.1	12.4	4.5
Crosby	431	20	30.8	5.3	17.0	8.5
Culberson	77	7	31.7	5.4	23.6	2.7
Dallam	371	26	30.1	4.6	18.7	6.8
Dallas	839	120	45.7	16.7	21.4	7.6
Dawson	596	26	33.9	6.0	15.9	12.0
Deaf Smith	621	33	32.8	6.0	18.5	8.3
Delta	529	20	37.1	10.6	20.0	6.5
Denton	3,203	292	40.4	14.0	19.7	6.8
DeWitt	1,711	29	29.1	10.3	12.4	6.4
Dickens	437	19	29.4	6.3	13.8	9.4
Dimmit	367	15	44.5	17.2	20.8	6.5
Donley	380	10	27.8	7.1	12.8	7.8
Duval	1,436	81	49.7	17.9	23.3	8.4
Eastland	1,174	27	33.4	11.4	14.4	7.6
Ector	264	30	42.6	17.7	20.1	4.8
Edwards	419	23	33.0	14.3	12.4	6.3
Ellis	2,264	89	35.4	14.0	14.5	6.9
El Paso	657	89	41.1	24.5	15.8	0.9
Erath	2,161	58	33.7	10.5	15.4	7.8
Falls	1,263	45	38.3	11.1	19.5	7.8
Fannin	2,515	85	36.3	11.6	17.7	7.0
Fayette	2,822	40	29.4	10.9	11.2	7.3
Fisher	588	20	34.7	8.9	16.5	9.3
Floyd	589	17	30.9	6.3	11.1	13.5
Foard	194	8	34.8	8.4	15.7	10.7
Fort Bend	1,286	75	36.9	13.0	17.2	6.8
Franklin	520	13	35.2	10.3	17.8	7.1
Freestone	1,517	88	41.4	14.1	18.0	9.2
Frio	651	22	39.3	13.9	19.0	6.4
Gaines	644	42	37.3	5.5	22.8	9.0
Galveston	612	46	41.3	14.1	20.7	6.5

--continued

Table C. **Summary of Coverage, Nonresponse, and Misclassification Adjustments by County: 2012** (continued)

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

Geographic area	Total (number)	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
ALL FARMS - Con.						
Counties - Con.						
Garza	277	9	33.3	7.3	15.8	10.1
Gillespie	1,847	42	32.8	12.7	12.0	8.1
Glasscock	186	8	29.3	8.5	12.4	8.5
Goliad	1,175	29	35.4	11.1	17.2	7.0
Gonzales	1,674	23	29.8	11.6	11.6	6.7
Gray	417	16	34.5	7.6	18.0	8.9
Grayson	2,562	81	34.4	13.0	13.7	7.7
Gregg	527	59	44.1	17.3	17.5	9.2
Grimes	1,683	46	35.3	12.2	16.2	7.0
Guadalupe	2,241	65	34.5	14.1	12.9	7.5
Hale	899	54	36.5	6.6	20.6	9.3
Hall	390	15	33.7	4.7	19.7	9.2
Hamilton	1,001	22	31.3	11.1	13.3	6.9
Hansford	263	30	32.6	3.4	25.3	4.0
Hardeman	357	13	34.0	7.0	18.3	8.7
Hardin	660	32	40.9	11.8	22.0	7.2
Harris	2,207	175	41.7	16.1	19.0	6.6
Harrison	1,298	55	41.4	13.8	19.5	8.1
Hartley	255	21	30.6	4.0	22.6	4.0
Haskell	503	20	30.4	7.0	13.2	10.2
Hays	1,439	92	43.3	13.1	22.1	8.1
Hemphill	232	9	31.6	6.6	18.4	6.6
Henderson	1,961	70	35.9	12.8	15.4	7.7
Hidalgo	2,161	143	46.4	21.7	18.9	5.8
Hill	1,884	33	32.8	11.9	13.6	7.3
Hockley	781	30	34.0	7.3	16.4	10.3
Hood	1,286	66	37.5	13.1	16.4	8.0
Hopkins	2,113	76	37.7	11.3	19.4	7.0
Houston	1,505	65	39.1	13.4	16.5	9.2
Howard	475	12	34.1	11.0	14.0	9.1
Hudspeth	167	19	33.4	6.3	23.3	3.8
Hunt	4,206	192	38.5	14.6	16.7	7.3
Hutchinson	247	12	36.0	9.7	19.9	6.4
Irion	155	15	26.0	8.9	11.2	5.9
Jack	864	19	32.8	9.7	15.6	7.5
Jackson	811	31	34.1	9.1	19.0	6.0
Jasper	894	37	40.9	12.6	19.8	8.5
Jeff Davis	84	3	22.9	10.8	6.0	6.0
Jefferson	764	41	39.6	14.4	18.6	6.6
Jim Hogg	263	15	46.9	16.7	24.8	5.4
Jim Wells	1,047	47	43.7	17.3	19.8	6.6
Johnson	3,023	122	37.4	13.4	17.1	6.8
Jones	1,014	37	35.2	9.1	17.6	8.4
Karnes	1,288	30	36.9	9.9	19.6	7.4
Kaufman	3,041	122	37.8	12.9	17.2	7.6
Kendall	1,387	50	39.4	15.1	16.6	7.7
Kenedy	28	4	18.8	7.5	7.5	3.8
Kent	194	6	29.8	6.4	14.2	9.2
Kerr	1,034	34	35.8	15.4	11.9	8.5
Kimble	602	21	32.4	14.7	10.6	7.1
King	59	3	32.4	8.1	12.2	12.2
Kinney	196	17	33.4	14.2	14.7	4.4
Kleberg	401	28	43.9	16.2	21.8	5.9
Knox	228	13	31.8	5.4	20.3	6.2
Lamar	1,843	84	37.1	10.8	19.1	7.3
Lamb	933	62	36.4	4.4	24.6	7.3
Lampasas	1,017	38	33.7	14.7	11.7	7.3
La Salle	446	17	41.7	14.6	20.7	6.4
Lavaca	2,617	44	29.5	10.5	11.9	7.0
Lee	1,807	74	34.6	13.7	12.4	8.4
Leon	1,962	64	38.2	12.4	18.0	7.7
Liberty	1,470	78	39.8	15.1	16.9	7.8
Limestone	1,526	43	38.1	11.4	19.0	7.8
Lipscomb	277	8	26.2	6.2	9.6	10.4
Live Oak	892	24	40.1	11.5	21.2	7.3
Llano	740	13	30.9	12.4	10.9	7.6
Loving	10	1	8.0	(Z)	8.0	(Z)
Lubbock	1,116	49	36.7	11.3	17.3	8.1
Lynn	455	16	29.9	7.0	11.3	11.6
McCulloch	619	13	34.4	12.4	13.9	8.1
McLennan	3,278	118	37.8	13.9	15.9	7.9
McMullen	238	13	36.5	11.9	18.1	6.6
Madison	970	30	38.2	11.8	18.5	8.0
Marion	247	52	44.1	16.0	15.7	12.4
Martin	414	24	34.2	8.0	14.1	12.1
Mason	640	12	28.4	10.5	10.5	7.3
Matagorda	856	40	35.5	11.2	18.8	5.5
Maverick	294	25	45.8	22.6	19.6	3.6
Medina	1,976	66	34.8	12.5	15.4	6.9
Menard	325	11	30.6	12.4	10.2	8.0
Midland	540	45	42.1	13.4	21.5	7.2
Milam	1,909	47	33.5	12.0	14.2	7.4
Mills	870	33	34.2	11.6	15.3	7.3
Mitchell	482	27	35.1	7.5	18.5	9.1
Montague	1,454	25	31.9	10.6	13.7	7.5
Montgomery	1,601	118	41.7	13.0	21.7	7.0
Moore	261	12	31.8	9.4	15.1	7.3
Morris	412	32	38.8	11.1	21.6	6.1

--continued

Table C. **Summary of Coverage, Nonresponse, and Misclassification Adjustments by County: 2012** (continued)

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

Geographic area	Total (number)	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
ALL FARMS - Con.						
Counties - Con.						
Motley	224	6	29.4	8.3	10.8	10.3
Nacogdoches	1,196	49	38.7	9.5	22.3	7.0
Navarro	2,573	98	40.7	14.8	18.1	7.9
Newton	450	36	43.8	12.1	22.4	9.3
Nolan	478	14	31.0	8.4	13.3	9.2
Nueces	754	51	39.2	14.0	20.3	4.9
Ochiltree	348	14	30.8	7.1	14.5	9.1
Oldham	159	8	34.7	5.3	16.0	13.3
Orange	671	52	40.4	13.7	20.8	5.9
Palo Pinto	1,329	55	36.9	11.2	18.3	7.5
Panola	1,079	43	38.6	11.9	19.4	7.4
Parker	4,370	214	37.6	14.1	16.1	7.5
Parmer	570	37	28.2	3.9	18.2	6.0
Pecos	291	16	28.3	9.4	14.3	4.6
Polk	738	30	40.6	13.2	19.2	8.2
Potter	258	21	36.9	15.0	16.4	5.5
Presidio	162	13	37.2	12.0	19.8	5.4
Rains	682	27	36.5	11.8	16.3	8.4
Randall	892	43	38.2	9.9	20.4	7.9
Reagan	135	7	33.4	8.9	18.6	5.9
Real	241	10	35.5	15.5	12.8	7.3
Red River	1,139	48	35.2	11.4	15.3	8.5
Reeves	240	25	39.1	7.8	24.6	6.8
Refugio	259	12	35.3	9.4	20.9	4.9
Roberts	107	8	27.9	4.8	17.3	5.8
Robertson	1,520	68	38.6	11.2	19.1	8.2
Rockwall	440	31	36.4	13.6	16.3	6.5
Runnels	925	21	31.9	9.4	13.5	9.0
Rusk	1,390	48	38.5	11.9	18.4	8.2
Sabine	201	11	40.4	14.0	20.0	6.4
San Augustine	305	14	37.9	10.7	21.6	5.6
San Jacinto	791	58	43.9	12.1	20.8	10.9
San Patricio	701	23	37.7	13.4	18.9	5.4
San Saba	744	19	31.6	12.6	11.2	7.7
Schleicher	310	16	32.2	11.5	14.6	6.1
Scurry	677	23	35.7	10.3	13.0	12.3
Shackelford	233	4	25.4	8.5	10.0	7.0
Shelby	1,048	41	37.9	8.8	23.3	5.8
Sherman	313	10	27.7	5.5	11.1	11.1
Smith	2,961	180	39.6	15.9	15.3	8.4
Somervell	350	7	35.8	12.7	14.4	8.7
Starr	1,165	68	52.3	18.0	28.2	6.2
Stephens	452	15	37.5	8.9	21.0	7.7
Sterling	73	3	26.1	10.4	10.4	5.2
Stonewall	356	13	35.3	7.9	16.6	10.8
Sutton	218	11	24.3	12.2	8.7	3.5
Swisher	565	23	36.5	6.3	20.8	9.5
Tarrant	1,278	116	38.7	16.3	16.0	6.4
Taylor	1,149	29	35.0	11.1	15.3	8.5
Terrell	86	7	22.3	11.1	8.7	2.5
Terry	630	28	35.3	6.7	17.4	11.1
Throckmorton	275	15	27.5	7.4	12.8	7.4
Titus	801	24	38.2	12.1	18.4	7.7
Tom Green	1,203	69	35.2	12.5	17.3	5.5
Travis	1,132	54	38.1	14.2	16.2	7.6
Trinity	604	23	39.5	10.6	21.9	7.0
Tyler	727	30	40.3	10.9	21.7	7.6
Upshur	1,754	89	39.2	13.0	19.0	7.2
Upton	101	7	34.5	12.4	16.5	5.5
Uvalde	640	33	36.6	9.7	19.9	7.1
Val Verde	421	29	41.9	22.0	16.2	3.7
Van Zandt	2,915	75	32.7	13.4	11.8	7.4
Victoria	1,533	43	36.9	11.5	18.7	6.6
Walker	1,560	115	41.9	15.1	18.2	8.6
Waller	1,927	91	38.6	15.6	15.9	7.1
Ward	93	8	37.1	13.8	18.1	5.2
Washington	2,697	100	34.2	11.9	14.0	8.3
Webb	696	32	45.4	18.6	21.9	4.9
Wharton	1,553	130	39.4	9.6	24.0	5.7
Wheeler	551	15	30.3	9.1	11.5	9.7
Wichita	639	21	35.2	11.6	17.1	6.5
Wilbarger	424	19	32.4	7.6	18.8	5.9
Willacy	321	30	40.8	21.0	15.7	4.2
Williamson	2,542	107	34.6	13.6	14.1	6.9
Wilson	2,444	59	35.8	13.2	15.5	7.1
Winkler	43	8	21.1	7.7	12.4	1.0
Wise	3,095	116	35.0	13.7	13.8	7.5
Wood	1,465	40	33.7	12.7	13.2	7.8
Yoakum	339	22	35.6	4.6	21.0	9.9
Young	795	18	34.4	11.3	15.8	7.2
Zapata	449	19	50.9	22.8	22.5	5.7
Zavala	287	8	37.0	12.1	17.1	7.8
LAND IN FARMS						
State Total						
Texas	130,153,438	3,008,411	19.8	4.9	11.2	3.7

--continued

Table C. **Summary of Coverage, Nonresponse, and Misclassification Adjustments by County: 2012** (continued)

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

Geographic area	Total (number)	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
LAND IN FARMS - Con.						
Counties						
Anderson	375,110	19,453	30.0	7.8	16.3	5.9
Andrews	752,030	26,991	4.3	2.0	0.8	1.5
Angelina	116,977	5,999	37.5	6.5	24.5	6.5
Aransas	39,844	968	12.8	3.5	7.7	1.6
Archer	541,467	29,219	20.9	4.0	14.3	2.5
Armstrong	434,272	22,207	23.2	4.6	12.7	5.9
Atascosa	665,287	46,655	30.0	6.5	18.7	4.7
Austin	369,960	17,210	30.7	6.6	19.0	5.2
Bailey	471,624	22,388	25.2	3.3	14.4	7.5
Bandera	402,481	20,803	33.1	11.7	15.1	6.4
Bastrop	387,586	36,777	28.1	5.9	17.0	5.2
Baylor	543,638	9,785	7.5	1.0	5.0	1.5
Bee	538,807	30,978	21.5	5.0	13.6	3.0
Bell	421,362	13,823	29.1	6.4	17.3	5.4
Bexar	342,882	9,986	29.5	7.7	16.9	5.0
Blanco	363,990	16,330	24.5	9.4	9.7	5.4
Borden	464,270	13,339	8.3	3.5	2.2	2.6
Bosque	569,644	49,661	22.6	7.6	10.5	4.5
Bowie	273,107	10,170	30.4	5.8	19.6	5.0
Brazoria	631,021	27,129	31.0	5.1	22.0	3.9
Brazos	299,108	20,113	28.2	7.4	15.4	5.4
Brewster	1,912,726	81,296	7.3	4.5	2.2	0.6
Briscoe	524,239	21,828	16.1	4.9	4.9	6.3
Brooks	572,917	47,797	11.2	4.8	5.3	1.1
Brown	595,312	36,286	25.9	7.6	12.5	5.8
Burleson	335,346	14,442	29.5	6.4	18.2	4.9
Burnet	485,277	40,355	28.9	7.2	15.8	5.8
Caldwell	310,433	8,933	29.4	6.2	18.0	5.1
Calhoun	184,094	25,136	21.6	1.9	18.3	1.4
Callahan	563,179	39,984	18.4	3.0	11.9	3.4
Cameron	309,700	29,557	32.2	4.7	23.7	3.8
Camp	78,238	6,160	34.3	6.4	21.4	6.5
Carson	484,876	21,492	22.1	3.1	13.6	5.4
Cass	167,578	6,367	33.1	11.1	14.8	7.3
Castro	548,142	48,080	23.1	1.3	16.9	4.9
Chambers	253,743	18,348	25.2	3.9	18.3	3.0
Cherokee	301,338	17,240	31.4	5.1	21.4	4.9
Childress	443,797	35,338	21.1	6.1	11.1	3.9
Clay	632,567	20,374	20.6	4.5	12.1	4.0
Cochran	448,719	23,329	17.1	2.1	6.6	8.3
Coke	484,333	35,883	26.1	5.4	15.4	5.3
Coleman	725,738	29,189	25.5	6.1	14.4	5.0
Collin	312,806	10,568	30.4	6.5	18.0	6.0
Collingsworth	494,805	28,288	19.7	4.6	11.4	3.7
Colorado	485,121	24,139	24.3	5.7	14.7	3.9
Comal	205,018	7,259	31.2	8.5	16.3	6.5
Comanche	517,135	17,086	26.6	6.2	15.4	5.0
Concho	501,597	18,853	23.3	5.3	13.1	4.9
Cooke	503,827	28,166	26.2	5.3	16.2	4.7
Coryell	463,039	21,923	28.2	6.6	16.0	5.5
Cottle	564,617	14,577	9.2	2.8	3.5	2.9
Crane	239,159	19,247	3.2	2.5	0.5	0.3
Crockett	1,546,202	45,569	9.4	5.2	2.9	1.3
Crosby	558,372	16,099	10.9	1.3	6.1	3.5
Culberson	1,618,007	94,193	6.6	0.7	5.5	0.3
Dallam	851,947	42,460	18.5	3.0	9.8	5.7
Dallas	83,754	17,101	39.8	4.5	31.1	4.2
Dawson	558,085	22,638	20.0	2.8	8.2	9.0
Deaf Smith	923,532	35,516	21.1	2.6	10.9	7.6
Delta	131,212	16,524	31.8	6.1	20.2	5.5
Denton	383,533	11,302	29.8	6.3	17.9	5.6
DeWitt	536,411	39,035	25.1	4.6	17.2	3.3
Dickens	572,617	15,318	8.9	1.7	4.6	2.6
Dimmit	677,023	43,271	18.0	6.4	9.6	2.0
Donley	585,096	11,724	5.3	1.4	2.7	1.3
Duval	959,630	45,975	29.1	11.1	13.1	4.9
Eastland	503,633	18,593	26.0	7.5	13.0	5.5
Ector	428,848	55,199	9.3	3.9	3.8	1.6
Edwards	969,873	62,051	16.8	6.5	8.4	1.9
Ellis	473,860	9,360	26.2	6.7	14.8	4.6
El Paso	209,393	13,461	25.8	13.5	8.3	4.0
Erath	607,550	18,447	26.4	6.1	14.5	5.8
Falls	382,651	12,231	29.5	4.6	20.5	4.3
Fannin	513,651	31,229	29.9	5.0	20.7	4.3
Fayette	492,038	15,070	25.9	7.6	12.0	6.4
Fisher	494,955	35,412	24.2	5.4	13.2	5.5
Floyd	581,997	17,756	17.1	3.2	5.5	8.4
Foard	368,143	24,608	15.6	4.0	6.9	4.7
Fort Bend	339,295	25,821	27.1	3.5	20.5	3.1
Franklin	113,015	3,145	32.4	9.2	15.9	7.3
Freestone	421,303	20,720	29.4	6.7	17.4	5.2
Frio	713,262	29,742	30.7	7.8	18.9	4.1
Gaines	774,822	33,279	21.7	2.8	11.9	7.0
Galveston	89,554	6,384	37.9	8.0	24.9	5.0
Garza	455,569	39,313	12.8	3.1	6.5	3.1
Gillespie	652,247	27,632	28.8	7.9	13.8	7.0
Glasscock	433,706	18,274	14.5	4.0	5.9	4.6
Goliad	494,930	20,019	22.9	8.2	10.8	3.9

--continued

Table C. **Summary of Coverage, Nonresponse, and Misclassification Adjustments by County: 2012** (continued)

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

Geographic area	Total (number)	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
LAND IN FARMS - Con.						
Counties - Con.						
Gonzales	609,790	14,672	23.2	6.5	12.5	4.3
Gray	514,942	16,349	21.9	3.8	12.1	5.9
Grayson	431,268	31,799	29.4	7.0	15.6	6.8
Gregg	48,052	5,221	42.2	12.5	20.8	8.9
Grimes	417,142	17,800	28.4	5.8	18.6	4.0
Guadalupe	383,109	10,160	27.5	6.4	15.7	5.4
Hale	640,609	51,563	30.1	2.2	20.9	7.0
Hall	509,050	22,836	20.7	2.8	13.3	4.6
Hamilton	445,777	36,373	25.4	4.6	17.1	3.7
Hansford	566,770	19,164	13.8	1.4	10.6	1.8
Hardeman	354,648	20,620	20.0	4.4	11.1	4.5
Hardin	68,508	7,736	39.5	6.4	23.7	9.4
Harris	236,402	18,184	31.9	7.0	20.2	4.8
Harrison	199,635	14,309	36.4	6.0	25.8	4.6
Hartley	902,940	246,012	12.2	1.3	9.6	1.3
Haskell	567,156	22,495	19.3	5.0	9.0	5.4
Hays	245,006	13,656	33.5	8.7	18.1	6.8
Hemphill	575,829	25,443	13.7	3.0	8.3	2.3
Henderson	345,628	84,149	28.7	4.0	18.2	6.5
Hidalgo	795,180	26,591	37.1	11.8	18.0	7.4
Hill	504,129	10,430	24.5	5.9	14.3	4.3
Hockley	483,775	25,102	23.8	3.3	11.8	8.7
Hood	224,225	13,340	30.3	8.7	15.3	6.2
Hopkins	422,587	17,029	30.9	6.6	19.4	4.9
Houston	467,883	22,057	30.2	7.6	16.5	6.1
Howard	498,472	21,115	19.1	4.0	9.0	6.1
Hudspeth	2,251,109	51,777	6.3	2.7	3.0	0.6
Hunt	454,539	13,499	34.3	7.8	20.1	6.4
Hutchinson	520,950	35,531	14.0	3.8	8.1	2.1
Irion	496,136	28,765	10.3	3.8	4.6	1.8
Jack	527,895	17,414	21.1	6.2	10.8	4.1
Jackson	441,827	43,644	19.9	2.8	14.0	3.1
Jasper	88,130	18,538	36.0	7.0	22.7	6.3
Jeff Davis	1,255,005	17,535	2.7	2.2	0.2	0.3
Jefferson	353,971	48,950	21.6	4.5	14.3	2.8
Jim Hogg	644,924	191,456	22.0	6.7	14.1	1.1
Jim Wells	503,754	31,530	32.0	11.5	14.3	6.2
Johnson	428,958	11,402	32.0	7.1	19.2	5.7
Jones	562,944	29,336	19.7	3.3	11.4	5.0
Karnes	464,641	27,389	29.8	5.8	19.2	4.7
Kaufman	449,181	26,729	30.5	5.0	20.7	4.9
Kendall	369,951	14,883	34.9	8.9	19.0	6.9
Kenedy	916,390	10,055	0.8	0.2	0.6	0.1
Kent	563,124	15,437	6.6	1.9	3.5	1.2
Kerr	582,252	37,037	24.8	10.8	8.4	5.6
Kimble	694,230	24,388	22.3	8.9	8.2	5.1
King	417,597	19,639	5.3	2.6	1.4	1.3
Kinney	576,745	19,413	9.9	5.7	2.5	1.7
Kleberg	484,137	11,285	5.6	0.7	4.3	0.5
Knox	450,631	38,056	14.2	3.0	7.0	4.3
Lamar	496,571	24,741	28.0	4.8	18.8	4.4
Lamb	616,260	42,043	27.4	2.2	20.4	4.7
Lampasas	444,755	18,139	16.0	4.0	8.7	3.3
La Salle	634,847	44,816	27.7	10.1	14.8	2.8
Lavaca	546,546	21,394	24.5	6.6	12.7	5.2
Lee	318,216	6,758	29.3	8.4	14.7	6.2
Leon	594,393	25,155	27.9	7.6	15.4	4.9
Liberty	286,793	14,893	31.6	8.5	15.8	7.2
Limestone	486,787	49,123	29.3	5.9	18.7	4.8
Lipscomb	591,326	13,107	11.7	2.2	5.0	4.5
Live Oak	540,710	14,172	30.0	8.3	16.7	5.0
Llano	528,018	24,665	22.1	7.3	10.1	4.7
Loving	379,524	32,175	2.9	0.5	2.3	0.2
Lubbock	502,571	21,329	26.4	3.5	15.0	7.9
Lynn	472,170	24,683	18.1	2.6	5.9	9.5
McCulloch	614,353	17,525	22.8	6.5	11.5	4.8
McLennan	553,517	18,878	31.3	6.1	19.7	5.5
McMullen	517,425	35,258	20.4	6.2	10.5	3.7
Madison	291,350	13,987	26.7	5.6	17.0	4.1
Marion	40,124	3,678	37.3	11.1	15.7	10.5
Martin	453,712	38,200	23.3	3.1	13.8	6.5
Mason	551,268	24,108	23.7	7.3	11.4	5.0
Matagorda	568,055	45,217	21.2	4.2	14.2	2.8
Maverick	540,869	41,048	17.5	11.4	4.2	1.9
Medina	833,587	16,508	17.3	5.3	9.0	3.0
Menard	536,562	30,705	20.0	9.0	5.9	5.0
Midland	404,361	19,224	20.6	4.3	12.4	3.9
Milam	527,871	12,886	27.0	6.4	15.3	5.3
Mills	471,393	18,666	26.6	7.6	14.0	5.0
Mitchell	573,130	14,030	9.0	2.1	5.0	2.0
Montague	488,672	22,761	25.8	6.4	13.4	5.9
Montgomery	155,362	7,774	34.9	9.5	19.3	6.0
Moore	523,650	23,690	15.4	3.7	7.9	3.9
Morris	91,874	24,858	27.1	3.5	21.4	2.2
Motley	595,487	19,014	11.7	2.1	6.9	2.8
Nacogdoches	264,818	22,939	34.8	5.0	24.9	4.9
Navarro	558,096	24,394	30.2	7.8	16.6	5.7
Newton	58,782	4,841	27.8	4.5	18.0	5.2

--continued

Table C. **Summary of Coverage, Nonresponse, and Misclassification Adjustments by County: 2012** (continued)

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

Geographic area	Total (number)	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
LAND IN FARMS - Con.						
Counties - Con.						
Nolan	465,160	25,050	15.7	3.1	8.8	3.8
Nueces	523,933	20,362	13.5	3.0	7.9	2.7
Ochiltree	544,623	23,745	20.2	3.3	10.0	6.8
Oldham	830,427	50,176	6.0	1.0	3.8	1.2
Orange	52,799	7,127	30.8	5.0	21.5	4.4
Palo Pinto	593,309	42,838	21.9	3.7	15.5	2.6
Panola	227,367	20,578	33.5	6.6	19.6	7.3
Parker	494,492	18,074	31.4	6.3	19.6	5.5
Parmer	553,724	30,590	13.6	1.6	8.5	3.5
Pecos	2,947,905	61,137	6.2	3.2	2.4	0.6
Polk	139,199	9,389	34.1	8.5	18.9	6.8
Potter	568,641	18,199	9.8	4.0	4.5	1.3
Presidio	1,655,540	104,425	9.7	6.2	2.2	1.3
Rains	116,853	14,175	34.6	6.7	22.3	5.6
Randall	570,991	49,599	25.5	3.6	14.5	7.3
Reagan	698,550	24,549	10.0	4.7	4.4	0.9
Real	320,572	16,904	18.9	11.9	4.8	2.2
Red River	448,634	19,572	25.8	5.3	16.0	4.5
Reeves	1,235,728	55,315	10.1	2.1	6.5	1.5
Refugio	474,709	73,007	10.9	2.8	6.4	1.8
Roberts	562,448	50,014	10.5	1.3	8.2	1.1
Robertson	467,568	26,377	26.6	5.4	16.7	4.6
Rockwall	45,399	5,253	30.3	6.6	17.7	5.9
Runnels	665,905	17,117	17.9	5.1	7.6	5.1
Rusk	274,327	13,298	29.6	7.2	16.8	5.6
Sabine	29,035	2,711	38.8	14.6	18.6	5.7
San Augustine	72,890	11,412	28.0	7.5	16.4	4.2
San Jacinto	111,900	14,849	30.3	6.0	17.1	7.3
San Patricio	374,100	15,445	23.0	5.9	12.7	4.3
San Saba	671,092	26,704	22.0	8.6	7.5	5.8
Schleicher	833,569	31,635	15.1	5.0	7.4	2.7
Scurry	494,353	57,011	22.4	5.6	9.4	7.5
Shackelford	505,228	40,114	11.3	4.8	3.9	2.6
Shelby	197,189	8,807	34.5	6.2	23.7	4.5
Sherman	583,168	11,830	11.1	1.9	4.4	4.8
Smith	302,339	14,613	33.8	12.4	14.1	7.3
Somervell	91,368	8,168	29.1	8.4	14.6	6.1
Starr	668,724	32,829	38.5	13.2	20.7	4.7
Stephens	516,748	16,761	25.2	6.7	13.8	4.7
Sterling	585,066	64,806	14.5	7.3	5.1	2.2
Stonewall	472,890	21,028	21.7	4.3	12.5	4.9
Sutton	910,984	50,425	12.4	6.7	4.7	0.9
Swisher	545,582	18,268	25.0	3.3	14.7	7.0
Tarrant	145,661	6,251	28.6	7.8	15.8	5.0
Taylor	578,912	18,377	21.0	4.3	12.4	4.3
Terrell	1,100,763	72,835	8.6	3.6	4.5	0.6
Terry	442,100	18,414	23.5	2.8	11.9	8.8
Throckmorton	508,002	16,938	12.0	4.5	4.1	3.4
Titus	146,541	25,882	24.3	6.6	13.0	4.7
Tom Green	956,852	57,149	8.0	1.8	5.2	1.0
Travis	252,686	13,118	34.6	8.9	20.5	5.2
Trinity	111,262	4,351	29.8	7.3	16.9	5.6
Tyler	90,670	7,002	35.0	8.3	20.0	6.7
Upshur	202,377	9,823	35.5	7.0	23.5	5.0
Upton	686,231	22,964	9.8	3.8	4.9	1.1
Uvalde	977,281	34,626	8.9	2.3	5.2	1.4
Val Verde	1,497,074	60,395	11.6	7.2	3.4	1.1
Van Zandt	370,603	13,701	29.4	8.7	13.8	7.0
Victoria	437,805	21,465	23.6	4.8	15.4	3.4
Walker	280,512	19,335	32.6	8.2	18.5	5.9
Waller	314,981	31,919	30.7	5.4	20.5	4.8
Ward	391,653	29,850	4.7	1.5	2.6	0.6
Washington	368,823	13,203	27.6	6.8	15.5	5.3
Webb	2,098,378	123,196	20.6	7.4	11.5	1.6
Wharton	660,701	46,796	27.0	3.2	20.8	3.0
Wheeler	519,217	10,489	17.8	5.4	6.9	5.5
Wichita	366,787	20,733	16.7	3.1	10.1	3.4
Wilbarger	587,173	30,970	10.2	2.2	5.5	2.6
Willacy	336,075	43,596	24.4	8.1	11.4	4.9
Williamson	558,622	22,540	27.9	5.5	17.6	4.8
Wilson	439,689	23,161	30.4	6.8	19.3	4.3
Winkler	533,464	23,285	2.7	0.7	1.6	0.4
Wise	487,078	19,428	30.3	6.6	17.4	6.3
Wood	227,338	8,252	30.3	7.2	18.0	5.0
Yoakum	488,493	50,737	26.3	2.1	18.2	6.0
Young	523,673	28,522	19.8	4.5	11.7	3.7
Zapata	563,146	34,244	44.5	18.0	22.9	3.5
Zavala	692,850	14,374	16.1	6.9	6.1	3.2
SALES						
State Total						
Texas	25,375,581	2,666,227	14.2	1.9	10.7	1.6
Counties						
Anderson	44,579	4,156	23.4	5.7	14.2	3.5
Andrews	12,578	2,654	9.3	1.8	6.1	1.3

--continued

Table C. **Summary of Coverage, Nonresponse, and Misclassification Adjustments by County: 2012** (continued)

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

Geographic area	Total (number)	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
SALES - Con.						
Counties - Con.						
Angelina	46,448	9,677	32.5	3.6	26.8	2.1
Aransas	1,075	71	17.4	4.9	10.2	2.3
Archer	76,822	21,223	26.5	0.7	25.0	0.9
Armstrong	19,206	3,844	21.9	3.2	11.4	7.3
Atascosa	84,999	33,474	26.1	1.4	23.3	1.4
Austin	43,542	5,730	29.5	3.5	23.2	2.8
Bailey	292,448	84,575	7.6	1.5	4.8	1.3
Bandera	11,188	4,706	20.0	6.2	10.3	3.6
Bastrop	35,318	5,569	26.3	5.0	15.5	5.8
Baylor	44,738	5,242	9.2	0.3	5.5	3.4
Bee	26,044	3,071	25.7	2.9	19.9	2.8
Bell	84,880	11,688	21.1	3.3	14.9	2.9
Bexar	72,387	3,679	16.3	4.2	8.8	3.3
Blanco	19,144	6,987	11.9	3.9	4.9	3.1
Borden	9,437	610	6.9	2.1	2.9	1.9
Bosque	78,296	28,466	23.5	6.9	12.3	4.3
Bowie	66,022	12,022	30.6	4.9	21.7	4.0
Brazoria	118,236	24,487	29.5	2.4	22.9	4.1
Brazos	94,997	10,766	16.9	4.6	9.5	2.7
Brewster	9,903	905	11.4	3.6	6.8	1.0
Briscoe	20,435	2,031	18.6	3.3	8.6	6.7
Brooks	50,768	19,491	43.1	18.5	20.8	3.8
Brown	40,678	3,517	18.9	4.6	10.6	3.7
Burleson	90,059	14,490	32.9	3.0	28.2	1.7
Burnet	14,714	1,447	28.9	7.3	15.8	5.8
Caldwell	62,938	21,733	25.8	3.9	19.8	2.2
Calhoun	42,105	11,057	26.7	0.6	25.2	0.8
Callahan	29,901	3,408	18.4	3.9	11.0	3.5
Cameron	160,405	55,341	33.3	4.5	24.6	4.3
Camp	137,668	24,953	17.3	4.7	11.1	1.5
Carson	82,986	5,540	9.2	1.5	5.3	2.3
Cass	67,594	25,911	28.9	3.2	23.6	2.1
Castro	1,312,140	450,630	4.5	0.4	3.7	0.4
Chambers	25,593	12,748	26.3	1.2	23.7	1.4
Cherokee	133,984	25,054	16.5	4.1	10.6	1.9
Childress	19,871	3,664	16.2	1.2	13.2	1.9
Clay	79,810	21,172	28.8	3.4	19.4	6.0
Cochran	100,787	61,452	12.7	1.7	7.7	3.2
Coke	7,011	684	26.6	3.0	17.9	5.7
Coleman	28,376	2,722	26.3	4.4	17.9	4.0
Collin	77,812	17,262	23.4	2.2	17.9	3.3
Collingsworth	43,109	3,637	16.4	1.3	12.4	2.7
Colorado	67,980	11,550	25.4	2.2	20.7	2.5
Comal	(D)	(D)	(D)	(D)	(D)	(D)
Comanche	158,136	15,474	8.0	1.9	4.9	1.2
Concho	22,830	1,772	18.7	3.8	10.9	4.0
Cooke	63,319	4,102	34.2	4.6	24.5	5.1
Coryell	68,550	15,658	26.9	1.2	24.6	1.1
Cottle	15,905	2,752	12.8	2.8	6.6	3.4
Crane	1,410	144	5.8	3.1	2.0	0.7
Crockett	13,894	862	7.3	4.3	2.2	0.8
Crosby	71,589	6,118	13.3	1.1	8.4	3.7
Culberson	13,734	2,390	14.8	1.9	11.0	1.9
Dallam	651,714	163,826	5.4	0.8	3.9	0.6
Dallas	44,489	20,965	28.2	2.4	22.6	3.2
Dawson	73,129	3,722	15.5	1.1	9.1	5.2
Deaf Smith	1,379,076	205,266	9.7	2.4	5.8	1.6
Delta	29,346	4,785	30.5	5.1	21.8	3.6
Denton	136,995	100,059	12.2	2.3	7.8	2.2
DeWitt	61,350	15,179	31.4	3.6	25.2	2.6
Dickens	18,526	1,249	12.9	1.6	8.5	2.7
Dimmit	35,216	34,737	7.3	1.8	4.3	1.2
Donley	95,128	32,662	5.2	1.5	2.8	0.9
Duval	14,803	1,358	37.8	9.2	23.2	5.4
Eastland	27,875	4,888	29.7	6.3	16.2	7.1
Ector	2,190	440	24.0	6.8	15.1	2.2
Edwards	8,164	793	16.8	6.5	8.5	1.9
Ellis	91,390	12,479	20.9	4.2	13.0	3.7
El Paso	45,535	5,168	33.9	6.1	18.2	9.6
Erath	256,445	36,460	10.9	0.6	9.4	0.9
Falls	135,296	37,631	18.8	1.2	16.3	1.3
Fannin	71,141	17,962	24.6	3.0	18.6	3.0
Fayette	66,358	8,348	28.7	6.3	16.3	6.1
Fisher	31,089	4,288	17.3	1.7	13.2	2.4
Floyd	282,743	263,556	2.8	0.7	1.2	1.0
Foard	13,827	827	18.8	2.0	12.9	3.9
Fort Bend	103,787	34,187	20.2	2.8	13.2	4.2
Franklin	85,976	10,425	31.7	4.2	24.9	2.6
Freestone	44,082	14,546	22.5	3.5	15.9	3.1
Frio	183,672	20,166	36.1	6.5	26.3	3.3
Gaines	180,470	12,491	21.5	1.1	15.4	5.1
Galveston	(D)	(D)	(D)	(D)	(D)	(D)
Garza	12,385	1,357	17.1	2.2	9.4	5.4
Gillespie	46,140	25,894	37.0	10.7	17.6	8.8
Glasscock	25,878	2,971	10.3	1.4	3.9	4.9
Goliad	19,445	1,325	29.2	6.0	17.9	5.3
Gonzales	517,760	74,340	15.5	1.9	12.6	1.0
Gray	207,677	18,012	3.1	0.5	2.2	0.4

--continued

Table C. **Summary of Coverage, Nonresponse, and Misclassification Adjustments by County: 2012** (continued)

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

Geographic area	Total (number)	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
SALES - Con.						
Counties - Con.						
Grayson	91,948	25,287	29.5	5.7	17.0	6.9
Gregg	3,607	506	40.8	9.3	22.6	8.9
Grimes	48,052	6,492	21.0	3.7	14.7	2.6
Guadalupe	61,591	7,550	30.3	7.0	18.6	4.7
Hale	409,930	13,390	9.2	0.5	7.3	1.4
Hall	24,751	2,154	15.7	1.0	12.3	2.5
Hamilton	55,828	3,889	18.1	2.1	14.1	1.9
Hansford	783,207	342,512	2.5	0.5	1.8	0.2
Hardeman	25,362	5,558	11.7	1.3	8.2	2.2
Hardin	(D)	(D)	(D)	(D)	(D)	(D)
Harris	65,190	15,065	29.2	9.1	14.8	5.2
Harrison	18,991	7,167	29.4	1.6	26.3	1.5
Hartley	1,180,897	323,977	2.8	1.5	1.2	0.1
Haskell	38,671	5,491	21.2	3.9	8.9	8.5
Hays	14,970	1,746	25.5	5.9	15.1	4.6
Hemphill	110,552	77,812	3.3	1.1	1.6	0.6
Henderson	49,521	22,414	16.1	3.5	9.1	3.5
Hidalgo	452,766	64,839	31.8	10.3	15.4	6.1
Hill	119,939	8,723	18.8	3.1	13.2	2.5
Hockley	78,717	10,057	24.1	1.8	16.3	6.0
Hood	18,742	2,967	27.5	5.1	17.0	5.3
Hopkins	205,946	22,375	21.9	1.5	18.9	1.5
Houston	49,581	14,506	31.6	6.7	17.8	7.2
Howard	13,864	5,182	22.9	5.8	11.6	5.5
Hudspeth	34,478	17,227	12.6	1.8	8.0	2.8
Hunt	69,337	8,428	35.1	6.4	22.3	6.4
Hutchinson	55,876	22,241	9.2	2.5	4.6	2.2
Irion	7,463	893	13.5	1.9	8.9	2.7
Jack	22,500	2,509	25.5	3.1	17.7	4.7
Jackson	101,836	13,646	22.0	1.1	19.7	1.3
Jasper	10,069	5,489	39.1	2.3	32.1	4.7
Jeff Davis	(D)	(D)	(D)	(D)	(D)	(D)
Jefferson	38,030	6,194	29.8	6.0	20.1	3.6
Jim Hogg	11,131	4,097	18.1	3.5	13.5	1.0
Jim Wells	82,856	13,756	23.6	8.1	11.7	3.9
Johnson	78,850	19,638	30.7	5.7	19.9	5.1
Jones	43,283	3,252	16.4	1.7	12.1	2.7
Karnes	27,599	3,271	26.5	3.8	19.2	3.5
Kaufman	58,981	7,408	29.9	3.0	23.8	3.2
Kendall	12,530	1,714	39.3	6.1	27.1	6.1
Kenedy	23,687	188	0.5	0.1	0.3	0.1
Kent	(D)	(D)	(D)	(D)	(D)	(D)
Kerr	10,803	1,486	27.6	7.1	15.8	4.7
Kimble	(D)	(D)	(D)	(D)	(D)	(D)
King	6,588	479	4.9	1.6	1.5	1.8
Kinney	4,710	1,192	19.4	6.7	9.9	2.8
Kleberg	61,817	46,428	5.0	0.6	4.0	0.4
Knox	59,013	16,130	21.0	2.5	11.7	6.8
Lamar	84,885	14,135	22.3	1.5	19.1	1.7
Lamb	575,286	198,699	7.9	0.3	7.0	0.6
Lampasas	16,137	1,287	16.6	3.6	9.6	3.5
La Salle	18,683	1,287	40.1	8.9	28.4	2.8
Lavaca	61,904	11,547	20.1	4.8	11.9	3.4
Lee	38,561	7,630	18.8	5.0	10.4	3.4
Leon	148,739	26,235	34.5	3.1	29.7	1.7
Liberty	34,939	6,344	28.7	7.8	15.1	5.8
Limestone	48,284	8,186	23.3	3.5	16.5	3.4
Lipscomb	52,682	7,734	6.9	0.9	4.2	1.8
Live Oak	17,913	1,851	26.3	5.4	16.4	4.5
Llano	13,764	1,345	23.9	7.9	11.6	4.5
Loving	912	52	4.5	0.9	3.1	0.5
Lubbock	174,800	55,582	14.0	1.4	9.4	3.2
Lynn	67,595	3,861	12.7	1.2	6.2	5.3
McCulloch	22,565	2,585	25.4	6.6	12.7	6.1
McLennan	183,082	12,084	17.3	4.6	10.3	2.4
McMullen	8,336	1,145	22.8	4.5	11.5	6.8
Madison	82,860	5,305	13.1	1.3	10.9	0.9
Marion	3,350	2,326	17.7	3.6	11.2	2.8
Martin	20,265	5,039	21.0	0.8	15.9	4.3
Mason	51,449	17,377	40.0	7.7	24.9	7.4
Matagorda	129,703	21,475	25.2	8.5	13.4	3.4
Maverick	32,608	21,894	8.6	2.6	3.5	2.4
Medina	115,519	47,625	19.5	1.7	16.0	1.8
Menard	9,635	1,320	19.4	5.9	9.6	3.9
Midland	17,213	4,660	9.5	1.8	5.3	2.4
Milam	144,728	25,674	24.6	2.1	21.4	1.1
Mills	43,032	8,946	24.4	5.1	15.3	4.0
Mitchell	21,187	2,201	12.4	0.7	10.5	1.2
Montague	44,931	9,023	33.2	3.0	27.1	3.1
Montgomery	23,836	7,611	47.2	4.2	36.8	6.2
Moore	605,026	344,071	3.9	1.1	2.1	0.7
Morris	46,936	12,231	34.7	4.0	28.8	1.9
Motley	12,800	1,630	10.9	2.0	5.7	3.3
Nacogdoches	322,374	47,834	23.5	1.7	20.7	1.1
Navarro	66,378	6,323	24.0	4.9	15.3	3.8
Newton	2,948	215	40.3	6.8	27.6	5.9
Nolan	23,827	11,252	5.2	0.5	3.8	1.0
Nueces	84,868	44,502	8.9	0.2	7.7	1.0

--continued

Table C. **Summary of Coverage, Nonresponse, and Misclassification Adjustments by County: 2012** (continued)

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

Geographic area	Total (number)	Standard error	Adjustment as percent of total	Percent of total adjustment from coverage	Percent of total adjustment from nonresponse	Percent of total adjustment from misclassification
SALES - Con.						
Counties - Con.						
Ochiltree	424,605	212,839	2.8	1.9	0.6	0.2
Oldham	112,956	46,595	2.8	0.3	1.9	0.6
Orange	4,335	1,070	26.0	3.6	17.9	4.5
Palo Pinto	53,787	24,791	31.0	2.0	24.5	4.5
Panola	93,297	42,935	37.4	1.0	33.2	3.1
Parker	74,288	11,377	32.9	3.3	25.1	4.5
Parmer	1,329,538	265,926	1.6	0.4	1.0	0.2
Pecos	47,470	3,770	8.4	3.0	3.9	1.4
Polk	7,836	1,225	32.2	6.9	20.7	4.7
Potter	20,972	7,530	6.5	2.7	3.1	0.7
Presidio	(D)	(D)	(D)	(D)	(D)	(D)
Rains	15,250	1,625	30.3	3.6	19.8	6.9
Randall	540,315	483,132	2.1	0.3	1.6	0.1
Reagan	11,105	1,176	21.3	3.1	14.9	3.4
Real	1,649	197	25.5	9.0	12.9	3.6
Red River	53,529	7,479	33.4	2.5	28.3	2.6
Reeves	54,206	13,459	51.1	1.2	46.9	3.0
Refugio	43,046	5,821	17.9	2.9	10.0	5.1
Roberts	16,400	3,648	13.2	0.6	11.8	0.9
Robertson	136,444	24,128	19.9	2.9	15.1	1.9
Rockwall	4,113	2,429	18.3	6.6	8.0	3.7
Runnels	47,427	3,158	18.1	3.6	10.2	4.3
Rusk	75,303	37,071	36.2	1.3	33.6	1.3
Sabine	14,728	7,074	28.2	1.9	25.7	0.6
San Augustine	63,215	16,600	26.1	7.2	16.2	2.7
San Jacinto	8,529	2,206	28.7	5.1	19.1	4.5
San Patricio	86,215	20,079	13.7	2.6	7.2	3.9
San Saba	30,021	3,256	21.0	6.2	9.1	5.8
Schleicher	13,610	924	12.6	3.4	6.9	2.4
Scurry	29,027	1,281	11.3	2.2	5.6	3.5
Shackelford	22,334	8,056	22.0	6.7	11.2	4.1
Shelby	473,287	49,618	28.9	2.2	25.4	1.3
Sherman	590,356	85,800	2.3	0.5	1.4	0.4
Smith	76,790	14,465	29.9	8.3	13.0	8.6
Somervell	4,303	688	30.5	5.0	20.2	5.3
Starr	108,546	21,370	27.9	2.6	20.9	4.5
Stephens	9,217	1,266	19.5	4.5	11.6	3.4
Sterling	(D)	(D)	(D)	(D)	(D)	(D)
Stonewall	47,446	2,798	4.1	2.3	1.3	0.5
Sutton	10,872	728	15.7	6.1	8.5	1.1
Swisher	586,810	466,855	2.3	0.7	1.4	0.2
Tarrant	34,603	5,105	28.4	4.8	20.0	3.6
Taylor	37,625	24,280	16.1	2.4	11.1	2.6
Terrell	3,069	172	3.6	1.2	2.3	0.2
Terry	125,803	25,768	21.9	2.3	13.7	5.9
Throckmorton	24,837	2,443	13.5	3.0	7.0	3.5
Titus	81,222	29,749	27.0	2.5	23.3	1.2
Tom Green	131,436	3,663	4.6	0.8	3.0	0.9
Travis	41,668	27,959	30.6	1.2	25.8	3.7
Trinity	7,050	649	31.2	6.0	19.4	5.9
Tyler	19,144	12,446	12.3	2.8	7.9	1.7
Upshur	60,558	19,968	29.4	1.6	26.9	1.0
Upton	12,684	1,899	24.1	6.0	11.1	7.0
Uvalde	112,475	21,687	8.9	1.8	6.5	0.7
Val Verde	10,650	775	7.2	2.9	3.7	0.7
Van Zandt	94,330	18,046	26.2	4.8	17.0	4.5
Victoria	47,554	7,106	17.7	2.3	13.4	2.0
Walker	34,513	12,293	25.4	7.7	14.0	3.7
Waller	91,677	38,761	16.9	1.5	13.6	1.9
Ward	1,772	102	8.5	2.1	5.3	1.1
Washington	45,727	7,233	26.9	3.1	20.8	3.0
Webb	30,259	2,489	15.8	3.4	11.5	0.9
Wharton	373,637	55,463	22.0	2.7	17.3	2.0
Wheeler	111,206	69,069	2.8	1.0	1.1	0.8
Wichita	37,932	2,945	22.1	2.1	15.3	4.7
Wilbarger	47,244	4,281	17.0	2.7	10.2	4.1
Willacy	82,566	10,107	22.8	4.6	12.5	5.7
Williamson	129,648	24,980	24.4	1.8	20.7	1.9
Wilson	102,098	71,725	15.6	0.9	13.8	0.9
Winkler	3,436	(H)	1.9	(Z)	1.7	0.2
Wise	49,867	5,189	31.7	6.6	19.5	5.6
Wood	105,876	16,550	21.4	3.7	15.2	2.5
Yoakum	80,008	8,674	22.1	1.8	15.1	5.2
Young	23,692	2,514	21.6	2.6	16.8	2.2
Zapata	11,781	6,814	31.8	16.4	13.2	2.2
Zavala	72,714	17,032	15.9	5.0	7.2	3.7

Table D. **American Indian or Alaska Native Operators: 2012**

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

Geographic area	American Indian or Alaska Native farm operators		
	Total	Individually reported [1]	Other [2]
State Total			
Texas	5,626	5,626	-
Counties			
Anderson	37	37	-
Andrews	5	5	-
Angelina	19	19	-
Aransas	5	5	-
Archer	8	8	-
Armstrong	2	2	-
Atascosa	71	71	-
Austin	20	20	-
Bandera	25	25	-
Bastrop	44	44	-
Baylor	5	5	-
Bee	18	18	-
Bell	85	85	-
Bexar	64	64	-
Blanco	4	4	-
Bosque	22	22	-
Bowie	99	99	-
Brazoria	74	74	-
Brazos	35	35	-
Brewster	10	10	-
Briscoe	7	7	-
Brown	45	45	-
Burleson	20	20	-
Burnet	39	39	-
Caldwell	24	24	-
Calhoun	3	3	-
Callahan	9	9	-
Cameron	21	21	-
Camp	17	17	-
Carson	4	4	-
Cass	24	24	-
Castro	6	6	-
Chambers	8	8	-
Cherokee	36	36	-
Childress	7	7	-
Clay	20	20	-
Cochran	9	9	-
Coke	10	10	-
Coleman	20	20	-
Collin	78	78	-
Collingsworth	7	7	-
Colorado	9	9	-
Comal	19	19	-
Comanche	25	25	-
Concho	1	1	-
Cooke	48	48	-
Coryell	24	24	-
Crane	1	1	-
Crockett	3	3	-
Crosby	12	12	-
Culberson	2	2	-
Dallam	7	7	-
Dallas	36	36	-
Dawson	8	8	-
Deaf Smith	15	15	-
Delta	15	15	-
Denton	63	63	-
DeWitt	12	12	-
Dickens	6	6	-
Dimmit	24	24	-
Donley	3	3	-
Duval	22	22	-
Eastland	18	18	-
Ector	13	13	-
Edwards	12	12	-
Ellis	65	65	-
El Paso	27	27	-
Erath	78	78	-
Falls	29	29	-
Fannin	80	80	-
Fayette	35	35	-
Fisher	14	14	-
Floyd	28	28	-
Foard	7	7	-
Fort Bend	17	17	-
Franklin	6	6	-
Freestone	18	18	-
Frio	10	10	-
Gaines	18	18	-
Galveston	11	11	-
Garza	8	8	-
Gillespie	19	19	-
Goliad	23	23	-
Gonzales	25	25	-
Gray	12	12	-
Grayson	109	109	-
Gregg	6	6	-

Geographic area	American Indian or Alaska Native farm operators		
	Total	Individually reported [1]	Other [2]
Counties - Con.			
Grimes	24	24	-
Guadalupe	35	35	-
Hale	7	7	-
Hall	5	5	-
Hamilton	32	32	-
Hansford	2	2	-
Hardeman	7	7	-
Hardin	10	10	-
Harris	37	37	-
Harrison	31	31	-
Hartley	3	3	-
Hays	14	14	-
Henderson	38	38	-
Hidalgo	25	25	-
Hill	32	32	-
Hockley	13	13	-
Hood	33	33	-
Hopkins	78	78	-
Houston	20	20	-
Howard	17	17	-
Hudspeth	3	3	-
Hunt	125	125	-
Hutchinson	6	6	-
Irion	3	3	-
Jack	23	23	-
Jackson	8	8	-
Jasper	10	10	-
Jefferson	16	16	-
Jim Hogg	8	8	-
Jim Wells	25	25	-
Johnson	73	73	-
Jones	26	26	-
Karnes	21	21	-
Kaufman	93	93	-
Kendall	21	21	-
Kenedy	3	3	-
Kent	2	2	-
Kerr	35	35	-
Kimble	6	6	-
Kinney	1	1	-
Kleberg	12	12	-
Knox	3	3	-
Lamar	60	60	-
Lamb	19	19	-
Lampasas	24	24	-
La Salle	13	13	-
Lavaca	15	15	-
Lee	14	14	-
Leon	62	62	-
Liberty	17	17	-
Limestone	54	54	-
Lipscomb	1	1	-
Live Oak	8	8	-
Llano	14	14	-
Lubbock	35	35	-
Lynn	5	5	-
McCulloch	26	26	-
McLennan	79	79	-
McMullen	5	5	-
Madison	27	27	-
Marion	14	14	-
Martin	6	6	-
Mason	3	3	-
Matagorda	16	16	-
Maverick	3	3	-
Medina	31	31	-
Menard	11	11	-
Midland	8	8	-
Milam	32	32	-
Mills	15	15	-
Mitchell	13	13	-
Montague	36	36	-
Montgomery	50	50	-
Moore	18	18	-
Morris	8	8	-
Motley	2	2	-
Nacogdoches	21	21	-
Navarro	167	167	-
Newton	6	6	-
Nolan	6	6	-
Nueces	11	11	-
Ochiltree	9	9	-
Oldham	4	4	-
Orange	42	42	-
Palo Pinto	38	38	-
Panola	14	14	-
Parker	139	139	-
Parmer	8	8	-
Polk	16	16	-
Potter	4	4	-
Presidio	5	5	-

See footnote(s) at end of table.

--continued

Table D. **American Indian or Alaska Native Operators: 2012** (continued)

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

Geographic area	American Indian or Alaska Native farm operators			Geographic area	American Indian or Alaska Native farm operators		
	Total	Individually reported [1]	Other [2]		Total	Individually reported [1]	Other [2]
Counties - Con.				**Counties** - Con.			
Rains	27	27	-	Taylor	25	25	-
Randall	24	24	-	Terry	10	10	-
Real	8	8	-	Throckmorton	5	5	-
Red River	61	61	-	Titus	30	30	-
Reeves	9	9	-	Tom Green	14	14	-
Refugio	12	12	-	Travis	28	28	-
Roberts	3	3	-	Trinity	11	11	-
Robertson	42	42	-	Tyler	24	24	-
Rockwall	8	8	-	Upshur	28	28	-
Runnels	16	16	-	Uvalde	11	11	-
Rusk	32	32	-	Val Verde	7	7	-
Sabine	6	6	-	Van Zandt	94	94	-
San Augustine	3	3	-	Victoria	20	20	-
San Jacinto	23	23	-	Walker	36	36	-
San Patricio	8	8	-	Waller	39	39	-
San Saba	29	29	-	Washington	34	34	-
Scurry	16	16	-	Webb	5	5	-
Shackelford	5	5	-	Wharton	19	19	-
Shelby	14	14	-	Wheeler	8	8	-
Sherman	14	14	-	Wichita	15	15	-
Smith	96	96	-	Wilbarger	3	3	-
Somervell	8	8	-	Williamson	47	47	-
Starr	16	16	-	Wilson	60	60	-
Stephens	10	10	-	Wise	72	72	-
Stonewall	4	4	-	Wood	45	45	-
Sutton	3	3	-	Yoakum	4	4	-
Swisher	17	17	-	Young	23	23	-
Tarrant	56	56	-	Zavala	10	10	-

[1] Data were collected for a maximum of three operators per farm.
[2] Data represent American Indian or Alaska Native farm or ranch operators on reservations who did not report individually. Data obtained by reservation officials.