1 Supporting Statement - Part B

FIELD CROPS PRODUCTION

OMB No. 0535-0002

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection has been conducted previously, include the actual response rate achieved during the last collection.

The agency's data collection goal is to obtain a complete response from each of the operations in the sample, staying on time and within budget. Telephone follow-up is conducted across the board. Data collection and follow-up are continued as long as possible given the publication date and the necessary post-data collection processing activities (summarization, analysis, preparing the publication, etc.).

The National Agricultural Statistics Service (NASS) maintains a list of farmers known to grow crops of interest and to represent all crop growing areas within a State. Sample sizes are determined for each crop or survey as shown in Item A-12 (table). Telephone follow-up is conducted for any survey which does not obtain at least an 80 percent response rate, subject to available funds, to ensure reliable indications. The follow-on surveys included in this docket are required to cover small or specialty crops that are not adequately represented in our larger probability surveys.

County, State, and federal employees such as cooperative extension service agents and Farm Service Agency county officials are the primary respondents for the weekly Crop Progress and Condition Report. Other sources include farmers, agricultural teachers at local schools, and NASDA field enumerators who are also involved in farming.

The Cash Rent survey targets operations that historically rent land for cash.

For the County Agriculture Production Surveys (CAPS) only, an adaptive design process has been used since 2011. For the final 5 of the 13 weeks of telephone follow-up for Row Crops CAPS, telephone follow-up was prioritized to counties

that needed more complete reports in order to meet publication standards. Completed reports were still desired from all operations, and all records available for telephone follow-up were attempted multiple times throughout the data collection time period.

The response rates for the most recent year are included below:



2. Describe the procedures for the collection of information including:

- **statistical methodology for stratification and sample selection,**
- **estimation procedure,**
- **degree of accuracy needed for the purpose described in the justification,**
- **unusual problems requiring specialized sampling procedures**

The specialty surveys, listed in the first part of the table above, target commodities that cannot be covered adequately in general purpose surveys. Most are grower surveys using a mail phase with telephone nonresponse follow-up until a prescribed cutoff date. The sample sizes cited often represent over 50 percent of the sampling population and contain a large number of matched reports from survey to survey. These surveys are coordinated with other collections to avoid duplicate contacts. The Sunflower, Non-Oil Survey, the Sugarbeet Survey, and the Sugarcane Survey are censuses of all known processors using a mail phase with phone follow-up.

The Wheat and Barley Variety surveys and the County Agricultural Production Surveys (CAPS) obtain information needed to estimate proportions and averages only. No direct indications or estimates are derived from these data. Official State and U.S. estimates are set from the quarterly Agricultural Survey (OMB No. 0535-0213), a national probability survey with full follow-up. The results of the Variety and CAPS surveys are used to allocate the official estimates from the Agricultural Survey into classes (variety) or to geographic sub domains (i.e., county). These surveys employ a mail phase with phone follow-up until a prescribed time deadline. Nonresponse follow-up is directed to achieve sufficient coverage and full follow-up is not required. Operations selected for the Agricultural Survey are excluded from the CAPS so that the datasets can be pooled when computing the proportions and averages. The Agricultural Survey and the Census of Agriculture (OMB No. 0535-0226) are used to evaluate potential bias.

Beginning with the 2020 crop year, model-based county-level estimates were incorporated into the NASS estimation process for county-level acreage, yield, and production. Bayesian small area models for county-level planted acres, harvested acres, and yield were fit separately for each major crop and processed in batches; common methodologies were applied nationwide. The planted and harvested acreage models input current year survey expansions and standard errors and previous year official statistics as well as available administrative data from other USDA agencies. Yield models input current and previous year survey ratios and standard errors, previous official statistics, and the National Commodity Crop Productivity Index variable. These county-level estimates were benchmarked against state-level official estimates established by the ASB.

The weekly Crop Progress Survey queries panels of respondents made up largely of USDA Extension Agents, USDA Farm Service Agency personnel, and other federal and state employees. Data are collected via web-based instrument by noon and estimates are published by 4:00 pm Eastern Time on Mondays during the survey period. Minimal phone follow-up is done for these surveys due to the quick turnaround time.

Samples for the Cash Rents Survey are drawn with a county-level stratified design to produce state, district, and county-level estimates. A targeted probability sample is selected based primarily on operations that have historically reported cash rented non-irrigated cropland, irrigated cropland, or pasture. In addition, operations from each county that previously reported renting or leasing land from others but did not report a cash rental agreement have a small probability of being selected for the survey.

The Cash Rents Survey utilizes direct expansions and/or ratio expansions for all survey indications. Direct expansions are calculated by applying sampling weights and nonresponse adjustments to reported data and summing these values. Similarly, ratios are calculated by applying sampling weights and nonresponse adjustments to data when both the numerator and denominator are reported. For the Cash Rent Survey, ratio estimates are used to set the district and county level cash rental rates, while direct expansions are used to set acreage estimates used to weight the rental rates within a state. Modes of data collection used for this group of surveys include original mailing of questionnaires, follow-up mailing of questionnaires to non-respondents, post card reminders, phone follow-up, and limited face to face enumeration in certain situations. The amount of time allotted to collect the data as well as amount of funds available for data collection will be considered when determining the modes to be used on each of the surveys. Each Regional Field Office (RFO) is responsible for utilizing the resources available to them to maximize the response rates while minimizing the respondent burden and out of pocket expenses.

Beginning with the 2022 estimate year, model-based state-level estimates were incorporated into the NASS cash rental rates process. Bayesian small area models for state-level rented acre totals and rental rates were fit separately for irrigated cropland, non-irrigated cropland, and permanent pastureland. The rented acreage model uses current year survey expansions and standard errors, and previous official statistics as input. Rental rate model incorporates current and previous year survey ratios, the corresponding sampling variances, previous official statistics, percentage of farmland by land types based on Census of Agriculture, population density, and the number of reports obtained at state level Model based and corresponding standard deviations were calculated as posterior means and posterior standard deviations, respectively.

Beginning with the 2021 estimate year, model-based county-level estimates were incorporated into the NASS estimation process for county-level rates. Bayesian small area models for county-level rented acre totals and rental rates were fit separately for each practice and processed in batches; common methodologies were applied nationwide. The rented acreage models input current year survey expansions and standard errors and previous year official statistics. Rental rate models input current and previous year survey ratios and standard errors, previous official statistics, a National Commodity Crop Productivity Index variable, and the number of reports obtained. These county-level estimates were benchmarked against state-level official estimates established by the ASB.

The annual Wildlife Damage Survey is a reimbursable survey that will be conducted if funding is secured by the State cooperator. It will utilize direct expansions and/or ratio expansions for all survey indications. Direct expansions will be calculated by applying sampling weights and nonresponse adjustments to reported data and summing these values. Direct expansions will be used to estimate acreage of damage by species. Similarly, ratios will be calculated by applying sampling weights and nonresponse adjustments to data when both the numerator and denominator are reported. For the annual wildlife damage survey, ratio estimates are used to set the percentage of acres with damage caused by wildlife as well as indication of control measures and attitudes. Modes of data collection used for this group of surveys include original mailing of questionnaires, follow-up mailing of questionnaires to non-respondents, post card reminders, phone follow-up, and limited face to face enumeration in certain situations. The amount of time allotted to collect the data as well as amount of funds available for data collection will be considered when determining the modes to be used on each of the surveys. Each Regional Field Office (RFO) is responsible for utilizing the resources available to them to maximize the response rates while minimizing the respondent burden and out of pocket expenses.

Telephone follow-up is the most common mode of nonresponse follow-up for each state and for each survey in this docket. RFOs have some latitude to employ face-to-face interviews based on knowledge of the respondent and his or her response history, but survey timing and data collection budgets are also considered in this decision. The agency's data collection goal is to obtain a complete response from each of the operations in the sample, staying on time and within budget. Data collection periods for each survey are determined based on the publication date and the necessary post-data collection processing activities (summarization, analysis, preparing the publication, etc.).

The questionnaires that are completed on paper are returned to either the RFOs or the National Operations Center (NOC) and reviewed for reasonableness prior to keying into data processing media for summarization.

Data are weighted by the initial sampling weight that has been adjusted for nonresponse using the reweighted estimator to generate national and state level indications. Any extreme operators are manually estimated for by RFO statisticians. This topic is addressed further in the next section.
Additional statistical methodology and contact information for commodity statisticians can be found in the back of the publications attached to this renewal package.

3. Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.

Response to these surveys is voluntary. Some producers refuse to participate in surveys or cannot be reached during the data collection period. This is unit-level nonresponse. Some producers submit only partially complete reports or reports in which data fails edit checks for consistency or credibility. This is item-level nonresponse. Nonresponse adjustments are made at both levels and are done through reweighting, machine imputation, or manual imputation. Reweighting is the process of expanding the values from usable responses to account for missing responses. That is, sample weights are adjusted upward for the usable responses to account for nonresponse. The adjustment generally occurs by stratum, as the bounded strata represent groupings of similar farms. Machine imputation is the process of using an algorithm to estimate missing data. Algorithms may be based on all or some subset of the data.

Operations which at the State or national level have a considerable influence on agricultural production or other characteristics may have special handling arrangements, including personal interviews and selected time periods of reporting to reduce respondent burden. Operations which have a considerable influence on the survey item(s) of interest are referred to as extreme operators (EOs) for that survey. The survey item(s) of interest vary from survey to survey, hence an EO for one survey may or may not be an EO for another survey. EOs are grouped into a separate, unbounded stratum. Data from operations in this stratum represent only those operations and no expansion of their response may be made to represent other operations, because these operations are often unique and highly influential to the overall estimates. EOs are sampled with a probability of one. Nonresponse for EOs is always handled through manual imputation. In these instances, previously reported data, data from other contacts with the EO, trends in similar sized operations, or other reliable outside information are taken into consideration when manually imputing their data.

Since NASS relies on the mail for a great deal of data collection for these surveys, it is very important for the respondents to know who NASS is and how

we will be using the data that they provide. This is accomplished both by including publicity materials with the questionnaires and making the survey results available to the respondents once the summaries are published. Respondents and data users can opt in to receive printed copies of the survey results by mail at no cost to them or they can access the data on the internet. Statisticians from the State and Regional Field Offices also attend grower meetings, trade shows, state fairs, etc. to meet with farmers and answer any questions they have about NASS or the data that is collected.

With the heavy dependence on a mail phase for these surveys, Regional Field Offices are directed to perform sufficient nonresponse follow-up to reduce the possible impact of a self-selecting sample. All samples and estimators are designed to provide unbiased point estimates of the items of interest. Surveys that do not require full follow-up can only provide approximations of measures of precision. Estimates of proportions and averages have very narrow ranges and standard errors tend to be small given the large sample sizes.

NASS Regional Field Offices constantly monitor responses, particularly for the CAPS, to ensure adequate coverage for all counties requiring estimation. Targeted nonresponse follow-up occurs regularly when coverage deficiencies are identified. This involves extensive telephone follow-up in addition to personal enumeration when resources allow. In addition, contacts for selected samples will be coordinated with other surveys to manage multiple contacts and minimize respondent burden.

4. Describe any tests of procedures or methods to be undertaken.

Data will be analyzed after each survey to determine if any changes and/or cognitive testing are needed prior to the next survey.

NASS has included burden in A-12 to allow for cognitive testing if our survey methodologists feel it is necessary.

5. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.

Sample sizes for each state are determined by the agency's Sampling, Editing, and Imputation Methodology Branch, headed by Branch Chief Mark Apodaca, (202) 690-8141

Summary programs are prepared by the Summary, Estimation, and Disclosure Methodology Branch, headed by Branch Chief Jeff Bailey, (202) 690-8141.

Data collection is carried out by NASS Regional Field Offices. The Director of Western Field Operations is Troy Joshua. His phone number is (202) 720-8220. The Director of Eastern Field Operations is Jody McDaniel. His phone number is (202) 720-3638. Survey data are also reviewed and summarized by the Regional Field Offices. Publications are released from the Regional Offices and Headquarters.

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