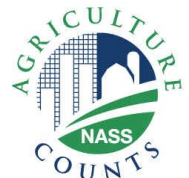


USDA - NASS

# Nonresponse Bias Plan for Field Crops Terms of Clearance

12/11/2012



## Nonresponse Bias in the Field Crops Docket

The National Agricultural Statistics Service (NASS) conducts surveys in order to prepare national, State, and county estimates of crop and livestock production, disposition, prices, and related environmental and economic factors. This document addresses the Field Crops docket Terms of Clearance.

**TERMS OF CLEARANCE:** *In accordance with 5 CFR 1320 and prior terms of clearance (2009), the information collection is approved for three years conditional on the following: 1) a plan to evaluate the extent of nonresponse and nonresponse bias for probability sample surveys, censuses, and coverage surveys with an observed response rate of less than 80% will be received by OMB no later than six months from the date of this approval; 2) the complete evaluation will be received prior to the next request for clearance for this docket.*

The following documentation serves as an overview of NASS's plan to address the potential for nonresponse bias for surveys in the Field Crops docket as spelled out in the OMB Terms of Clearance above. In response to the Terms of Clearance, this plan will address nonresponse bias issues for surveys with a less than 80% response rate (unacceptable range according to the [OMB Standards and Guidelines for Statistical Surveys](#)) in the Field Crops docket.

### Phase I

For the 13 surveys in the Field Crops docket that have a response rate below 80%, NASS will determine whether data are available to calculate weighted item response rates that include a measure of size to account for the unit's relative importance in the estimates. Attachment A shows the 2011 unit response rates for surveys in the Field Crops docket.

### Phase 2

#### **Weighted response rate data are available**

Calculate weighted item response rates for key items for surveys where the unit response rate is less than 80%. Many establishment surveys use weighted item response rates because a small number of extremely large operations may dominate an industry.

Attachment B defines the weighted and unweighted response rates.

- Unweighted response rate is in the acceptable range (i.e., 80% or more) – NASS will document this and provide the information to OMB.
- Unweighted response rate is in the unacceptable range, but the weighted item response rate is in the acceptable range (i.e., 70% or more) – NASS will document this and provide the information to OMB.
- Both unweighted and weighted response rates are in the unacceptable range – NASS will document this and proceed to Phase 3.

### **Weighted response rate data are not available**

For some surveys, data are not available to calculate weighted item response rates. This plan includes the steps NASS will take to obtain the data needed to calculate these metrics for future data collections.

- NASS is currently making updates to its systems to obtain the data needed to calculate weighted item response rates for all future surveys.
- NASS will establish a standard reporting mechanism for Field Offices to provide this information to Headquarters in a consistent, usable manner.
- NASS will modify its aggregates database and estimation systems to have Field Offices submit response rates and commodity weighted response rates with each estimate. Eventually, all surveys will be standardized and in a centralized environment, which will allow NASS to pull the data automatically.
- NASS will provide Field Offices with the tools and training necessary to collect, capture, and report this data for all surveys.
- For probability-based surveys, NASS will create a timeline for the standardization of the survey and the comprehensive plans for collecting the necessary data.
- For opinion-based surveys (e.g., Crop Weather), NASS will document the procedures undertaken to select a qualified sample, train respondents, monitor and validate responses, etc.
- NASS will calculate weighted response rates for future data collections in the Field Crops docket once these data are available and will evaluate the need for a nonresponse bias study. NASS will provide this information to OMB.

### **Phase 3**

As mentioned in Phase 2, NASS will provide documentation of the response rates to OMB if (1) the unweighted unit response rates are in the acceptable range or (2) the unweighted unit response rates are in the unacceptable range, but the weighted item response rates are in the acceptable range. Under these circumstances, NASS will not conduct a nonresponse bias study since response rates are in the acceptable ranges according to the [OMB Standards and Guidelines for Statistical Surveys](#).

When unweighted response rates and weighted item response rates are both in the unacceptable range, NASS will examine potential nonresponse bias and provide the findings to both OMB and the public. The size of the survey and the use of the estimates will be taken into account prior to conducting these studies to allocate resources effectively. In some cases, such as for opinion-based or small surveys, NASS may provide a justification statement to OMB documenting the findings and explaining the statistical soundness of the data.

Attachment C contains a flowchart of the nonresponse bias approach.

Improving response rates is an ongoing goal and constant challenge for establishment surveys. NASS is currently working on establishing best practices for handling impact (i.e., those that

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have the most impact on estimates) farming establishments. These practices include building rapport, educating operators, conducting outreach, coordinating data collection contacts, developing data collection plans, and implementing follow-up strategies. NASS will continue to work on ways to improve survey response rates and is committed to providing timely, accurate, and useful statistics in service to U.S. agriculture.

## Attachment A

Field Crop Production Response Rates for 2011					
Survey 1/	Sample Size	Freq.	Total Contacts	Total Responses	Unit Response Rate
<b>Commodity Specific Surveys</b>					
<b>Alfalfa/Other Grass Seed</b>	15	1	15	6	40
<b>Dry Beans</b>					
Dry Bean Cleaner Survey	94	2	188	148	78
Dry Bean Inquiry	5,722	3	17,166	12,465	72
Dry Bean Seed Inquiry	28	3	84	81	96
<b>Mint</b>					
Mint Grower	232	1	232	163	70
Mint Dealer	8	1	8	7	87
<b>Oilseeds, special</b>	820	1	820	624	76
<b>Sunflower, non-oil</b>	2	3	6	6	100
<b>Potatoes</b>					
Acreage, Production and/or Marketings	1,795	3	5,385	3,774	70
Acreage and Disposition	2,105	3	6,315	4,539	71
Sweetpotatoes	1,082	1	1,082	846	78
<b>Sugarbeets, June</b>	5	4	20	20	100
<b>Sugarbeets, Shuttle</b>	5	4	20	20	100
<b>Sugarcane</b>	11	3	33	33	100
<b>Tobacco</b>	925	6	5,550	5,010	90
<b>Variety Surveys</b>					
<b>Wheat and Barley</b>	26,286	1	26,286	15,371	58
<b>County Estimates</b>					
County Agricultural Production Survey (CAPS) Small Grains	102,547	1	102,547	70,450	68
County Agricultural Production Survey (CAPS) Row Crops	194,649	1	194,649	123,213	63
<b>Crop Progress and Condition Report (Crop Weather)</b>	3,877	36	139,572	99,654	71
<b>Cash Rent Survey</b>	239,960	1	239,960	182,850	76

### Terminology – Response rate definitions

**Unweighted (Unit) response rate** = (Questionnaires Completed by Respondents / (Selected Sample – Office Holds)) \* 100

**Weighted item response rates** (excerpt from **OMB - STANDARDS AND GUIDELINES FOR STATISTICAL SURVEYS**)

**Guideline 3.2.3:** Calculate weighted unit response rates (RRW) to take into account the different probabilities of selection of sample units, or for economic surveys, the different proportions of key characteristics that are represented by the responding units. For each observation  $i$ :

$C_i = 1$  if the  $i$ th case is completed (or is a sufficient partial), and  $C_i = 0$  if the  $i$ th case is not completed;

$R_i = 1$  if the  $i$ th case is a refusal and  $R_i = 0$  if the  $i$ th case is not a refusal;

$NC_i = 1$  if the  $i$ th case is a noncontacted sample unit known to be eligible and  $NC_i = 0$  if

the  $i$ th case is not a noncontacted sample unit known to be eligible;

$O_i = 1$  if the  $i$ th case is a eligible sample units not responding for reasons other than refusal and  $O_i = 0$  if the  $i$ th case is not a eligible sample unit not responding for reasons other than refusal;

$U_i = 1$  if the  $i$ th case is a sample units of unknown eligibility and  $U_i = 0$  if the  $i$ th case is not a sample unit of unknown eligibility;

$e$  = estimated proportion of sample units of unknown eligibility that are eligible; and

$w_i$  = the inverse probability of selection for the  $i$ th sample unit.

The weighted unit response rate can be given by summing over all sample units selected to be in the sample, as shown below:

$$RRW = \frac{\sum w_i C_i}{\sum w_i (C_i + R_i + NC_i + O_i + e(U_i))}$$

Many economic surveys use weighted response rates that reflect the proportion of a key characteristic,  $y$ , such as “total assets,” “total revenues,” or “total amount of coal produced.” Though it may be referred to as a coverage rate, it is, in fact, a weighted item response rate where the item of interest is a quantity of primary interest for the survey. If we let  $y_i$  be the value of the characteristic  $y$  for the  $i$ th sample unit and sum over the entire sample, then the weighted response rate can be given by:

$$RRW = \frac{\sum w_i y_i C_i}{\sum w_i y_i (C_i + R_i + NC_i + O_i + e(U_i))}$$

Alternatively, the denominator can be based on the population total from a previous period or from administrative records.

### Attachment C: Nonresponse Bias Approach Flowchart

