Field Crops Production

(OMB # 0535-0002)

Calculations for:

Total responses,

Average response rates, and

Coverage of commodity rates.

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To calculate the average response rate, OMB Guideline 3.2.2 is used (see below). However, if there is more than one wave of data collection, then the completed cases and in-scope sample cases are summed across the waves. This is shown in the 'Average Response Rate' column in the table.

$$RRU = \frac{\sum C_k}{\sum \left(C_k + R_k + NC_k + O_k + e(U)_k\right)}$$

Where C_k = number of completed cases or sufficient partials in k^{th} data collection wave
R_k = number of refused cases in k^{th} data collection wave
NC_k = number of non-contacted sample units known to be eligible in k^{th} data collection wave
O_k = number of eligible sample units not responding for reasons other than refusal in k^{th} data collection wave
U_k = number of sample units of unknown eligibility, not completed in k^{th} data collection wave and
E_k = estimated proportion of sample units of unknown eligibility that are eligible in k^{th} data collection wave.

The 'Total Responses' column in table represents the numerator of the response rate above or the sum of completed cases or sufficient partials over all data collection waves.

Guideline 3.2.2: Calculate unweighted unit response rates (RRU) as the ratio of the number of completed cases (or sufficient partials) (C) to the number of in-scope sample cases (AAPOR, 2004). There are a number of different categories of cases that comprise the total number of in-scope cases:

C = number of completed cases or sufficient partials;
R = number of refused cases;
NC = number of noncontacted sample units known to be eligible;
O = number of eligible sample units not responding for reasons other than refusal;
U = number of sample units of unknown eligibility, not completed; and
e = estimated proportion of sample units of unknown eligibility that are eligible.

The unweighted unit response rate represents a composite of these components:

$$RRU = \frac{C}{C + R + NC + O + e(U)}$$

The 'Coverage of Commodity Rate' is a weighted item response rate as described in OMB Guideline 3.2.3 (see below). It can also be described as the proportion of a key survey estimate

that was reported by respondents who completed the survey. The formula used to calculate the 'Coverage of Commodity Rate' in the table is:

$$RRW = \frac{\sum w_j y_j}{\sum w_j a_j y_j}$$

Where w_j = the inverse probability of selection (or initial sampling weight) for the j^{th} completed report

y_i = reported data for key survey item from j^{th} completed report

a_i = non-response adjustment for the j^{th} completed report

The units of survey estimate used to calculate the Coverage of Commodity Rate varies by survey. They are specified in the table below:

Survey	Units of Coverage Rate
Sweet Potato Price	Cwt
Sugarbeets	Tons
Sugar Production Survey	Tons
Tobacco Price Inquiry	Lbs.
All other surveys listed	Acres

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 *ith* case is completed (or is a sufficient partial), and $C_i = 0$ if the *ith* case is not completed;

$R_i = 1$ if the *ith* case is a refusal and $R_i = 0$ if the *ith* case is not a refusal;

$NC_i = 1$ if the *ith* case is a noncontacted sample unit known to be eligible and $NC_i = 0$ if the *ith* case is not a noncontacted sample unit known to be eligible;

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

$U_i = 1$ if the *ith* case is a sample units of unknown eligibility and $U_i = 0$ if the *ith* 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 *ith* 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 *ith* 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.