Evaluation of Producer Surveys to Identify and Inventory Agricultural Conservation Practices for the Bay Model

Jon Harcum

Steve Dressing

Tetra Tech, Inc.

Agriculture Workgroup Meeting

March 15, 2018

Evaluation of Producer Surveys

PSU/DEP Conservation Practice Inventory

- Survey Population and Sample Size
- Surveys mailed to 20,0000 farms
- 6,782 surveys returned (34%)
- ~10% post-stratified sampling by county (n=710) for on-site verification

Previous Presentations to AgWG

March 2017

- Review of PSU/DEP study
- Add-on Tt Analyses

September 2017

- Update on developing recommendation report

February 2018

- Draft Recommendation Report

March 2018

- Revised Recommendation Report

AgWG decision from January 26, 2017

The AgWG approved the following proposed methodology for setting statistical confidence standards for BMPs submitted through alternative verification methods:

- Two-step process
- First step
  - Sample size greater than or equal to 20
  - False Alarm Rate (FAR) threshold of 0.2 or below (upper 90% confidence limit value)
  - Hit Rate (HR) threshold of 0.7 or greater (lower 90% confidence limit value)
- Second step
  - Correct for bias in the BMP quantity
  - Ratio of Post-Agreement Rate (PAG)/Hit Rate (HR) (lower 90% confidence limit value)

Feb'18 Draft: Draft Two-Step Process

First step:

- Only the results from producer surveys that include follow-up, independent verification using a stratified random sample of the returned mail surveys may be used.

- Any statistical adjustments made to the survey results only apply to the data set of returned surveys and cannot be used to extrapolate to non-respondents.

- Follow-up verification must be made using a 10 percent (or greater) random sample for each stratum (e.g., county) and a minimum of two (2) samples per BMP and stratum*.

- The 90% confidence interval half-width cannot exceed the greater of 10% of the predicted total <u>or</u> 200 acres (or linear feet) for any state watershed-wide or stratum-specific estimate.

Second step:

- Adjust the survey data based on field verification data.

*Variability in agricultural systems across the survey area may indicate a need for more samples per stratum.

AgWG Review and Comment

AgWG draft report review:

- Two sets of comments were received

- Key comments
  - Pointed to a bit of professional judgement that would be difficult to build a consensus around.
  - Concern around "small numbers" component

- Response
  - Removed requirements related to half-width confidence limits
  - Removed "small numbers" component
  - Updated reported information to use the lower 90% confidence interval (or, if greater, the verified acreage)

Revised Two-Step Process

First step:

- Only the results from producer surveys that include follow-up, independent verification using a stratified random sample of the returned mail surveys may be used.

- Follow-up verification must be made using a 10 percent (or greater) random sample for each stratum (e.g., county) and a minimum of two (2) samples per BMP and stratum*.

- Any statistical adjustments made to the survey results only apply to the data set of returned surveys and cannot be used to extrapolate to non-respondents.

Second step:

- For reporting purposes, use the greater of the verified acreage or the lower 90% confidence interval determined by the approach taken to adjust survey data based on field verification.

*Variability in agricultural systems across the survey area may indicate a need for more samples per stratum.