1Supporting Statement – Part B

WHEAT & BARLEY SCAB CONTROL PRACTICES SURVEY

OMB No. 0535-NEW

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 target population for the Wheat & Barley Scab Control Practices Survey is crop producers who harvested wheat and barley for grain in the past 5 years.

The crop production population will be determined by the NASS List Frame. Operators with previously recorded crop production will be eligible for sampling.

According to the 2007 Census of Agriculture, there are about 123,000 operations which harvested wheat or barley in the seventeen States (AR, IL, IN, KS, KY, MD, MI, MN, MO, NE, NY, NC, ND, OH, PA, SD, and VA). Approximately 16,200 farm operations will be selected from this population. A stratified sample will be used to represent all sizes of farms, the different varieties of wheat and barley as well as all geographic regions of each of the seventeen States.

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 16,000 cases were determined to maximize sampling rigor within budget constraints. It was determined that the 16,000 cases would allow for 5 percent precision. The sample will be selected so operations with barley and all wheat types (winter, durum, and other spring wheat) will be represented. It will be selected based upon the relative acreage planted to each crop and type according

to NASS data available in the publication "Acreage". An average of the past three years' acreage data will be used to select the sample. The attached document, Wheat & Barley Scab Sampling Methodology – 2014Jan10.docx contains an analysis of the sample along with expected response.

The aim of the estimation technique will be to provide state-level estimates of the relative importance of the factors affecting farmer adoption of scab control measures in the above-mentioned crops and types. The statistical estimation procedure will be the well-established regression technique of limited dependent variable analysis. In particular, logit analysis techniques will be used to estimate the importance of the roles the factors play in the probability of adoption. We will use standard 95% confidence levels to test the statistical significance of the factors in the regression. We anticipate no unusual problems requiring specialized sampling procedures

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.**

Training in refusal conversion will be given to enumerators. Training workshops for other surveys include sessions devoted to role playing for refusal conversion. Enumerators will be provided information about the value and use of the data being requested.

For handling non-responses, no imputation or donor data will be utilized. Most of the questions are categories and/or rankings, and a reweighting technique will be used. This will be applied at the item level, and will cover both unit nonresponse and item nonresponse in one step. Essentially, the weights of respondents will be increased to account for the entire population (response bias is assumed to be zero). For example, if 80 out of 100 respondents answer a question, the original weight of the 80 respondents would be multiplied by 1.25 for nonresponse adjustment and the result will be the final weight for expansion. In cases where responses will be stratified by acres, nonresponse adjustment will be calculated within each stratum. The results will be expressed as "of those who responded" or as a percentage of operations.

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

Limited dependent variable regression analysis is well-established in the literature. Many studies have used this procedure in the past, and statistical packages usually contain routines to estimate the parameters of the logit model. Some of

the studies published in the peer-reviewed literature include:

Bhattacharyya, A., Harris, T.R., Kvanicka, W.G., Veserat, G.M., 1997. Factors influencing rates of adoption of Trichomoniasis vaccine by Nevada range cattle producers. Journal of Agricultural and Resource Economics 22, 174–190.

Bosch, D.J., Cook, Z.L., Fuglie, K.O., 1995. Voluntary versus mandatory agricultural policies to protect water quality: adoption of nitrogen testing in Nebraska. Review of Agricultural Economics 17, 13–24.

Eckman, D.T., Patrick, G.F., Musser, W.N., 1996. Factors affecting written marketing plan adoption by large-scale grain producers. Review of Agricultural Economics 18, 565–574.

Goodwin, B.K., Schroeder, T.C., 1994. Human capital, producer education programs, and the adoption of forward-pricing methods. American Journal of Agricultural Economics 76, 936–947.

Harper, J.K., Rister, M.E., Mjelde, J.W., Drees, B.M., Way, M.O., 1990. Factors influencing the adoption of insect management technology. American Journal of Agricultural Economics 72, 997–1005.

Marra, M.C., R. Rejesus, R. Roberts, B. English, J. Larson, S. Larkin, and S. Martin, S. 2010. "Estimating the demand and willingness-to-pay for cotton yield monitors". *Precision Agriculture*, 11(3):215-238

Marra, M., Carlson, G., 1987. The Role of Farm Size and Resource Constraints in the Choice between Risky Technologies. Western Journal of Agricultural Economics 12 (2), 109–118.

Marra, M., Hubbell, B., Carlson, G., 2001. Information quality, technology depreciation, and Bt cotton adoption in the Southeast. Journal of Agricultural and Resource Economics 26, 158–175.

McNamara, K.T., Wetzstein, M.E., Douce, G.K., 1991. Factors affecting peanut producer adoption of integrated pest management. Review of Agricultural Economics 13, 129–139.

Nkonya, E., Schroeder, T., Norman, D., 1997. Factors affecting adoption of improved maize seed and fertilizer in northern Tanzania. Journal of Agricultural Economics 48, 1–12.

Purvis, A., Boggess, W.G., Moss, C.B., Holt, J., 1995. Technology adoption under irreversibility and uncertainty. American Journal of Agricultural Economics 77, 541–551.

Roberts, R., J. Larsen, B. English, S. Larkin, M. Marra, S. Martin, J. Reeves. 2010. "Grid Soil Sampling Adoption and Abandonment in Cotton Production" *Precision Agriculture,* available at http://www.springerlink.com/content/22r5lk1tpu073554/fulltext.pdf.

Shapiro, B.I., Brorsen, B.W., Doster, D.H., 1992. Adoption of double-cropping soybeans and wheat. Southern Journal of Agricultural Economics 24, 33–40.

Walton, Jonathan, J. Larson, R. Roberts, D. Lambert, B. English, S. Larkin, M. Marra, S. Martin, K. Paxton, and J. Reeves. 2010. "Factors influencing farmer adoption of portable computers for site-specific management: A case study for cotton production", *Journal of Agricultural & Applied Economics,* Volume 42, Number 2, 1573-1618.

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), or other person(s) who will actually collect and/or analyze the information for the agency.

Specifications and survey design were developed by Christina Cowger, PhD of USWBSI, (919) 513-7388. Christina Cowger will also supervise analysis of the data collected.

Data collection is carried out by the network of NASS Field Offices; Director of Western Field Operations is Kevin Barnes (202) 720-8220. Director of Eastern

Field Operations is Norman Bennett (202) 720-3638.

The NASS survey statistician contact is Richard Hopper of the Survey Development and Support Branch of Census and Survey Division (202)720-2206. Richard Hopper is responsible for coordination of sampling, questionnaires, data collection, generating training materials, the development of a Survey Administration Manual, and an Enumerator Manual, data processing, and Field Office support.

January, 2014