

## Wheat and Barley Scab Sampling Methodology

There are 17 states that will be targeted for this survey. They include AR, IL, IN, KS, KY, MD, MI, MN, NO, NE, NY, NC, ND, OH, PA, SD and VA. The target population includes any active farming operation in the 17 states listed above who has harvested either wheat or barley. The goal of this survey is to make conclusions at the state level, so each state will be sampled independently depending upon their respective population counts. A systematic random sample will be utilized to create the sample. Refer to the table below to view the population counts by state, and the required number of completed reports to attain the specified level of precision, while assuming a 95% confidence level.

### Wheat and Barley Head Scab Project 95% confidence level

State	Population	Within 3% precision Sample	Within 5% precision Sample	Within 7% precision Sample	Within 10% precision Sample
05-AR	2,495	811	353	191	97
17-IL	11,247	1,034	390	201	99
18-IN	7,307	976	381	199	99
20-KS	21,370	1,064	394	204	100
21-KY	9,080	989	383	200	99
24-MD	2,251	811	353	191	97
26-MI	8,435	989	383	200	99
27-MN	8,648	989	383	200	99
29-MO	10,487	1,034	390	201	99
31-NE	7,760	976	381	199	99
36-NY	1,813	714	333	185	95
37-NC	4,890	909	370	196	98
38-ND	13,109	1,034	390	201	99
39-OH	16,771	1,053	392	204	100
42-PA	8,834	989	383	200	99
46-SD	7,688	976	381	199	99
51-VA	3,495	870	364	194	98
99-US	145,680	16,218	6,404	3,365	1,675

It was discussed with the client and determined that a 5% level of precision accompanied by the 95% confidence threshold would be acceptable power levels for their results. Therefore, this study will require a total of 6,404 completed reports to meet these criteria.

Next, we must consider what our expected response rate will be for this study. Given the uncertainty of the response behavior of this target population as it relates to this topic and the modes of data collection include one mailing of the survey to be accompanied by a telephone follow-up, we cautiously anticipate a 40%-50% response. To be conservative and to help ensure a successful study, the sample design will utilize an anticipated 40% response rate. This will require a total sample size of 16,218 records.

This total sample is then dispersed across the states so that the distribution of samples matches the distribution of the target population among these 17 states. Similarly, within each state, the samples are allocated between wheat and barley producers to ensure an accurate representation of the true state-level population totals for each of these crop types.