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Evaluation of a Redesigned Onfarm Grain Stocks Questionnaire

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Abstract

This project focused on a redesign of the quarterly onfarm grain stocks survey questionnaire to provide conversational questions and instructions to respondents. Data were collected by telephone in North Dakota and Ohio using an interview version of the test questionnaire for the April and June 1985 surveys. Results indicated the redesign of the questionnaire did not significantly change onfarm grain stocks estimates. Questions were read verbatim using the redesign and the format was recommended for use in the operational program.

Keywords: Questionnaire design, verbatim, interview version, onfarm grain stocks.

* This paper was prepared for internal distribution only. It was written *
* some time ago and is being published primarily for the record. *

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James Bethel and Douglas Kleweno

Introduction

The probability onfarm grain stocks survey was initiated in April 1983. During the first 6 quarters it was in operating, the survey frequently was suspected of underestimating the quantity of stored grain on farms. This suspicion had been supported by the observation that the farm report estimate of onfarm grain stocks was consistently higher than that of the probability survey, and also by outside sources of information for certain commodities, in particular the amounts of shelled corn and crushed soybeans. In an effort to improve the quality of grain stocks estimates, the Statistical Research Division undertook an evaluation of the survey. Part of this evaluation was the redesign of the survey questionnaire.

Earlier research by Dunkerley¹ had also focused on identification of problem areas and methods to improve the accuracy of the probability grain stocks estimates. His research indicated there were many errors or mistakes in reporting onfarm stocks but that they tended to be offsetting. Farmers also failed to report unharvested corn as stocks.

This project was conducted to evaluate the onfarm grain stocks questionnaire design. North Dakota and Ohio State Statistical Offices (SSO's) were asked to participate based on interest and willingness to develop an improved questionnaire. Selection of the two States also provided the opportunity to observe variations likely in different geographic areas. Research was initiated, for this quarterly probability survey, with the April 1, 1985, survey because that was the earliest timeframe possible after the NASS deputy administrator requested the study. An independent study to research imputation methods was also undertaken by Brian Carney [unpublished].

The test questionnaire was designed for interviews with emphasis on a conversational format. Onfarm grain stocks data, although traditionally obtained by mail, are now collected to a great extent by telephone. Instead of attempting to adapt a mail questionnaire for interview use, the researchers made a conscious effort to create a "truly" telephone and personal interview questionnaire version. The April survey questionnaire redesign evaluated the wording of ground and cracked grain and silage as part of the introductory statement. The June survey questionnaire introduction was modified to focus specifically on government program grain stored. The focus of this study was limited to the onfarm grain stocks questionnaire section. The face page reporting unit versus sampling unit issue was not within the scope of this study. Evaluation of the test questionnaire in the two States was by telephone enumeration.

¹ Clarence Dunkerley, "Evaluation of Grain Stocks Estimates." U.S. Department of Agriculture, Statistical Reporting Service, June 1971.

Research on the questionnaire design, undertaken by the authors and Margaret Weidenhamer, proceeded by stages. First, data collection activities were observed on the October 1, 1984, grain stocks survey in the North Dakota SSO. The telephone interviewers conversations were taped as they administered the operational questionnaire. This was a volunteer gesture by North Dakota to help identify strengths and weaknesses associated with the questionnaire design. This information was most useful in constructing the test questionnaire. It was assumed other SSO survey experiences were similar. After considerable discussion with the Crops Branch staff, the authors decided to limit this study to the reporting of ground, cracked, or silage corn and government program grain. During October and November, the questionnaire was revised and a new version to be used for the April 1, 1985, survey was constructed. This version was then circulated for review among NASS staff in Washington D.C., the staff in the test States North Dakota and Ohio, and in the Nebraska and Missouri SSO's. After further revisions, the questionnaire was given a brief pretest by the Ohio SSO. The results were favorable in that the wordings for the page 2 introduction, the grain stocks questions, and the followup questions on page 3 all seemed to be clearly understood and easy for interviewers to read. The test questionnaire was used for the April 1 survey and after slight revisions for the June 1 survey. It was used in these States through the October 1, 1986, survey. At that time, modifications were made to adapt it for use in the Crop Integrated Survey Program (CRISP). Starting January 1, 1986, onfarm grain stocks data were obtained by CRISP.

This report documents questionnaire changes and implementation of the April and June 1985 onfarm grain stocks survey in the two test States. It also documents the evaluation of the questionnaire performance.

Results from Observing the October Survey

The October 1, 1984, version of the operational questionnaire is shown in Appendix 1. (This is the "general" version; versions for specific States vary primarily with respect to the list of crops.) Margaret Weidenhamer and Jim Bethel observed and tape recorded North Dakota interviewers as they administered this questionnaire. No two interviewers administered the questionnaire alike. Major variations in data collection procedures were earlier reported by Weidenhamer¹ in other agency surveys. This section describes some of the ways that the October questionnaire was completed.

Almost none of the North Dakota interviewers followed the introduction on the first page of the questionnaire. The suggested introduction was:

We are conducting the quarterly inventory of grains and oilseeds stored on farms. We need your help to make our estimates as accurate as possible. This survey will give you timely information about onfarm grain inventories and should serve as a guide for planning and marketing during the coming year. The questions refer to all the land you

¹ Margaret Weidenhamer, "Views on the June Enumerative Survey - A Qualitative Analysis of Discussions with Enumerators and Supervisory Enumerators." U.S. Department of Agriculture, Statistical Reporting Service, 1983.

operate and the information you report will be kept confidential. Response to this survey is voluntary and not required by law.

Some form of one-line introduction was generally delivered, such as:

We're doing that onfarm grain stocks survey tonight and I'd like to know if you have a minute to help me out.

Item 1 ("Is your operation known by any name other than...") was typically rendered verbatim, although some interviewers obtained information relating to question 4 (type of operation) immediately afterward. But it was with item 2, on page 2, that differences among the interviewers really became striking.

Very few interviewers read the first sentence on page 2 ("The following information will be used to prepare the October 1 estimates of grain stocks for row crops and small grains plus 1984 small grain production."). Some examples of what interviewers actually said:

"Would you tell me if you have any grain stored on the land that you now operate? What we're interested in is..."

"Would you include the following: all whole grain..."

"What we'd like you to include this evening is..."

"I would like to know the grain now stored on the land you operate. That would be all whole grain..."

"What we're looking for this evening is what you have stored on the land you operate..."

"Do you have any grain stored on the land you operate regardless of ownership?"

"We're wondering what you might have on hand as far as grains are concerned."

"What we're looking for tonight is if you have any grain stocks right now."

"The grain that they're interested in here is any whole grain stored on the land that you're operating..."

Below the introductory sentence in item 2, labeled "Instructions," were two lists: one of types of grain to include and another of types of grain not to include.

Instructions:

Include:

- All whole grain, stored on the land you operate, regardless of ownership;
- Whole grain for feed, sale and seed;
- All government program stored on the land you operate;
- Landlord's share.

Exclude:

- Grain owned by you but stored off the land you operate;
- Ground, cracked or ensilage grain.

The interviewers' treatment of this was somewhat less diverse, but hardly uniform. The list of "includes" was generally given in a somewhat modified form, as in:

"Include all whole grain now stored on the land you operate, regardless of ownership, whether it's for feed, sale or seed. Include government grain and any landlord's share."

Sometimes, however, the list became severely shortened:

"Include all whole grain, regardless of who it belongs to or what it's intended for."

There was a marked tendency to shorten phrases. For example, "stored on the land you operate," was rendered, variously, as:

"...stored on the land..."

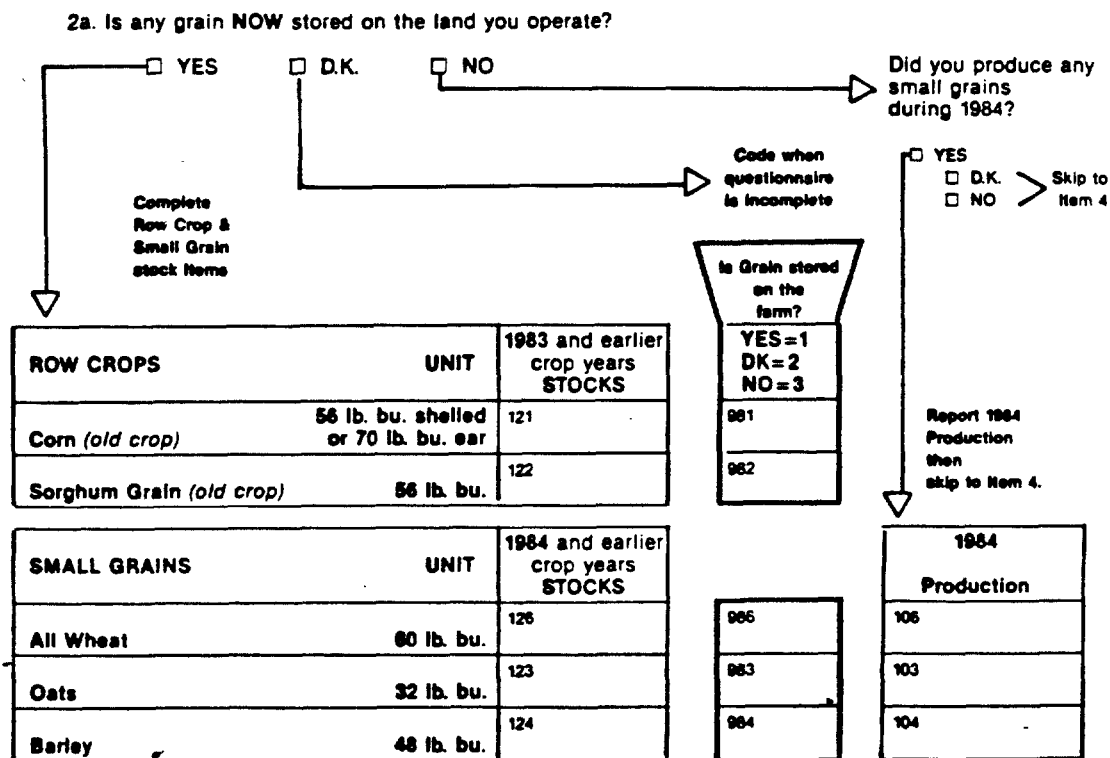
"...stored on your land..."

"...stored on your farm..."

There was also a tendency to omit the "stored on the land you operate" which followed "all government program grain" and, occasionally, to entirely delete "landlord's share," the last item on the "include" list.

Very few interviewers read either of the items on the "exclude" list.

Question 2a was generally read as it was written:



Some interviewers however, began page 2 with a similar question (eg., "Would you tell me if you have any grain stored on the land that you now operate?") or just skipped this question and went straight to the row crops items.

The questions for the specific crops were generally quite brief. "Any corn?" and "Any old crop corn?" were common, although longer versions were often given, especially for the initial items, such as:

"Do you have any corn stored on your land that you're operating right now?"

"Do you have any old corn in storage?"

"Any winter wheat in storage?"

The foregoing should give the reader an idea of the types of discrepancies discovered among the interviewers' approaches to the operational questionnaire. Some of these may well be harmless; others could clearly lead to improper reporting ("stored on your farm," for example). One can only speculate as to the effects of varying the questionnaire wordings in this way without analyzing the differences by splitting the population into treatments.

The April Test Questionnaire

The April 1, 1985, High Plains version of the operational questionnaire is shown in Appendix 1. The operational questionnaire face page is different because changes were being made to standardize all data collection documents. This study intentionally used the old format to minimize possible interaction effects. Redesign efforts were directed mainly at page 2, and, in particular, towards these objectives:

1. To create an introductory paragraph which could be read in a conversational tone of voice, which was as short as possible, and yet included the important concepts of the onfarm grain stocks survey. This paragraph would replace the operational list of "includes and excludes" found at the top of page 2 of the operational questionnaire. The lists were not read consistently by the interviewers, with the result that fundamental concepts of the survey were often not communicated to the respondent.
2. To provide questions which the interviewer could use verbatim in collecting the data. The operational questionnaire, for questions about stocks, provided only the name of the item (eg., "Corn") and a space for recording the amount. Our intent was to give the interviewer the exact questions to be asked. This had two advantages. First, the data collected should be more consistent and, second, concepts underlying the survey (eg., whole grain) could be emphasized.
3. To make the general layout and flow of questions and data cells on page 2 simpler and easier for the interviewer to use.

The April 1, 1985, test questionnaires are shown in Appendix 1. There are two versions, one for Ohio and one for North Dakota, the two test States. There were several differences between page 2 of the April operational questionnaire and page 2 of the test questionnaire:

1. The "screening" question, "Is any grain...now stored on the total acres you operate?" was deleted. Notice that on the operational version this was to be read before any indication was given of what crops were meant by the word "grain." In the test version, the interviewer read the introduction and then asked the respondent about each specific crop.
2. The list of "includes and excludes" was replaced with an introductory paragraph. This paragraph emphasized the concepts of "whole grain," "on the land you operate," and "regardless of ownership," mentioning, in the process, all of the "includes." This paragraph was designed to read easily and consist of natural-sounding phrases (eg., "We're looking for...").
3. Questions were provided which could be used verbatim by the interviewer. These emphasized the concepts of "whole grain," "regardless of crop year," and "stored right now." Note that each crop had two questions: the first asked whether any was in storage and the second asked how much was in storage.
4. The layout of the test questionnaire included a column (the "Circle Answer" column) which could be used to indicate whether the respondent had stocks (circle "+"), no stocks (circle "-"), or whether no information was obtained (circle "?"). This column had several purposes. One was to assist in coding the boxes in the "Code" column. Another was to allow the interviewer to easily list stored grains volunteered by the respondent. Instructions to the interviewer at the bottom of page 2 discussed how the "Circle Answer" column was to be used for coding.

In order to simplify the introductory paragraph, it was necessary to leave out the "exclude" instructions from the operational questionnaire. (These were generally not read by the interviewers anyway.) One of these special instructions was the "Grains exclude: ground cracked, or ensilage grain." The questions on page 3 (of the test version) were intended to detect whether, in fact, this was a problem. Question 5 asked whether the respondent understood from the instructions and questions on page 2 that ground or cracked grain should not be reported as grain, while question 6 asked a similar question for silage. If respondents frequently answered that the items in question should be reported, then this would indicate the need for some additional instructions. Question 7 ascertained whether errors were actually made in reporting the amounts on page 2. If any errors were made, these were recorded on a sheet (see Revision Sheet, Appendix 1) for later reference and analysis.

In North Dakota, during the October 1, 1984, survey, we observed that almost no two interviewers administered the questionnaire in the same way. Even what little of the operational questionnaire could be read verbatim was usually not. Page 2 of the April test questionnaire went a long way toward correcting this. It was, for the most part, read verbatim by all the interviewers in North Dakota and Ohio. In fact, many of the interviewers were quite pleased with page 2 of the questionnaire and seemed to have no

objections at all to using it verbatim. The effects of varying question wordings are well documented and the desirability of uniformity hardly needs to be emphasized.

The second page of the test questionnaire appeared to be easily understood by the respondents and easy for the interviewers to follow and read questions verbatim. The respondents seemed to grasp the questions easily. Those who asked for additional explanations usually asked about specific types of government program grain, mainly the reserve program. Most of the interviewers, however, had few questions of this type. Page 2 also seemed to "flow" well; that is, there was no confusion about which item was to be asked next, what was to be skipped, and so forth. It was difficult to elicit a negative response from the interviewers about the second page of the test questionnaire. The only possible source of trouble was that the phrase "whole grain corn" confused some respondents, who heard only the first two words--"whole grain"--and reported their wheat storage. (It was suggested that "whole corn" might be a more apt expression.)

Page 3, on the other hand, was plagued with problems. Questions designed to screen for incomplete reporting of ground or cracked grain were confusing to the respondent. As interviewing started, it quickly became apparent that respondents were hearing question 5 as, "Do you think that we should include ground or cracked grain in the estimates of stored grain that we make?" (Many thought we should.) The question was immediately revised to read, "From what I told you in the questions just asked, would you say that we wanted ground or cracked grain reported, or that we did NOT want it reported?" Many respondents were still confused by this question, however. The problems seemed to be of two kinds. In some cases the shift from factual questions to opinion questions was too difficult. In other cases, the answer was so clear that the question was unnecessary. Yet another problem was that many respondents thought we were asking about the small amount (about 2%) of grain, usually called "dockage," which is broken in the process of harvesting.

Because of the great confusion regarding these questions, the results of page 3 were not formally analyzed. It appeared, however, that neither ground and cracked grain nor silage was being reported on the April 1 survey with significant frequency. Only two respondents indicated they had reported ground or cracked grain--for a combined total of 2400 bushels--and none said they had reported silage. Page 3 was frequently skipped because the questions confused the respondents.

The June Test Questionnaire

The June 1 version of the test questionnaire is shown in Appendix 1. It varied slightly from the April version in that the introductory paragraph was lengthened slightly and the questions on page 3 related to government program grain instead of ground/cracked grain and silage.

In some States, large amounts of grain stored on farms were either in the loan program or the farmer-owned reserve program. It was suspected that not all farm operators reported this grain. In fact, some April survey respondents, who reported more stocks in April than in January, admitted when recontacted by SSO personnel that they had not realized grain stored on the farm under government programs was supposed to be reported.

One objective of the introductory paragraph was to indicate clearly to survey respondents that government grain was to be included in the stocks report. Questions 5 and 6, on page 3, were designed to indicate whether this instruction was "getting through" to the respondents. Question 5 asked whether the operator had any grain stored under government programs and, if the answer was "yes," question 6 asked whether that grain was included in the figures which the respondent gave had just given the interviewer. If a significant number of respondents answered "no" to question 6, then this would indicate that the introduction was not communicating this important instruction. As before, all corrections to the original figures were recorded in each State for later analysis.

Because of the difficulties with the April "test" questions about ground/cracked grain, questions 5 and 6 were pretested by the North Dakota staff at the end of the April survey. It was apparent that some operators with government program grain were not reporting it. The introduction was altered by substituting "under government loan or in the farmer-owned reserve" for "in a government program." Further pretesting indicated that this seemed to correct the problem.

The administration of the June questionnaire went very smoothly. In North Dakota, the questions were read verbatim by all but one reluctant interviewer. The Ohio survey was not monitored by Washington, D.C. personnel but the SSO staff critique was positive. The questions on page 3 seemed to work quite well, and as before, several interviewers remarked on the improved questionnaire format and how well page 2 questions read.

Analysis of Data from the April Questionnaire

Table 1A, page 12, shows the estimated average difference between January and April grain stocks of those farming operations that reported grain stocks in January. These estimates were obtained by matching the January positive reports with the April survey data, finding the difference

$$d_i = \text{Jan}_i - \text{Apr}_i$$

for the i -th farming operation, and then estimating the overall average of such differences with

$$\hat{D} = \frac{\hat{D}}{\hat{N}},$$

where D is an estimate of the total difference (from positive stocks in January) and \hat{N} is an estimate of the number of operations with positive January stocks. A technical discussion of the estimates and other calculations is shown in Appendix 2.

Since little or no new stocks should be placed in storage between January and April, and some existing stocks would likely be used or sold, one would generally expect to find

$$\hat{D} \geq 0 .$$

However, if the test questionnaire tended to clarify the concepts so that more grain was reported in April than in January by a substantial number of respondents, then one would expect to find either that

$$\hat{D} < 0 ,$$

or that this value would at least be proportionately smaller when compared with similar calculations for other States. On the other hand, if the new questionnaire led to reporting smaller amounts of stored grain, then this value would be larger relatively, when compared with differences in other States.

In this regard, an examination of table 1A reveals no consistent patterns. The table gives results for both the test States and for several other States, selected for comparability regarding major crops. North Dakota does seem to have smaller values of \hat{D} for some crops (corn, soybeans, barley, spring wheat) but the pattern does not hold for others (durum wheat, oats, all wheat). A comparison of Ohio with the other States shows similar results. Moreover, table 1B gives confidence intervals for these estimates, and an analysis of this table reveals that almost none of the differences between these estimates are statistically significant. (Two estimates are considered to be significantly different, in a statistical sense, if their respective confidence intervals do not overlap).

One objection to this analytical approach might be that changes in the amount of stocks of a few large operators could be distorting the estimate. Table 2A gives estimates of the average difference between January and April grain stocks as a percentage of January grain stocks. Here

$$d_i^* = \frac{\text{Jan}_i - \text{April}_i}{\text{Jan}_i}$$

was calculated for each farming operation and the estimate \hat{D}^* was formed as before. Again, no consistent patterns appeared to hold, and table 2B indicated that the differences between the estimates, with few exceptions, failed to have statistical significance.

Yet another factor which could influence level differences between reporting periods is the respondent. If, for example, the operator was interviewed in January and his (or her) spouse was interviewed in April, the data reported might not be comparable enough to isolate the effect of changing the questionnaire. Tables 3 and 4 show the same calculations as tables 1A and 2A, but using only those records for which the respondent was the operator in both surveys. There were a few differences, but not any which exhibit meaningful patterns.

Another consideration, obviously, would be whether the test questionnaire had any effect on the refusal rate. Table 5 gives the refusal rate for the January and April surveys. The January and April refusal rates in Table 5 are among all records. The "matched" category was cooperative January respondents who reported positive grain stocks but refused to cooperate in the April survey. The refusal rate naturally dropped from January to April since the sample in April was made up largely of the positive reports from the earlier survey. It does not appear that the 5-percentage-point drop which occurred in North Dakota and Ohio was unusual. In fact, Indiana, Minnesota, and South Dakota all had larger drops in their refusal rates. The "matched" refusal rates for the test States were not unusual either.

Finally, tables 6A-B give the imputation rates for North Dakota and Ohio for selected crops, with several other States (from the same survey periods) included for comparison. Imputation codes were placed in the boxes in the "Code" column on page 2 of the test questionnaire. If the respondent reported some amount of stored grain (zero or larger), no code was entered. If the respondent refused to give any information or did not know (as, for example, a spouse might not) the amount of stocks, a code was entered which indicated whether the operator was known to have stocks of the item, whether nothing was known, or whether the operation was known not to have onfarm stocks of the item. In almost all cases, the amount of coding dropped between the January and April surveys, again reflecting the increased proportion of "good reporters" in the April survey. The proportions in tables 6A and 6B for imputed stocks data are among all records, including inaccessible, area frame overlap and operations which were out of business. Here, as before, the test States were in no way remarkably different. There was no sign that the redesign of page 2 had any effect on the amount of coding done.

Analysis of Data from the June Questionnaire

Tables 7A-B show the average differences between January and June reported grain stocks as a percentage of January grain stocks. As before, the results were inconclusive. In comparing the \bar{D} values for different States and variables, there was no indication that Ohio and North Dakota were consistently different.

Table 8 gives estimates of the proportion of operators who reported onfarm storage of grain under government programs in North Dakota and Ohio along with the estimated proportion of these operators who said they reported this grain on the test questionnaire. A rather small proportion of Ohio farming operations participated in the government grain programs, but nearly half of North Dakota farmers had government program grain stored on the land they operated. In both States, however, practically all respondents said they reported such grain on the test questionnaire.

Tables 9 and 10 show the estimated amount of underreporting due to missed government program grain. These amounts were quite negligible.

Summary and Conclusions

The analysis did not demonstrate any consistent questionnaire design effect on the reporting of onfarm grain stocks. However, by providing questions which could be used (and were used) verbatim, the questionnaire did succeed in providing a means of uniform data collection. It appeared that many of the interviewers were actually quite happy to administer questions verbatim, provided that the questions were clear, flowed smoothly, and were easy for the respondent to understand. Verbatim use of the questionnaire was stressed in training sessions for the April and June 1985 test surveys. The likelihood that the questionnaire would have been used verbatim if this had not been done is unknown.

Analysis of ground/cracked grain and silage corn erroneously included as stored whole grain was marred by difficulties with page 3 of the test questionnaire Appendix 1, page 38. A review of the sparse data available, however, suggests the test questionnaire format would not be a problem in an operational survey.

It appeared that the test questionnaire resolved the problem of nonreporting of government program grain. There were still some respondents who neglected to report grain stored under government programs, but only a negligible proportion did so and the amount of grain missed in this manner did not have a significant effect on the estimates.

In summary, the test questionnaire appeared to correct several deficiencies in the operational current questionnaire and, in the opinion of the authors, worked well enough to make it operational. Some cautions are in order, however. There are some regional and seasonal issues which were not addressed in this research. Grain not yet harvested, for example, and storage of high moisture corn are both potential problems which affect some areas at certain times of the year.

Another potential problem occurs when the onfarm grain stocks survey is merged with the Integrated Survey Program (ISP) or quarterly survey program. While the test questionnaire could easily be inserted into the operational ISP questionnaire, the style of the former is quite different from that of the latter. We recommend that the two questionnaires be reviewed by the data collection staff with appropriate changes made to create a "true" conversational interview version of the ISP questionnaire. Verbatim use of the onfarm grain stocks part of the questionnaire would be difficult to enforce if the rest of the questionnaire is not in a conversational style which can be read verbatim.

Finally, verbatim use of the survey instrument is essential. This must be stressed in interviewer training sessions and must be an active part of quality control and supervision.

Table 1A. Matched differences between positive January and April grain stocks reports (onfarm grain stocks survey, 1985)¹

Variables					
	North Dakota	Ohio	Illinois	Indiana	Iowa
Corn	1319	3274	6163	5402	4935
Soybeans	920	1097	1579	1581	1008
All wheat	933	659	430	-157	

	North Dakota	Iowa	Minnesota	South Dakota	Wisconsin
Barley	242		382	1462	
Oats	428	265	411	632	275
Durum wheat	1122			386	
Spring wheat	623		2306	1412	
Winter wheat	-216		184	1989	

¹ Expanded data in bushels.

Table 1B. Confidence intervals (95-percent level) for table 1A matched differences (onfarm grain stocks survey, 1985)¹

Variables					
	North Dakota	Ohio	Illinois	Indiana	Iowa
Corn	(-330, 4368)	(2447, 4305)	(4808, 7734)	(3954, 7241)	(2210, 8128)
Soybean	(-415, 3627)	(668, 1697)	(1033, 1579)	(971, 2457)	(336, 1871)
All wheat	(178, 1817)	(-12, 3347)	(-272, 1962)	(-330, 1620)	

	North Dakota	Iowa	Minnesota	South Dakota	Wisconsin
Barley	(-489, 1171)		(-1023, 2584)	(486, 3031)	
Oats	(93, 874)	(51, 581)	(237, 648)	(357, 992)	(120, 465)
Durum wheat	(-172, 2839)			(-325, 1909)	
Spring wheat	(-34, 1420)		(1292, 3717)	(422, 2772)	
Winter wheat	(-781, 799)		(-264, 2269)	(-162, 5410)	

Table 2A. Matched differences between January and April grain stocks reports as a percentage of January stocks (onfarm grain stocks survey, 1985)

Variables					
	North Dakota	Ohio	Illinois	Indiana	Iowa
Corn	0.061	0.247	0.119	0.294	0.001
Soybeans	-.038	.153	.132	.269	.045
All wheat	-.216	.376	.113	.009	

	North Dakota	Iowa	Minnesota	South Dakota	Wisconsin
Barley	-.175		-.098	.159	
Oats	-.046	.043	.060	-.181	.001
Durum wheat	-.107			.051	
Spring wheat	-.232		.149	-.031	
Winter wheat	-.252		-.272	-.367	

Table 2B. Confidence intervals (95 percent level) for table 2A matched differences (onfarm grain stocks survey, 1985)

Variables					
	North Dakota	Ohio	Illinois	Indiana	Iowa
Corn	(-0.11, 0.38)	(0.16, 0.35)	(0.04, 0.21)	(0.20, 0.42)	(-0.11, 0.09)
Soybeans	(-.22, .33)	(.04, .31)	(.02, .26)	(.16, .43)	(-.06, .18)
All wheat	(-.34, -.07)	(.05, 1.70)	(-.07, .51)	(-.31, 3.32)	

	North Dakota	Iowa	Minnesota	South Dakota	Wisconsin
Barley	(-.31, 0.0)		(-.26, .15)	(.02, .38)	
Oats	(-.20, .15)	(-.12, .28)	(-.18, .39)	(-.47, .19)	(-.13, .16)
Durum wheat	(-.21, .03)			(-.14, .46)	
Spring wheat	(-.39, -.04)		(.08, .25)	(-.11, .07)	
Winter wheat	(-.43, .06)		(-.50, .81)	(-.94, .54)	

Table 3. Matched difference between positive January and April grain stocks reports¹ (onfarm grain stocks survey, 1985)

Variable	North Dakota	Ohio	Illinois	Indiana	Iowa
Corn	1035	3445	--	5439	3437
Soybeans	1013	1055	--	1554	657
All wheat	1066	677	--	-223	

	North Dakota	Iowa	Minnesota	South Dakota	Wisconsin
Barley	175		303	1600	
Oats	567	297	412	588	278
Durum wheat	1168			412	
Spring wheat	665		2136	1216	
Winter wheat	-194		526	2647	

¹ Used only data where the operator was interviewed in both January and April surveys. Data are expanded and reported in bushels.

Table 4. Matched differences between January and April stocks reports as a percentage of January stocks¹ (onfarm grain stocks survey, 1985)

Variable	North Dakota	Ohio	Illinois	Indiana	Iowa
Corn	0.035	0.255	--	0.231	0.027
Soybeans	.005	.133	--	.236	0.032
All wheat	-.210	.355	--	.031	

	North Dakota	Iowa	Minnesota	South Dakota	Wisconsin
Barley	-.177		-.111	.174	
Oats	-.027	.118	.048	-.201	.055
Durum wheat	-.115			.058	
Spring wheat	-.227		.143	-.034	
Winter wheat	-.246		-.139	-.353	

¹ Used only data where the operator was interviewed in both January and April surveys. Data are expanded and reported in bushels.

Table 5. Refusal rates (in percentages) for selected States (onfarm grain stocks survey, 1985)

	North Dakota	Ohio	Illinois	Indiana	Minnesota	South Dakota
January	16.7	12.6	10.2	16.8	19.0	15.9
April	11.1	7.8	9.3	5.4	11.1	8.5
Matched ¹	8.1	3.2	10.7	4.0	9.5	4.5

¹ Refusal in April by operation reporting stocks in January.

Table 6A. Imputation rates for North Dakota, Minnesota and South Dakota
(onfarm grain stocks survey, 1985) ^{1, 2}

Crop	North Dakota		Minnesota		South Dakota	
	January	April	January	April	January	April
Durum wheat:	Percent					
Stocks	2.4	0.5			0.2	0.1
Unknown	20.1	14.7			6.9	8.2
No stocks	3.5	0.3			13.1	1.8
Not coded	74.0	84.4			80.0	89.8
Spring wheat:						
Stocks	4.5	.5	1.1	.9	2.3	.8
Unknown	19.9	14.8	17.1	10.6	8.0	8.2
No stocks	1.6	.3	3.5	3.0	9.8	1.2
Not coded	74.0	84.4	78.4	85.5	80.0	89.8
Winter wheat:						
Stocks	.8	.1	.03	.1	2.2	.5
Unknown	20.2	14.6	17.0	10.4	7.9	8.2
No stocks	5.0	.8	4.6	4.1	10.0	1.4
Not coded	74.0	84.4	78.1	85.4	80.0	89.8

¹ Stocks: Refusals known to have onfarm grain stocks
 Unknown: Refusals where nothing was known about onfarm grain stocks
 No Stocks: Refusals known to have no onfarm grain stocks
 Not Coded: Respondents reporting zero or positive onfarm grain stocks

² Sums may not equal 100 percent due to rounding.

Table 6B. Imputation rates for Ohio, Illinois and Indiana (onfarm grain stocks survey, 1985) 1, 2

Crop	Ohio		Illinois		Indiana	
	January	April	January	April	January	April
Corn:	Percent					
Stocks	4.0	1.6	3.2	2.1	6.6	1.3
Unknown	16.2	7.6	9.6	8.0	13.7	5.8
No stocks	1.6	.8	.6	.5	1.9	.3
Not coded	78.3	90.1	86.6	89.4	77.8	92.5
Soybeans:						
Stocks	2.2	.9	1.9	1.1	4.3	.3
Unknown	16.6	8.0	10.7	8.8	14.2	6.1
No stocks	2.8	1.0	.8	.8	3.7	1.1
Not coded	78.3	90.1	86.6	89.2	77.8	92.5
All wheat:						
Stocks	.5	.1	.5	.2	.7	.0
Unknown	16.8	8.1	11.1	9.3	14.5	5.9
No stocks	4.4	1.7	1.8	1.1	7.0	1.6
Not coded	78.3	90.1	86.6	89.4	77.8	92.5

- 1 Stocks: Refusals known to have onfarm grain stocks
 Unknown: Refusals where nothing was known about onfarm grain stocks
 No Stocks: Refusals known to have no onfarm grain stocks
 Not Coded: Respondents reporting zero or positive onfarm grain stocks

2 Sums may not equal 100 percent due to rounding.

Table 7A. Matched differences between January and June grain stocks reports
as a percentage of January stocks (onfarm grain stocks survey, 1985)¹

Variable	North Dakota	Ohio	Indiana	Iowa
Corn	-0.004	0.362	0.461	0.179
Soybeans	.065	.358	.388	-.133
All wheat	.014	.308	-.203	

Variable	North Dakota	Iowa	Minnesota	South Dakota	Wisconsin
Barley	-.027		-.082	.272	
Oats	.259	.333	.277	.150	.324
Durum Wheat	.031			.069	
Spring Wheat	-.061			.049	
Winter Wheat	-.113		.137	-.481	

¹ Expanded data in bushels.

Table 7B. Confidence intervals (95 percent level) for Table 7A matched differences
(onfarm grain stocks survey, 1985)

Variable	North Dakota	Ohio	Indiana	Iowa
Corn	(-.27, .54)	(.23, .53)	(.30, .68)	(-.12, .54)
Soybeans	(-.11, .49)	(.19, .60)	(.18, .76)	(-.10, .29)
All wheat	(-.05, .09)	(-.02, 2.02)	(-.44, 2.65)	

Variable	North Dakota	Iowa	Minnesota	South Dakota	Wisconsin
Barley	(-.19, .19)		(-.27, .22)	(.06, .66)	
Oats	(.14, .42)	(.18, .57)	(.13, .49)	(-.13, .54)	(.21, .48)
Durum wheat	(-.13, .11)			(-.14, .62)	
Spring wheat	(-.15, .05)		(.03, .32)	(-.09, .26)	
Winter wheat	(-.22, .08)		(-.06, 1.36)	(-1.17, .74)	

Table 8. Proportion of operators with government program grain storage and estimated proportion reporting it on test questionnaires (June onfarm grain stocks test survey, 1985)

	Percent with government grain:		Percent that reported it:	
	Estimate (SE)		Estimate (SE)	
North Dakota	0.484	(0.219)	0.998	(0.032)
Ohio	.058	(.195)	.993	(.020)

Table 9. North Dakota: Amount of missed government program grain by commodity (June onfarm grain stocks test survey, 1985)

Item	Durum wheat	Spring wheat	Barley	Soybeans
	<u>Bushels</u>			
Actual	80,000	70,000	100,000	3,000
	12,000	38,000	9,000	
	11,000		3,500	
Estimated total missed	183,358	141,045	208,545	5,491
	<u>Percent</u>			
Estimated percentage of State total	0.3	0.1	0.3	0.1

Table 10. Ohio: Amount of missed government program grain by commodity (June onfarm grain stocks test survey, 1985)

Item	Corn	Oats	Soybeans
	<u>Bushels</u>		
Actual	25,500	5	100
		200	6,500
			7,550
Estimated total missed	229,998	1,849	82,179
	<u>Percent</u>		
Estimated percentage of State total	0.3	0.1	0.5

APPENDIX 1. Questionnaires for Onfarm Grain Stocks surveys.

Questionnaire Version	Page
Operational:	
October 1, 1984 - General	20
January 1, 1985 - General	24
April 1, 1985 - High Plains	28
June 1, 1985 - High Plains	32
Test:	
April 1, 1985 - North Dakota	36
April 1, 1985 - Ohio (Page 2 only)	42
June 1, 1985 - North Dakota	44
June 1, 1985 - Ohio	50



U.S. Department of Agriculture

ON-FARM GRAIN STOCKS SURVEY

October 1, 1984

Form Approved
O.M.B. Number 0535-0007
Expiration Date 10/31/86
C.E. 11-00881g

I-General

Det/Str	ID	Tract	Subtract
-----	-----	-----	-----

Survey	Response	2 Tel. 3 Int. 7 TR 8 IR 9 Inac.	Optional	S. Unit
80__ 1	910		911	920
List = 0 NOL = 2				

Please make corrections in name, address, and Zip Code, if necessary.

Mr. _____, I am _____ from _____ (State)

Crop and Livestock Reporting Service. We are conducting the October 1 On-Farm Grain Stocks survey. We need your help to make the U.S. on-farm grain stocks estimates as accurate as possible.

This survey will give you timely information about on-farm grain inventories and should serve as a guide for planning and marketings during the coming year. The questions refer to all the land you operate and the information you report will be kept CONFIDENTIAL. Response to this survey is voluntary and not required by law.

1. Is your operation known by any name other than _____? *(Read above name to respondent)*

NO YES

Enter name _____
(Please continue on page 2.)

(Please continue on page 2.)

2. The following information will be used to prepare the October 1 estimates of grains **STOCKS** for row crops and small grains plus **1984 SMALL GRAIN PRODUCTION**.

Instructions:

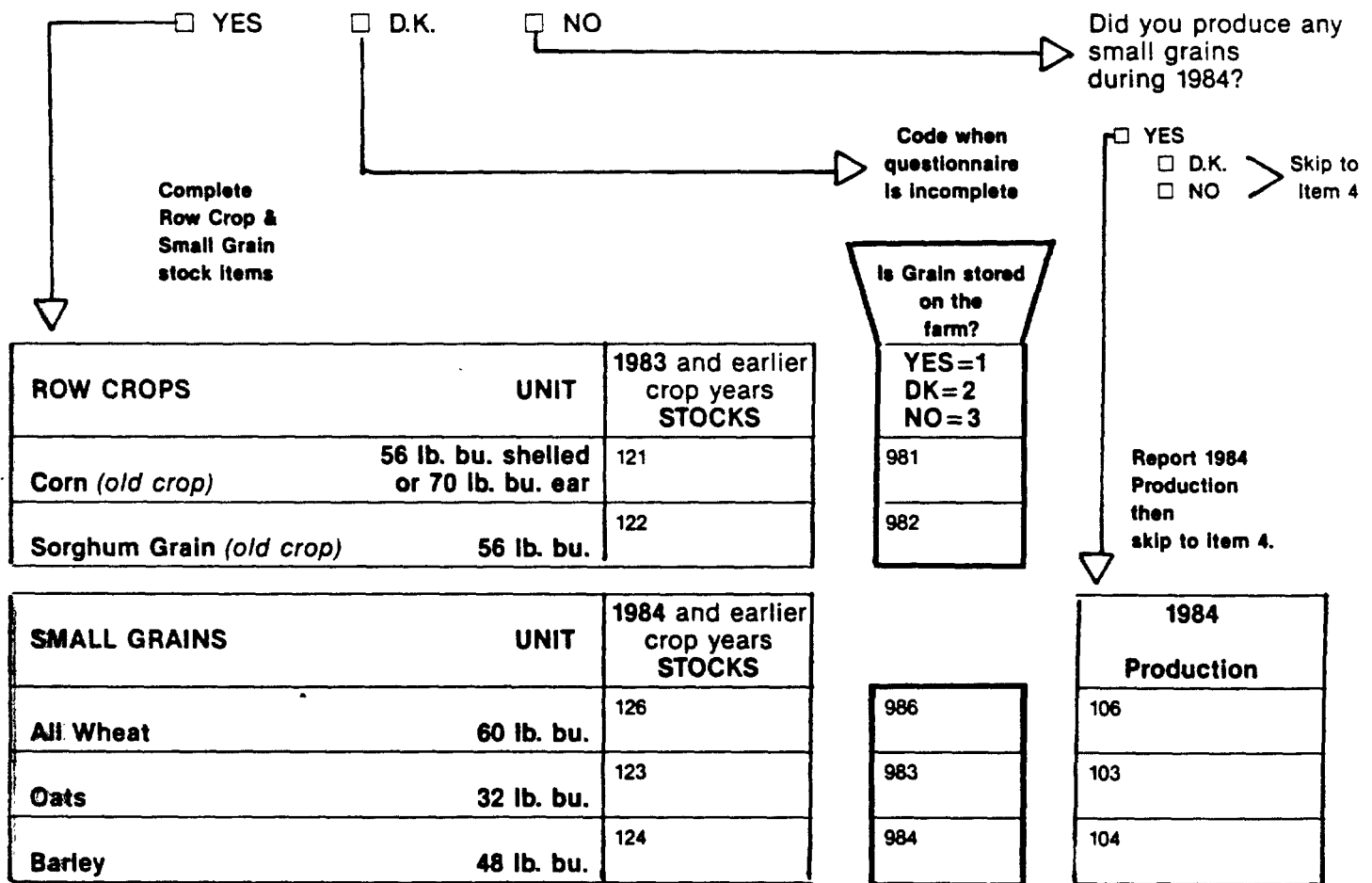
Include:

- All whole grain, stored on the land you operate, regardless of ownership;
- Whole grain for feed, sale and seed;
- All government program grain stored on the land you operate;
- Landlord's share.

Exclude:

- Grain owned by you but stored off the land you operate;
- Ground, cracked or ensilage grain.

2a. Is any grain **NOW** stored on the land you operate?



3a. Did you report all grain stored on the land you operate, including landlord's share and/or grain owned by others?

- YES - Continue NO - Make necessary corrections then continue.

3b. Did you produce any small grains during 1984?

- YES - Report 1984 production then skip to item 4.
- NO - Skip to item 4.

OPERATION DESCRIPTION OF LAND

Additional information is needed about your operation to assist in detecting possible duplication in reporting.

4. Which of the following best describes your farming or ranching operation?
(Check only one unless you, the individual or operation listed on the face page, have more than one operating arrangement.)

- = 1 Individually operated land.
- = 2-7 Partnership: Partners jointly operate land and share in the decision making.
- = 8 Hired manager of land owned by someone else.
- = 9 Do not now operate land for agricultural purposes.
(Out of business, have no storage facilities on all the land operated.)

921

Specify _____

5. Please identify name and address of new operator.

Name: _____
 Address: _____

6. Has your operation changed since June 1, 1984?
(Partnership dissolved, additional partner added, etc.)

923

- YES - *(Please explain and continue)* _____
- NO - *Continue.*

Complete Items 7 and 8 ONLY if partnership was checked in Item 4.

7. Does this partnership or joint arrangement have a name other than that listed on the face page?

YES _____
(Enter name, then continue to 7a.)

NO - *Continue below.*

7a. Who are the persons in this partnership or joint land arrangement with you?
(Please make necessary corrections if partnership information has been entered.)

924

a. Name _____ Phone _____ (First) (M) (Last)	925
b. Address _____ (Rt. or St.) (City) (State) (Zip)	
Was this person operating a farm individually in this State on June 1, 1984? <input type="checkbox"/> YES <input type="checkbox"/> NO	

a. Name _____	Phone _____	926
(First) (M) (Last)		
b. Address _____		
(Rt. or St.)	(City)	(State) (Zip)
Was this person operating a farm individually in this State on June 1, 1984? <input type="checkbox"/> YES <input type="checkbox"/> NO		

a. Name _____	Phone _____	927
(First) (M) (Last)		
b. Address _____		
(Rt. or St.)	(City)	(State) (Zip)
Was this person operating a farm individually in this State on June 1, 1984? <input type="checkbox"/> YES <input type="checkbox"/> NO		

8. Is any grain whole stored, **now** on the land operated by this partnership or joint land arrangement? *(Check box, comment and continue)*

YES

NO

8a. Was this grain included in Item 2 of page 2? *(Check box, comment and continue)*

YES

NO

9. The results of this survey will be released October 23, 1984. Would you like to receive a copy?

YES = 1

NO

099

 Comment on changes in your grain inventories since June 1, 1984

 That completes the survey. Another Grain Stocks Survey will be conducted in about three months and we may need to contact you again. Thank you for your help.

Reported by _____ Telephone No. _____

(Area Code)

(Number)

Enumerator _____

Date _____

098

100

ON-FARM GRAIN STOCKS SURVEY

January 1, 1985

Form Approved
 O.M.B. Number 0535-0007
 Expiration Date 10/31/86
 C.E. 11-00881g

I-General

State	ID	Tract	Subtract
-----	-----	0 1	0 1

Survey	Response	2 Tel. 7 TR 3 Int. 8 IR 9 Inac.	Optional	S. Unit
800 1	910		911	920

Please make corrections in name, address, and Zip Code, if necessary.

Mr. _____, I am _____ from _____
(State)

Crop and Livestock Reporting Service. We are conducting the January 1 On-Farm Grain Stocks survey. We need your help to make the U.S. on-farm grain stocks estimates as accurate as possible.

This survey will give you timely information about on-farm grain inventories and should serve as a guide for planning and marketings during the coming year. The questions refer to all the land you operate and the information you report will be kept CONFIDENTIAL. Response to this survey is voluntary and not required by law.

1. Is the name of your operation different than printed above? (Read above name to respondent)

NO YES

Enter name _____
 (Please continue on page 2.)

(Please continue on page 2.)

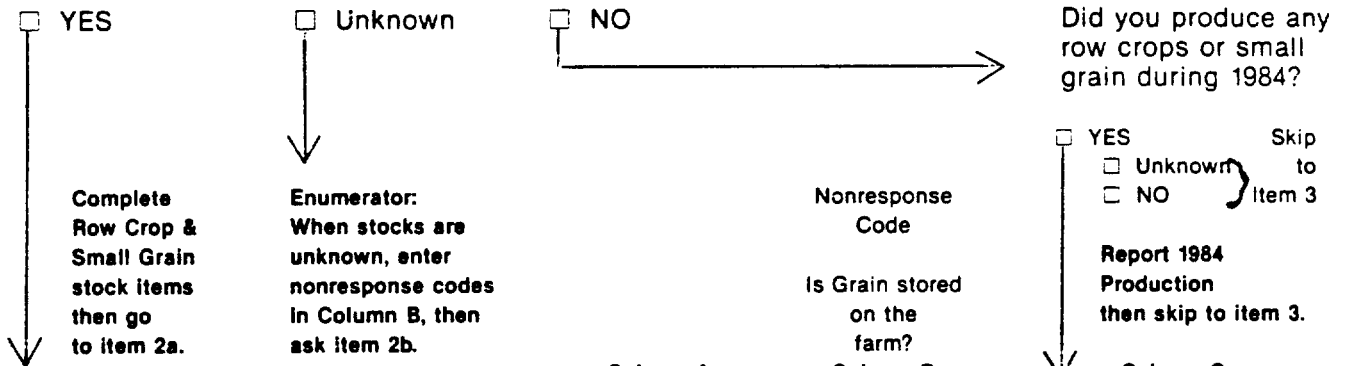
2. Is any grain, regardless of ownership, **NOW** stored on the total acres you operate?

Grains Include:

- All whole grain, stored on the land you operate, regardless of ownership;
- Whole grain for feed, sale and seed;
- All government program grain stored on the land you operate;
- Landlord's share.
- Grain not yet harvested.

Grains Exclude:

- Grain owned by you but stored off the land you operate;
- Ground, cracked or ensilage grain.



Column A		Column B	Column C
ROW CROPS	UNIT	1984 and earlier crop years STOCKS	1984 Grain Production
Corn	56 lb. bu. shelled or 70 lb. bu. ear	121	101
Soybeans	60 lb. bu.	125	105
Sorghum Grain	56 lb. bu.	122	102
SMALL GRAINS		UNIT	
All Wheat	60 lb. bu.	126	106
Oats	32 lb. bu.	123	103
Barley	48 lb. bu.	124	104

Enumerator: When stocks are incomplete, refused or inaccessible, enter nonresponse codes in Column B.

2a. Did you report all grain stored on the land you operate, including landlord's share and/or grain owned by others?

- YES - Continue
- NO - Make necessary corrections then continue.

2b. Did you produce any row crops or small grains during 1984 on the total acres you operate?

- YES - Complete Column C, 1984 grain production, then skip to item 4.
- NO - Skip to item 4.

3. Will there be any grain stored on the total acres you operate between now and April 1, 1985?

- YES = 1
- UNKNOWN = 2
- NO = 3

Enter code and continue

143

4. What is the total ON FARM grain storage capacity on the total land you operate? Include all types of structures normally used to store grain.

808 bu.

Enumerator: Is reported capacity in item 4 greater than zero?

- YES
 - UNKNOWN
 - NO
- If capacity equals zero or is not reported, enter code in 807 cell that best explains capacity on the operation, then go to Item 5.

807

1 = Has capacity
2 = Unknown
3 = No capacity

OPERATION DESCRIPTION OF LAND

Additional information is needed about your operation to assist in detecting possible duplication in reporting.

5. Which of the following best describes your farming or ranching operation? (Check only one unless you, the individual or operation listed on the face page, have more than one operating arrangement.)

- = 1 Individually operated land.
- = 2-7 Partnership: Partners jointly operate land and share in the decision making.
- = 8 Hired manager of land owned by someone else.
- = 9 Do not now operate land for agricultural purposes. (Out of business, have no storage facilities on all the land operated.)

921

Specify _____

5a. Please identify name and address of new operator.

Name: _____

Address: _____

Complete items 7 and 8 ONLY if partnership was checked in item 5.

7. Does this partnership or joint arrangement have a name other than that listed on the face page?

YES _____ (Enter name, then continue to 7a.)

NO - Continue below.

7a. Who are the persons in this partnership or joint land arrangement with you? (Please make necessary corrections if partnership information has been entered.)

a. Name _____ Phone _____				925
	(First)	(M)	(Last)	
b. Address _____				
	(Rt. or St.)	(City)	(State)	(Zip)

ON-FARM GRAIN STOCKS SURVEY

April 1, 1985

Form Approved
 O.M.B. Number 0535-0007
 Expiration Date 10/31/86
 C.E. 11-0088

High Plains
 (Minn., Mont., S.D.)

Strata	ID	Tract	Subtract
Survey	Response	2 Tel. 7 TR 3 Int. 8 IR 6 MR 9 Inac.	Optional S. Unit
80 — 1	910		911 920
List = 0 NOL = 2			

Mr. (name on label), I am (name) from (State) Crop and Livestock Reporting Service. We are conducting the April On-Farm Grain Stocks survey. We need your help to make the U.S. on-farm grain stocks estimates as accurate as possible. The questions refer to all the land you operate and the information you report will be kept CONFIDENTIAL. Response to this survey is voluntary and not required by law.

1. Is the spelling of the Name and Address on the label correct?

- YES - Continue NO - Make corrections on the label and continue.

1a. Is your operation as listed on the label known by any other name?

- YES Enter Name: _____ NO Continue

2. Has the operation listed on the label been sold or taken over by another operation, or added or deleted a partner since January 1, 1985?

- YES Check One Box a. Sold or taken over by another operation? b. Added or deleted a partner? Skip to item 3.

Identify New Operator:

Name: _____ Phone: _____

Address: _____

City: _____ State: _____ Zip: _____

Office Use
923

NO Continue

c. Is the new operator or operation new to the State's agriculture since January 1, 1985?

- YES Complete another questionnaire for new operator. Continue with item 3 for name on label.
 NO Continue.

3. Is the operation as listed on the label: (check box and continue)...

- Individually operated land
 Partnership - No. of partners (____)
 Managed Land
 No Longer operating, Explain _____

Office Use
921

4. Do you operate under any other land arrangement beside the one listed on the label?

- YES List other arrangements: (Note: If Item 3 is checked individual, complete a separate questionnaire for each arrangement.) Continue NO Continue

5. Are any grain storage facilities located on the farmstead or all other land you operate?

- YES - Continue NO - Enter Code = 1 and continue.

919

6. Is any grain, regardless of ownership, **NOW** stored on the total acres you operate?

Grains Include:

- All whole grain, stored on the land you operate, regardless of ownership;
- Whole grain for feed, sale and seed;
- All government program grain stored on the land you operate;
- Landlord's share.

Grains Exclude:

- Grain owned by you but stored off the land you operate;
- Ground and cracked grain, and silage.

YES

Complete
Column A
then
go to
Item 7.

NO
Skip to page 3,
Item 7.

UNKNOWN
Enumerator:
Enter
codes in
Column B, then
skip to page 3,
Item 7.

		Column A	Column B
ROW CROPS	UNIT	STOCKS regardless of crop year	1=Has stocks 2=Unknown 3=No stocks
Corn	56 lb. bu. shelled or 70 lb. bu. ear	121	981
Soybeans (exclude Montana)	60 lb. bu.	125	985
Sorghum Grain (exclude Montana and Minnesota)	56 lb. bu.	122	982
All Sunflower (oil and non-oil) (exclude Montana)	Pounds	132	992
SMALL GRAINS			
Winter Wheat	60 lb. bu.	129	989
Durum Wheat	60 lb. bu.	127	987
Other Spring Wheat	60 lb. bu.	128	988
Oats	32 lb. bu.	123	983
Barley	48 lb. bu.	124	984

Enumerator: When stocks are incomplete, refused or inaccessible, enter presence codes in Column B.

PARTNERSHIP LAND ARRANGEMENT

7. Is partnership reported in Item 3 on the face page?

- YES - Continue
- NO - Go to Item 10.

8. Now I need to verify/identify the other person(s) in this partnership.
(Correct spelling of the name, and the address if already entered.)

OFFICE USE
924
925

<input type="checkbox"/> Sticker verified	
Name _____ Phone _____	
(First) (Middle) (Last)	
Address _____	
(Rt. or St.) (City) (State) (Zip)	
Was this person operating a farm individually in this State on Jan. 1, 1985?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO

OFFICE USE
926

<input type="checkbox"/> Sticker verified	
Name _____ Phone _____	
(First) (Middle) (Last)	
Address _____	
(Rt. or St.) (City) (State) (Zip)	
Was this person operating a farm individually in this State on Jan. 1, 1985?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO

OFFICE USE
927

<input type="checkbox"/> Sticker verified	
Name _____ Phone _____	
(First) (Middle) (Last)	
Address _____	
(Rt. or St.) (City) (State) (Zip)	
Was this person operating a farm individually in this State on Jan. 1, 1985?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO

9. That completes the inventory. The results will be released in May 1985.
Would you like a complimentary copy?

- YES = 1
- NO

099

Comment on changes in your grain inventories since January 1, 1985.

10. Another Grain Stocks Survey will be conducted in a few months and we may need to contact you again.
Thank you for your help.

Reported by _____ Date _____

Telephone No. _____
(Area Code) *(Number)*

Enumerator _____

Respondent: Enter code in box	
1 = Operator	4 = Unknown
2 = Spouse	5 = Observed
3 = Other, specify	096

Office Use
095
Enum. I.D.
096
Enter 1-5
100

ON-FARM GRAIN STOCKS SURVEY

June 1, 1985

Form Approved
O.M.B. Number 0535-0007
Expiration Date 10/31/86
C.E. 11-0088

I-High Plains
(Minn., Mont., S.D.)

Stratum		ID		Tract	
-----		-----		0 1	
Survey	Response	2 Tel.	Optional	S. Unit	
800	910	3 Int.	911	920	
1		6 MR			
		7 TR			
		8 IR			
		9 Inac.			

Mr. (name on label), I am (name) from (State) Crop and Livestock Reporting Service. We are conducting the June 1 On-Farm Grain Stocks survey. We need your help to make the U.S. on-farm grain stocks estimates as accurate as possible. The questions refer to the total acres you operate and the information you report will be kept **CONFIDENTIAL**. Response to this survey is voluntary and not required by law.

1. Is the spelling of the Name, and the Address on the label correct?

- YES - Continue NO - Make corrections on the label and continue.

1a. Is your operation as listed on the label known by any other name?

- YES Enter Name: _____ NO Continue

2. Since January 1, 1985, has the operation listed on the label been sold or taken over by another operation, or added or deleted a partner?

- YES → a. Sold or taken over by another operation? b. Added or deleted a partner? **Skip to Item 3.**

Check one box

→ Identify New Operator and continue:

- NO Continue

Name: _____ Phone: _____

Address: _____

City: _____ State: _____ Zip: _____

3. Is the operation as listed on the label: (check box and continue)...

- Individually operated land?
 partnership? - No. of partners (____)
 managed land?
 no longer operating, Explain _____

Office Use
921

4. Do you operate under any other land arrangement beside the one listed on the label?

- YES List other _____ NO Continue
arrangements: (Note: If Item 3 is checked individual, complete a separate questionnaire for each arrangement.)

5. Are any grain storage facilities located on the farmstead or any other land you operate?

- YES - Continue NO - Enter Code = 1 and continue.

919

6. Is any grain, regardless of ownership, **NOW** stored on the total acres you operate?

Grains Include:

- All whole grain, stored on the total acres you operate, regardless of ownership;
- Whole grain for feed, sale and seed;
- All government program grain stored on the total acres you operate;
- Landlord's share;
- Grain from 1984 and earlier crop years.

Grains Exclude:

- Grain owned by you but stored off the total acres you operate;
- Ground and cracked grain, and silage.

YES

Complete
Column A
then
go to
Item 7.

NO
Skip to page 3,
Item 7.

UNKNOWN
Enumerator:
Enter
codes in
Column B, then
skip to page 3,
Item 7.

Column A		STOCKS 1984 and EARLIER crop years	Column B
ROW CROPS	UNIT		1=Has stocks 2=Unknown 3=No stocks
Corn	56 lb. bu. shelled or 70 lb. bu. ear	121	981
Soybeans (exclude Montana)	60 lb. bu.	125	985
Sorghum Grain (exclude Montana and Minnesota)	56 lb. bu.	122	982
All Sunflower (oil and non-oil) (exclude Montana)	Pounds	132	992
SMALL GRAINS		UNIT	
Winter Wheat	60 lb. bu.	129	989
Durum Wheat	60 lb. bu.	127	987
Other Spring Wheat	60 lb. bu.	128	988
Oats	32 lb. bu.	123	983
Barley	48 lb. bu.	124	984
Rye (exclude Montana)	56 lb. bu.	130	990
Flaxseed (exclude Montana)	56 lb. bu.	133	993

Enumerator: When stocks are incomplete, refused or inaccessible, enter presence codes in Column B.

PARTNERSHIP LAND ARRANGEMENT

7. Is partnership reported in Item 3 on the face page?

YES - Continue **NO - Go to Item 9.**



8. Now I need to verify/identify the other person(s) in this partnership.
(Correct spelling of the name, and the address if already entered.)

<input type="checkbox"/> Sticker verified
Name _____ Phone _____
(First) (Middle) (Last)
Address _____
(Rt. or St.) (City) (State) (Zip)

OFFICE USE
925

<input type="checkbox"/> Sticker verified
Name _____ Phone _____
(First) (Middle) (Last)
Address _____
(Rt. or St.) (City) (State) (Zip)

OFFICE USE
926

<input type="checkbox"/> Sticker verified
Name _____ Phone _____
(First) (Middle) (Last)
Address _____
(Rt. or St.) (City) (State) (Zip)

OFFICE USE
927

9. That completes the inventory. The results will be released in July 1985.
Would you like a complimentary copy?

- YES = 1
- NO

099

Comment on changes in your grain inventories since April 1, 1985.

10. To assist in identifying duplication with our lists of farm operators, please report your Social Security Number. If your operation has an employer ID, this would also be helpful.

Social Security #	470	
Employer I.D. #	466	

Reported by _____ **Date** _____

Telephone No. _____
(Area Code) (Number)

Enter respondent code in box:	
1 = Operator	4 = Unknown
2 = Spouse	5 = Observed
3 = Other, specify	096

Another Grain Stocks Survey will be conducted in a few months and we may need to contact you again. Thank you for your help.

Enumerator _____

Office Use
095
Enum. I.D.
098
Enter 1-5
100

**ON-FARM
 GRAIN STOCKS SURVEY**
April 1, 1985
Test Questionnaire

Form Approved
 O.M.B. Number 0535-0007
 Expiration Date 10/31/86

I.N.D.

Strata	ID	Tract	Subtract
_____	_____	_____	_____

Survey	Response	2 Tel. 7 TR 3 Int. 8 IR 9 Inc.	Optional	S. Unit
80__ 1	910		911	920
List = 0 NOL = 2				

Please make corrections in name, address, and Zip Code, if necessary.

(Suggested Introduction)

Mr. _____, I am _____ from _____
 (State)

Crop and Livestock Reporting Service. We are conducting the quarterly inventory of grains and oilseeds stored on farms. We need your help to make our estimates as accurate as possible.

This survey will give you timely information about on-farm grain inventories and should serve as a guide for planning and marketing during the coming year. The questions refer to all the land you operate and the information you report will be kept CONFIDENTIAL. Response to this survey is voluntary and not required by law.

1. Is your operation known by any name other than _____?
 (Read above name to respondent)

NO YES

Enter name _____
 (Please continue on page 2.)



(Please continue on page 2.)

2. We're looking for whole grains (and oilseeds) stored on the land you operate, whether they are for feed or seed on your place or for sale. They could belong to you or to someone else, such as a landlord, or they could be in a government program, as long as they are in storage right now on the land you operate.

	CIRCLE ANSWER			AMOUNT	CODE
	NO	NA	YES		
3. Is any WHOLE GRAIN CORN from any crop year stored right now on the land you operate?	-	?	+	121 bu.	981
Are any SOYBEANS from any crop year stored right now on the land you operate?	-	?	+	125 bu.	985
What about SUNFLOWER SEED? (oil and non-oil)	-	?	+	132 LBS.	992
WINTER WHEAT?	-	?	+	129 bu.	989
DURUM WHEAT?	-	?	+	127 bu.	987
OTHER SPRING WHEAT? ..	-	?	+	128 bu.	988
OATS?	-	?	+	123 bu.	983
BARLEY?	-	?	+	124 bu.	984

INTERVIEWER: For each crop which does **NOT** have an entry under "Amount", make an entry under "Code", based on the "Circle Answer" column:

- 3 = No stocks
- 2 = NA (not ascertained)
- 1 = Yes, has stocks.

If **ANY** stocks were reported under "Amount", continue with question 5.

If **NO** stocks were reported under "Amount", skip to page 4, question 8.

5. We're trying to improve our questionnaire, and we'd like to make sure we have explained things clearly to you. From our instructions, would you say that **GROUND OR CRACKED** grain should be reported, or do you think it should be left out?

- * report = 1 * don't know = 2 omit = 3

(Check box and continue.)

171

6. What about **SILAGE**—should it be reported or left out?

- * report = 1 * don't know = 2 omit = 3

172

* If either 5 or 6 answered "report" or "don't know", continue with question 7.

If both 5 and 6 answered "omit", say: *Good, that's what we meant. Now skip to question 8.*

7. Then we didn't make the questions clear, because we did **NOT** want ground and cracked grain or silage included. Did you report any in the figures you just gave me?

- NO**—That's good, then we don't have to make any changes. **No = 1**
Now go to question 8. **Yes = 2**
- YES**—Let's go over the figures again and take out the *(ground and cracked/silage)* you reported. Make any revisions necessary on page 2, then skip to question 8.

173

INTERVIEWER COMMENTS:

No = 1
Yes = 2

174

Additional information is needed about your operation to assist in detecting possible duplication in reporting.

8. Which of the following best describes your farming or ranching operation?
(Check only one unless you, the individual or operation listed on the face page, have more than one operating arrangement.)

- = 1 Individually operated land.
- = 2-7 Partnership: Partners jointly operate land and share in the decision making.
- = 8 Hired manager of land owned by someone else.
- = 9 Do not now operate land for agricultural purposes.
(Out of business, have no storage facilities on all the land operated.)

921

Specify _____

9. Please identify name and address of new operator.

Name: _____
 Address: _____

10. Has your operation changed since January 1, 1985?
(Partnership dissolved, additional partner added, etc.)

923

- YES - (Please explain and continue) _____
- NO - Continue.

Complete items 11 and 12 ONLY if partnership was checked in item 8.

11. Does this partnership or joint arrangement have a name other than _____?
(Read name listed on the face page to respondent)?

- YES _____
(Enter name, then continue to 11a.)
- NO - Continue below.

11a. Who are the persons in this partnership or joint land arrangement with you?
(Please make necessary corrections if partnership information has been entered.)

924

a. Name _____ Phone _____ (First) (M) (Last)	925
b. Address _____ (Rt. or St.) (City) (State) (Zip)	
Was this person operating a farm individually in this State on Jan. 1, 1985? <input type="checkbox"/> YES <input type="checkbox"/> NO	

a. Name _____ Phone _____ (First) (M) (Last)	926
b. Address _____ (Rt. or St.) (City) (State) (Zip)	
Was this person operating a farm individually in this State on Jan. 1, 1985? <input type="checkbox"/> YES <input type="checkbox"/> NO	

a. Name _____ Phone _____ (First) (M) (Last)	927
b. Address _____ (Rt. or St.) (City) (State) (Zip)	
Was this person operating a farm individually in this State on Jan. 1, 1985? <input type="checkbox"/> YES <input type="checkbox"/> NO	

12. Is any whole grain (or oilseed) stored **now** on the land operated by this partnership or joint land arrangement?
 (Check box, comment and continue)

- YES
- NO - Skip to question 13.

12a. Was it included in the figures you gave me?
 (Check box, comment and continue)

- YES
- NO

13. That completes the inventory. The results will be released in May.
 Would you like a complimentary copy?

- YES = 1
- NO

099

 Another inventory will be conducted in a few months and we may need to contact you again. Thank you for your help.

Reported by _____ Date _____

Telephone No. _____
 (Area Code) (Number)

Enumerator _____

Respondent Code
 1 = Operator 4 = Unknown
 2 = Spouse 5 = Observed
 3 = Other, specify 096

095
098
100

REVISION SHEET FOR NORTH DAKOTA -- APRIL 1 ON-FARM GRAIN STOCKS

Strata	ID	Tract	Subtract
Survey	Response	Optional	S Unit
80_	910 2 Tel. 3 Int.	911	920
	1		

List=0
NOL =2

INSTRUCTIONS: Enter original and revised figures for each crop for which amounts in storage were revised as a result of questions on page 3.

	ORIGINAL AMOUNT	REVISED AMOUNT
CORN	121	121
SOYBEANS	125	125
SUNFLOWER SEED	132	132
WINTER WHEAT	129	129
DURUM WHEAT	127	127
OTHER SPRING WHEAT	128	128
OATS	123	123
BARLEY	124	124

COMMENTS ON PAGE 3? () YES () NO

2. We're looking for whole grains (and oilseeds) stored on the land you operate, whether they are for feed or seed on your place or for sale. They could belong to you or to someone else, such as a landlord, or they could be in a government program, as long as they are in storage right now on the land you operate.

4. IF YES: How many (units) of **WHOLE** (crop name) are stored there?

	CIRCLE ANSWER			AMOUNT	CODE
	NO	NA	YES		
3. Is any WHOLE GRAIN CORN from any crop year stored right now on the land you operate?.....	-	?	+	121 bu.	981
Are any SOYBEANS from any crop year stored right now on the land you operate?.....	-	?	+	125 bu.	985
What about SORGHUM GRAIN ?	-	?	+	122 bu.	982
WHEAT ?	-	?	+	126 bu.	986
OATS ?	-	?	+	123 bu.	983
BARLEY ?	-	?	+	124 bu.	984

INTERVIEWER: For each crop which does **NOT** have an entry under "Amount", make an entry under "Code", based on the "Circle Answer" column:

- 3 = No stocks
- 2 = NA (not ascertained)
- 1 = Yes, has stocks.

If **ANY** stocks were reported under "Amount", continue with question 5.

If **NO** stocks were reported under "Amount", skip to page 4, question 8.

REVISION SHEET FOR OHIO -- APRIL 1 ON-FARM GRAIN STOCKS

Strata	ID	Tract	Subtract
Survey	Response	Optional	S Unit
80_	910 2 Tel. 3 Int.	911	920

List=0
NOL =2

INSTRUCTIONS: Enter original and revised figures for each crop for which amounts in storage were revised as a result of questions on page 3.

	ORIGINAL AMOUNT	REVISED AMOUNT
CORN	121	121
SOYBEANS	125	125
SORGHUM GRAIN	132	132
WHEAT	126	126
OATS	123	123
BARLEY	124	124

COMMENTS ON PAGE 3? () YES () NO

**ON-FARM
 GRAIN STOCKS SURVEY**
June 1, 1985
Test Questionnaire

Form Approved
 O.M.B. Number 0535-0007
 Expiration Date 10/31/86

I-N.D.

State	ID	Tract
-----	-----	-----

Survey	Response	2 Tel. 7 TR 3 Int. 8 IR 9 Inac.	Optional	S. Unit
800 1	910		911	920

Please make corrections in name, address, and Zip Code, if necessary.

(Suggested Introduction)

Mr. _____, I am _____ from _____
 (State)

Crop and Livestock Reporting Service. We are conducting the quarterly inventory of grains (and oilseeds) stored on farms. We need your help to make our estimates as accurate as possible.

This survey will give you timely information about on-farm grain inventories and should serve as a guide for planning and marketing during the coming year. The questions refer to all the land you operate and the information you report will be kept CONFIDENTIAL. Response to this survey is voluntary and not required by law.

1. Is your operation known by any name other than _____?
 (Read above name to respondent)

NO YES → Enter name _____
 (Please continue on page 2.)

(Please continue on page 2.)

2. We're looking for whole grains (and oilseeds) stored on the land you operate, whether they are for feed or seed on your place or for sale. They could belong to you or to someone else, such as a landlord. They could also be under government loan or in the farmer-owned reserve, as long as they are in storage right now on the land you operate.

4. IF YES: How many (units) of **WHOLE** (crop name) are stored there?

	CIRCLE ANSWER			AMOUNT	CODE
	NO	NA	YES		
3. Is any WHOLE GRAIN CORN from any crop year stored right now on the land you operate?.....	-	?	+	121 bu.	981
Are any SOYBEANS from any crop year stored right now on the land you operate?.....	-	?	+	125 bu.	985
What about SUNFLOWER SEED? (oil and non-oil).....	-	?	+	132 LBS.	992
WINTER WHEAT?	-	?	+	129 bu.	989
DURUM WHEAT?	-	?	+	127 bu.	967
OTHER SPRING WHEAT? ..	-	?	+	128 bu.	988
OATS?	-	?	+	123 bu.	983
BARLEY?	-	?	+	124 bu.	984
RYE?	-	?	+	130 bu.	990
FLAXSEED?	-	?	+	133 bu.	983

3 = No stocks
 2 = NA (not ascertained)
 1 = Yes, has stocks

5. Is any grain that's under government loan or in the farmer-owned reserve program stored right now on the land you operate?

- yes don't know ..
 no } Skip to page 4
- ↓

yes = 1
dk = 2
no = 3

171

6. Was It Included in the figures you just gave me?

- yes - skip to page 4
- no - Let's go over the figures again and add in the stored government program grain that was not included before.

yes = 1
no = 3

173

Make any revisions necessary on page 2, then skip to page 4.

INTERVIEWER COMMENTS:

yes = 1
no = 3

174

Additional information is needed about your operation to assist in detecting possible duplication in reporting.

7. Which of the following best describes your farming or ranching operation?
(Check only one unless you, the individual or operation listed on the face page, have more than one operating arrangement.)

- = 1 Individually operated land.
- = 2-7 Partnership: Partners jointly operate land and share in the decision making.
- = 8 Hired manager of land owned by someone else.
- = 9 Do not now operate land for agricultural purposes.
(Out of business, have no storage facilities on all the land operated.)

Enter Code

921

Specify _____

8. Please identify name and address of new operator.

Name: _____
 Address: _____

Complete Items 9 and 10 ONLY if partnership was checked in item 7.

9. Does this partnership or joint arrangement have a name other than _____?
(Read name listed on the face page to respondent)

YES _____
(Enter name, then continue to 9a.)

NO - Continue below.

9a. Who are the persons in this partnership or joint land arrangement with you?
(Please make necessary corrections if partnership information has been entered.)

a. Name _____ Phone _____				925
	(First)	(M)	(Last)	
b. Address _____				
	(Rt. or St.)	(City)	(State)	(Zip)

- Continue to Page 5 -

a. Name _____ Phone _____ (First) (M) (Last)	926
b. Address _____ (Rt. or St.) (City) (State) (Zip)	

a. Name _____ Phone _____ (First) (M) (Last)	927
b. Address _____ (Rt. or St.) (City) (State) (Zip)	

10. Is any whole grain (or oilseed) stored **now** on the land operated by this partnership or joint land arrangement?
 (Check box, comment and continue)

YES NO - Skip to question 11.

10a. Was it included in the figures you gave me?
 (Check box, comment and continue)

YES NO

11. That completes the inventory. The results will be released in July.
 Would you like a complimentary copy?

YES = 1
 NO

099

12. To assist in identifying duplication with our lists of farm operators, please report your Social Security Number. If your operation has an Employer ID, this would also be helpful.

Social Security #	470 _____
Employer I.D. #	486 _____

Reported by _____ Date _____

Telephone No. _____
 (Area Code) (Number)

Another inventory will be conducted in a few months and we may need to contact you again. Thank you for your help.

Enumerator _____

Enter respondent code in box:	
1 = Operator	4 = Unknown
2 = Spouse	5 = Observed
3 = Other, specify	096

Office Use
Date
095
Enum. I.D.
098
Enter 1-5
100

REVISION SHEET FOR NORTH DAKOTA -- JUNE 1 ON-FARM GRAIN STOCKS

Strata	ID	Tract	Subtract

INSTRUCTIONS: Enter original and revised figures for each crop for which amounts in storage were revised as a result of questions on page 3.

	ORIGINAL AMOUNT	REVISED AMOUNT
CORN	121	121
SOYBEANS	125	125
SUNFLOWER SEED	132	132
WINTER WHEAT	129	129
DURUM WHEAT	127	127
OTHER SPRING WHEAT	128	128
OATS	123	123
BARLEY	124	124
RYE	130	130
FLAXSEED	133	133

COMMENTS ON PAGE 3? () YES () NO

**ON-FARM
 GRAIN STOCKS SURVEY**
June 1, 1985
Test Questionnaire

Form Approved
 O.M.B. Number 0535-0007
 Expiration Date 10/31/86

I-Ohio

Strata	ID	Tract
-----	-----	-----

Survey	Response	2 Tel. 3 Int. 9 Inac.	7 TR 8 IR	Optional	S. Unit
800 1	910			911	920

Please make corrections in name, address, and Zip Code, if necessary.

(Suggested Introduction)

Mr. _____, I am _____ from _____
 (State)

Crop and Livestock Reporting Service. We are conducting the quarterly inventory of grains (and oilseeds) stored on farms. We need your help to make our estimates as accurate as possible.

This survey will give you timely information about on-farm grain inventories and should serve as a guide for planning and marketing during the coming year. The questions refer to all the land you operate and the information you report will be kept **CONFIDENTIAL**. Response to this survey is voluntary and not required by law.

1. Is your operation known by any name other than _____?
 (Read above name to respondent)

NO YES → Enter name _____
 (Please continue on page 2.)

(Please continue on page 2.)

2. We're looking for whole grains (and oilseeds) stored on the land you operate, whether they are for feed or seed on your place or for sale. They could belong to you or to someone else, such as a landlord. They could also be under government loan or in the farmer-owned reserve, as long as they are in storage right now on the land you operate.

4. IF YES: How many bushels of **WHOLE** (crop name) are stored there?

	CIRCLE ANSWER			AMOUNT	CODE
	NO	NA	YES		
3. Is any WHOLE GRAIN CORN from any crop year stored right now on the land you operate?.....	-	?	+	121 bu.	981
Are any SOYBEANS from any crop year stored right now on the land you operate?.....	-	?	+	125 bu.	985
What about WHEAT?	-	?	+	126 bu.	986
OATS?	-	?	+	123 bu.	983

3 = No stocks
 2 = NA (not ascertained)
 1 = Yes, has stocks

5. Is any grain that's under government loan or in the farmer-owned reserve program stored right now on the land you operate?

- yes don't know ..
 no
- } Skip to page 4
- ↓

yes = 1
dk = 2
no = 3

171

6. Was it included in the figures you just gave me?

- yes - skip to page 4
- no - Let's go over the figures again and add in the stored government program grain that was not included before.

yes = 1
no = 3

173

Make any revisions necessary on page 2, then skip to page 4.

INTERVIEWER COMMENTS:

yes = 1
no = 3

174

Additional information is needed about your operation to assist in detecting possible duplication in reporting.

7. Which of the following best describes your farming or ranching operation?
(Check only one unless you, the individual or operation listed on the face page, have more than one operating arrangement.)

- = 1 Individually operated land.
- = 2-7 Partnership: Partners jointly operate land and share in the decision making.
- = 8 Hired manager of land owned by someone else.
- = 9 Do not now operate land for agricultural purposes.
(Out of business, have no storage facilities on all the land operated.)

Enter Code

921

Specify _____

8. Please identify name and address of new operator.

Name: _____
 Address: _____

Complete items 9 and 10 ONLY if partnership was checked in item 7.

9. Does this partnership or joint arrangement have a name other than _____?
(Read name listed on the face page to respondent)

YES _____
(Enter name, then continue to 9a.)

NO - Continue below.

9a. Who are the persons in this partnership or joint land arrangement with you?
(Please make necessary corrections if partnership information has been entered.)

a. Name _____ Phone _____				925
	(First)	(M)	(Last)	
b. Address _____				
	(Rt. or St.)	(City)	(State)	(Zip)

- Continue to Page 5 -

a. Name _____ Phone _____ (First) (M) (Last)	926
b. Address _____ (Rt. or St.) (City) (State) (Zip)	

a. Name _____ Phone _____ (First) (M) (Last)	927
b. Address _____ (Rt. or St.) (City) (State) (Zip)	

10. Is any whole grain (or oilseed) stored **now** on the land operated by this partnership or joint land arrangement?
 (Check box, comment and continue)

YES NO - Skip to question 11.

10a. Was it included in the figures you gave me?
 (Check box, comment and continue)

YES NO

11. That completes the inventory. The results will be released in July.
 Would you like a complimentary copy?

YES = 1
 NO

099

12. To assist in identifying duplication with our lists of farm operators, please report your Social Security Number. If your operation has an Employer ID, this would also be helpful.

Social Security #	470 _____
Employer I.D. #	466 _____

Reported by _____ Date _____

Telephone No. _____
 (Area Code) (Number)

Enter respondent code in box:	
1 = Operator	4 = Unknown
2 = Spouse	5 = Observed
3 = Other, specify	096

Another inventory will be conducted in a few months and we may need to contact you again. Thank you for your help.

Enumerator _____

Office Use
Date
095
Enum. I.D.
098
Enter 1-5
100

REVISION SHEET FOR OHIO -- JUNE 1 ON-FARM GRAIN STOCKS

Strata	ID	Tract	Subtract

INSTRUCTIONS: Enter original and revised figures for each crop for which amounts in storage were revised as a result of questions on page 3.

	ORIGINAL AMOUNT	REVISED AMOUNT
CORN	121	121
SOYBEANS	125	125
WHEAT	126	126
OATS	123	123

APPENDIX 2. Calculations of estimates and confidence intervals.

The estimates in Table 1A were calculated as D/N where

$$\hat{D} = \sum_h N_h d_h \quad (1)$$

$$\hat{N} = \sum_h N_h \frac{t_h}{n_h} \quad (2)$$

where

N_h = population size of stratum h

n_h = sample size in stratum h

t_h = number of positive responses in stratum h

d_h = sample average in stratum h

The variances of these quantities were estimated by

$$(SE(\hat{D}))^2 = \sum_h N_h^2 \frac{N_h - n_h}{N_h} \frac{s_h^2}{n_h} \quad (3)$$

$$(SE(\hat{N}))^2 = \sum_h N_h^2 \frac{N_h - n_h}{N_h} \frac{1}{n_h} \left(\frac{t_h}{n_h} \right) \left(1 - \frac{t_h}{n_h} \right) \quad (4)$$

where s_h is the sample variance in stratum h.

The confidence intervals (95-percent level) were calculated as

$$\text{lower limit} = \frac{\hat{D} - 2 \text{ SE}(\hat{D})}{\hat{N} + 2 \text{ SE}(\hat{N})}$$

$$\text{upper limit} = \frac{\hat{D} + 2 \text{ SE}(\hat{D})}{\hat{N} - 2 \text{ SE}(\hat{N})}$$