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# Evaluation of Using Previously Reported Data in the 1993 Agricultural Yield Surveys

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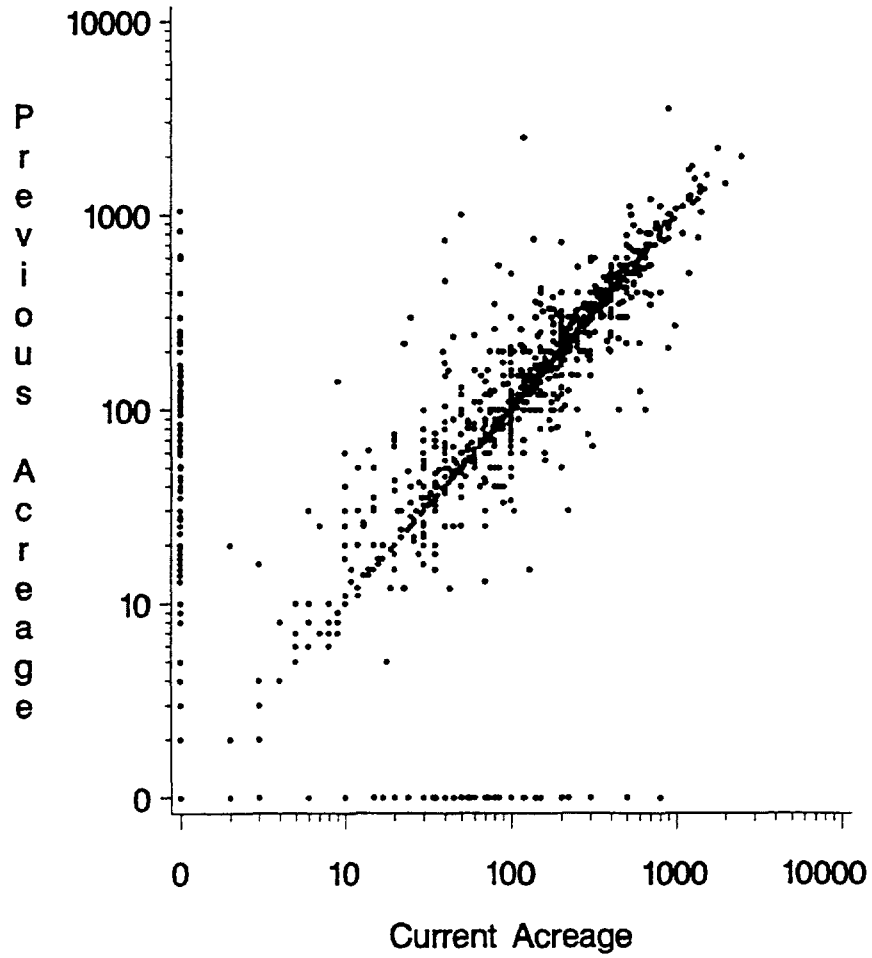

**EVALUATION OF USING PREVIOUSLY REPORTED DATA IN THE 1993 AGRICULTURAL YIELD SURVEYS**, by Jeffrey T. Bailey, Survey Quality Research Section, Survey Research Branch, Research Division, National Agricultural Statistics Service, United States Department of Agriculture, Washington, DC 20250-2000, January 1994, Research Report No. SRB-94-02.

## ABSTRACT

The National Agricultural Statistics Service (NASS) has begun to use previously reported data (PRD) in data collection. PRD have the potential to improve survey quality, reduce response burden and increase efficiency, but if not used wisely, can create bias and increase respondent burden. NASS uses computer assisted telephone interviews (CATI) to conduct much of its data collection and has demonstrated that using PRD in real-time consistency checking can improve responses without the introduction of bias. CATI technology makes the use of PRD practical in real-time consistency checking.

This research was an expansion of the research conducted last year which looked at PRD use only for acreage in the August Agricultural Yield Survey. For 1993, data were analyzed for PRD effects on the acreage and yield responses of winter wheat, corn and soybeans in the months of May-November. The results showed that acreage PRD impacted the acreage ratio indications substantially. The number of changes to yield responses due to PRD were smaller and had very little impact upon the yield indications. As PRD use is expanded it can be seen that it will provide benefits, but the benefits must be weighed against the costs of PRD storage and handling.

## KEY WORDS

Historical Data, Response Check, Consistency Check, CATI, Previous Reported Data (PRD)



## ACKNOWLEDGEMENTS

The author would like to thank Janice Goodwin and all the members of the Agricultural Yield Surveys team. Special thanks go to Dan Capstick for coding the CATI instrument to collect the data and Frank Benford for modifying the computer edit to accommodate the additional items required for this analysis. The help of Mark Harris was very beneficial in obtaining survey summary information. Thanks also to Bob White who helped in getting the survey data and to Don McKinnie and Linda Buckles who provided guidance on the SPS summary. Thanks to Dale Atkinson for his assistance throughout the study.

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## SUMMARY

The National Agricultural Statistics Service (NASS) is beginning to use previously reported data (PRD) in its Agricultural Yield Surveys. During interviews, respondents are asked to verify acreage and yield responses that are outside the prescribed range from the PRD. To assess the impact of using PRD on survey results, research analyses were performed which expanded upon research done last year (1992). These analyses looked at the effect of PRD upon winter wheat, corn, and soybean acreage and yield responses. All PRD checks were done only on the 74 percent completed with computer assisted telephone interviews (CATI). The CATI instrument enabled the capture of responses prior to and after PRD use to provide a direct analysis of PRD effects.

The results of the response checks for winter wheat, corn and soybean acreage showed that 18.5 percent of the cases were reviewed by the enumerator with the respondent. Of the cases reviewed, 24.1 percent of the responses were changed. The average change in acreage for the three crops was an increase of between 20 and 61 acres and the average absolute change was between 209 and 335 acres. None of the changes caused a statistically significant change in the indications, however 41 percent of the difference ratios were 0.03 or greater which may be large enough to affect the state's recommendation. Since PRD use had an impact on the data and its use in this manner has been shown to improve data quality we should continue using PRD for real-time checks on reported acreage.

For the yield response checks, 23.1 percent were outside the PRD limits and subsequently verified, but only 7.3 percent of those reviewed were changed. This indicates that farmer reported yields vary considerably from month to month and respondents are not likely to change their answer. This is because farmers are not really sure of their yield prior to harvest and their response may be influenced by recent weather. Due to the small number of changes made, PRD use caused no significant difference in the yield indications and differences of more than a bushel never occurred in more than 3 states for any month or crop. These results question the merit of PRD use for yield responses.

PRD use in CATI does provide a means to easily verify responses. However, it should be used judiciously to avoid too many checks that will slow down the interview, irritate the respondent or be ignored by the enumerator. The effect of PRD use should continue to be monitored in new applications.

## INTRODUCTION

The National Agricultural Statistics Service (NASS) is beginning to use previously reported data (PRD) in real-time editing in some of its surveys. This procedure involves using the computer to check the current responses against PRD during the interview and to route the session to the appropriate review screens as needed. Responses outside the prescribed relationship to the PRD will be verified by the interviewer with the respondent.

NASS has been using PRD in the Agricultural Yield Surveys for the last two years (1992 and 1993). The surveys are conducted in the months of May through November. Small grain crops are surveyed in May, June, and July and are subsampled from the March Agricultural Survey. Both small grains and row crops are surveyed in the August, September, October, and November surveys which are subsampled from both the March and June Agricultural Surveys.

The PRD checks were used in two areas in the Agricultural Yield Survey:
1) comparing acreage reported to the parent survey and 2) comparing yield reported with the previous month's reported yield. In both areas ratio indications of the current to the previous response are used in setting estimates. The PRD checks were instituted to reduce the large fluctuations in responses that heavily influence these ratios. Furthermore, the checks helped to ensure that the yields were reported accurately by cropping practice.

This research expands and enhances research that was done with the August 1992 Agricultural Yield Survey. That research looked at only PRD use for corn and soybean acreage. This study looks at acreage PRD use in the May and August surveys and yield PRD use in the intervening and subsequent months.

## BACKGROUND

NASS is striving to improve efficiency, while reducing response burden and response error in all its surveys. One way to help do this is to use PRD. A NASS Historical Data Working Group recently completed a report on the Agency's use of PRD (Waldhaus 1993). This report provides a model with a matrix diagram explaining the possible ways PRD can be used and provides some guidelines for survey designers to follow as decisions are made regarding PRD.

For the years 1992 and 1993, PRD was used operationally in the Agricultural Yield Surveys to check reported acres and yields for all crops. The research data collection was done entirely within the CATI instrument with no visible changes made to the operational program.

Research on the August 1992 Agricultural Yield Survey (Bailey 1993) looked at using previously reported acreage data for corn and soybeans. The results showed that respondents changed their answer when asked to verify their response about 30 percent of the time. These changes resulted in the ratio of current to previous survey responses changing by at least 0.03 for about one half of the states. It was also reported that about one half the changes were statistically significant, but

an error was made in the calculation of the p-values. Recalculation of the p-values showed that none were statistically significant, which is consistent with this year's findings.

A weakness of the 1993 study was that it was not possible to distinguish if response changes were made by the interviewer during the interview or by the statistician during the editing process. The assumption was made that if the response was reviewed in CATI, then the change was made during the interview. A recommendation was made to have the CATI instrument store both the "first" and "last" responses in subsequent studies. This was done for this year's research and the results validate the assumption made for last year's research.

For a brief summary about other NASS research related to PRD please refer to last year's report titled "Evaluation of Historical Data Use in the 1992 August Yield Survey" (Bailey 1993).

## METHODS

The NASS Agricultural Yield Surveys are conducted in the months of May through November, with the survey program consisting of two cycles. The first, begins in May and continues through July for small grains. The second cycle is August through November for both small grains and row crops. The majority of the samples are subsamples from the Agricultural Surveys conducted in March and June. Agricultural Survey replications that will rotate out or have only been surveyed for one quarter are commonly used. However, the survey is designed for states to be able to add supplemental samples as needed for special needs or to increase coverage of rare crops.

Normally harvested acres are asked only during the months of May (for small grains) and August (for small grains and row crops). Crop yields are asked each month. Therefore, acreage PRD checks were made in May against March and in August against June. Yield checks were made for June-July and September-November by comparing the current month's reported yield to the previous month's response.

Table 1 shows the total number of survey samples, CATI interviews and completed reports. Across all months, an average of 74.4 percent of the interview contacts were attempted by CATI, and of those, 85.0 percent were completed by CATI. CATI makes the use of PRD possible, since the calling instrument is programmed to do all the checking and routing through the questions.

The range for the acreage checks in May and August was a modified 25 percent limit in which (reported acreage + 100) divided by (PRD + 100) was compared to lower and upper limits of 0.75 and 1.25, respectively. This ratio with 100 acres added to each response was used to make a "one size fits all" edit, by ignoring large indicated percentage changes in small reports. For example, a change from 5 to 10 acres would not be verified.

For the months following May (June and July) and August (September, October, and November) all responses with ratios of reported yield to PRD greater than 1.25 or less than 0.75 were verified. While PRD

**Table 1: 1993 Agricultural Yield Survey Sample Sizes, Number of CATI Calls, and Number of Completed Reports**

| Month | Total Sample Size | Number Called on CATI | Percent Called on CATI | Number Completed on CATI | Percent Completed on CATI |
|---|---|---|---|---|---|
| May | 14,063 | 10,866 | 77.3 | 9,576 | 88.1 |
| June | 8,400 | 5,835 | 69.5 | 5,142 | 88.1 |
| July | 15,087 | 11,777 | 78.1 | 10,171 | 86.4 |
| August | 33,045 | 25,120 | 76.0 | 21,107 | 84.0 |
| Sept. | 28,697 | 19,680 | 68.6 | 16,951 | 86.1 |
| Oct. | 25,793 | 19,925 | 77.3 | 15,938 | 80.0 |
| Nov. | 25,378 | 18,672 | 73.6 | 16,160 | 86.6 |
| Total | 150,463 | 111,875 | 74.4 | 95,045 | 85.0 |

were used for all crops, the "first" and "last" responses were saved for analysis by CATI for only winter wheat in the May-July cycle and corn and soybeans in the August-November cycle.

The following sequence provides an example of the CATI session using corn harvested acreage collected in August.

1. The respondent reports his corn harvested acreage, which is entered into the CATI instrument by the enumerator.

2. The CATI instrument compares this value against the state's specified upper acreage limit for corn and routes the session to a response review screen, if needed. The response resulting from this initial review is then saved as a separate variable that can not be changed. It will be identified as "first" in subsequent discussions.

3. The CATI instrument compares the "first" response to data collected in June and, if it falls outside the modified 25 percent limit, a PRD response review screen appears (See Figure 1 for example).

4. The enumerator either verifies that the response is correct or makes changes. The resulting value is saved as "last" and "final."

5. The "first", "last" and "final" responses are output from CATI. Note: The "last" and "final" values

**Sample Response Review Screen in CATI Instrument:**

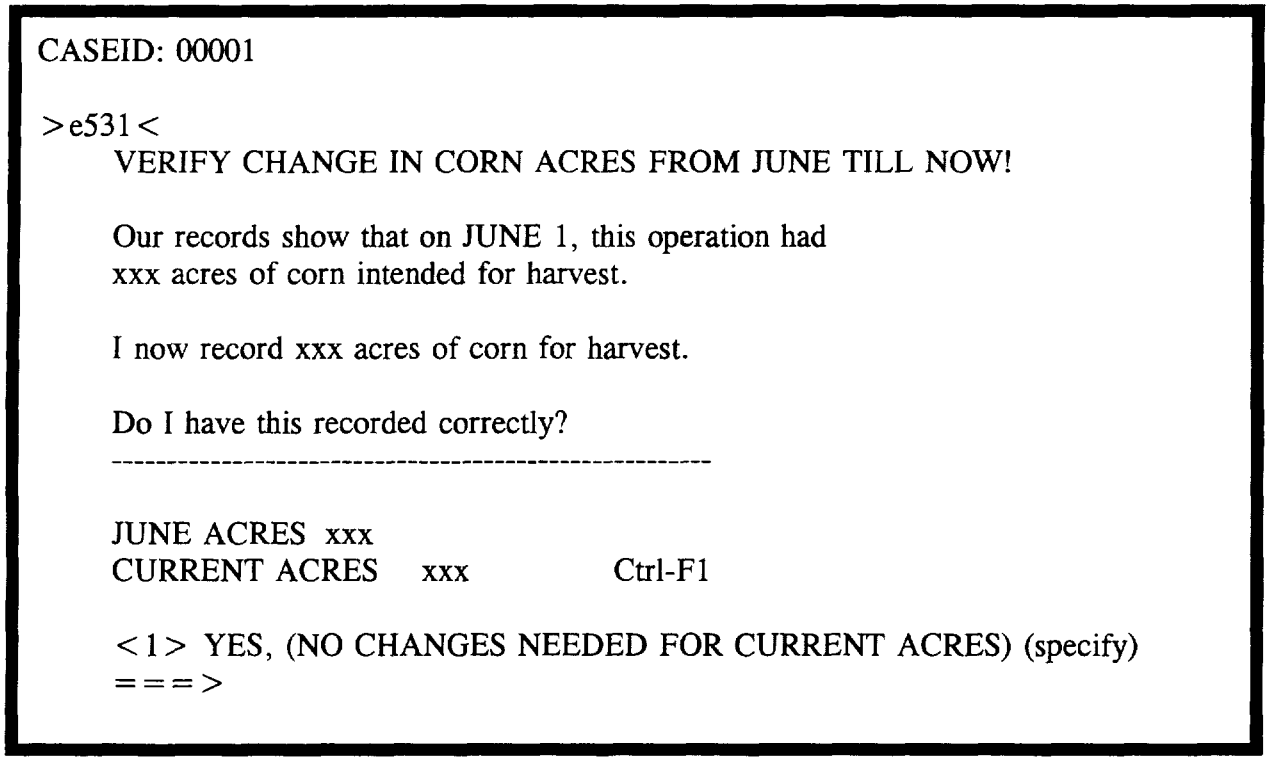



**Figure 1**

are the same at this point, but the "last" can not be changed in the subsequent mainframe edit.

The sequence described above is designed to isolate the effects of using the PRD. Since the CATI instrument retains the "first" response after the upper acreage limit check and just prior to the PRD check, the process isolates changes made to the responses due to the introduction of PRD from those attributable to any other reasons. The "first" response is retained in a separate variable that can not be changed by the enumerator. The final value from CATI was output twice to the variable called "last" that cannot be changed in the post interview editing and to another variable called "final" which is the normal summary variable that can be changed. By isolating PRD effects from editing effects as described above, we can also determine the impact of the statistician edits upon the data.

Certain special data collection situations were accounted for in the process. For example, some states asked irrigated and nonirrigated acreage or double and single crop soybean acreage. In these states the acreage checks were made only on the

combined total acreage after both acreage and yield were collected for the individual cropping practices. Also, the CATI session sequence was different for yield checks in that there was no prior extreme upper limit check before the PRD check.

Upon completion of an interview with CATI, the data were edited with a mainframe batch computer edit. The error print from the Survey Processing System (SPS) edit was then reviewed by statisticians in the state offices and the final data values from CATI were updated as needed.

Previous research (Mergerson and O'Connor 1992) has shown that when PRD are used in real-time editing, the result is better and closer to the "truth." Therefore, the main purpose of this research is to assess whether PRD had any effect upon the data. For analysis we have the following four different responses for each variable:

$Y_1$ = Response from a prior survey
$Y_2$ = "First" response before PRD check
$Y_3$ = "Last" response from CATI unchanged in the subsequent mainframe edit
$Y_4$ = "Final" value summarized, possibly changed in the mainframe edit

A major indication used in establishing acreage estimates is the ratio of current to previous reported acreage. Therefore, to assess the impact of PRD we want to test for a difference in ratios. This can easily be recast as the ratio of a difference in responses to the previous reported acreage. Once the variance of the ratio is calculated, we can test whether the ratio is significantly different from zero using the formula given in Appendix B.

The following ratios were calculated for each difference for testing acreage effects:

$$\frac{Y_3 - Y_2}{Y_1} = D_p \quad \textit{Difference due to PRD}$$

$$\frac{Y_4 - Y_3}{Y_1} = D_e \quad \textit{Difference due to Editing}$$

When testing for the effects of PRD for the yield, we have four responses from similar points in time. The yield indication is a ratio of production to current harvested acreage. Therefore, to test for PRD effects on yield, the differences in production are divided by harvested acreage.

$$\frac{P_3 - P_2}{A} = D_p \quad \textit{Difference due to PRD}$$

$$\frac{P_4 - P_3}{A} = D_e \quad \textit{Difference due to Editing}$$

Where
$P_1$ = Production from the prior survey
$P_2$ = "First" production before PRD check
$P_3$ = "Last" production from CATI unchanged in the subsequent mainframe edit
$P_4$ = "Final" production value summarized, possibly change in the mainframe edit
$A$ = "Final" harvested acreage for operations reporting production

Therefore, using the formula for the variance of a ratio (as specified in

Appendix B), tests were made to determine whether the differences in yield were significantly different from zero.

## RESULTS

### Acreage Results

During the May and August Agricultural Yield Surveys current acreage responses were checked with PRD. All crops were checked with PRD, but "first" and "last" responses were only stored for winter wheat in May and corn and soybeans in August. Table 2 shows at the U. S. level that 18.5 percent of the responses were outside the modified 25 percent limit and reviewed by the enumerator with the respondent. Of those reviewed, the respondent changed his "first" response 24.1 percent of the time. The average absolute change by month and crop was between 209 and 335 acres, while overall the average change was an increase of between 20 and 61 acres. See Appendix A, Tables 1, 2, and 3 for individual state totals.

The primary acreage indications from the Agricultural Yield Surveys are ratios of current reported acreage to the acreage reported in the Agricultural Survey from which the sample was drawn (which is also the PRD used to check the response). These are combined ratio estimates at the state level across all Agricultural Statistics Districts (ASD). The operational summary calculates both the combined ratio estimates and those estimates obtained by weighting separate ratio estimates by ASD acreage. The difference between the ratio estimates using the "first" and "last" responses was tested to

**Table 2: Acreage PRD Use in the 1993 Agricultural Yield Survey**

| Month and Crop | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits | | Cases Where Response Was Changed Given PRD | | Net Average Change Made in Response Due to PRD | Absolute Average Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | | |
| May Winter Wheat | 5,931 | 993 | 16.7 | 335 | 33.7 | 61 | 332 |
| August Corn | 6,893 | 1,379 | 20.0 | 299 | 21.7 | 20 | 209 |
| August Soybeans | 5,696 | 1,055 | 18.5 | 193 | 18.3 | 31 | 335 |
| Total | 18,520 | 3,427 | 18.5 | 827 | 24.1 | | |

determine if the difference was significantly different than zero. The differences were not statistically significant in any state, but 25 percent of the differences were greater than 0.04 and 41 percent of the differences were greater than 0.02. Differences of this size would likely impact state recommendations. Tables 4, 5, and 6 in Appendix A show individual state ratios and p-values.

Figures 2 and 3 illustrate the relationships between the PRD, the "first" response, and the "last" response, as plotted on a logarithmic scale. The June response is along the y axis in both graphs with the "first" and "last" August response along the x axis. In Figure 2 one quickly observes the strong linear trend along the y=x line. This is expected since we are plotting the response to the same question asked at two different points in time. The graph separates out those responses that were reviewed and not changed, reviewed and changed, and not reviewed by the enumerator with the respondent during the interview.

Figure 2 indicates an interesting characteristic of some observations in which a response is positive one time and zero another. For **corn harvested acres** shown in this graph, 8.7 percent of the observations reported corn for harvest in June but none in August. Conversely, 3.1 percent reported corn for harvest in August and none in June. For **soybean planted acres**, 5.6 percent of the responses were positive in June but zero in August, while 2.4 percent were zero in June and positive in August. For the 1993 crop year with the Midwest flooding, many times fields were not harvested, accounting for the bulk of the 8.7 and 5.6 percent going to zero.

Some of these changes from positive to zero and zero to positive can be explained by the June response being intentions to plant. Often when the intended crop was not planted, another crop was planted resulting in changes in actual plantings. No doubt some of the other changes were from the usual nonsampling errors of misreporting. In any case the observations are disturbing since they have a large influence upon the ratio indications.

Because of the "one size fits all" edit of those going from zero to positive or positive to zero, only reports of 25 acres or more were verified. It might be beneficial to verify all zero to positive and positive to zero responses regardless of the amount of acreage reported.

Figure 3 indicates the dynamics of the responses that were changed for corn acreage. Note that when the "first" response (asterisk) is away from the y=x line, the respondent's "last" response (diamond) is close to the PRD value. For clarity this plot contains only a sampling of the changes, specifically every sixth change. (Plots of winter wheat and soybeans were very similar.)

Figure 4 is a bar graph illustrating changes made to the responses. The values for which frequencies are charted are mid-points of the ranges of differences. The "0" bar represents observations with a non-zero difference of between -50 and +50. We can easily see that there were as many positive as negative changes. It is disturbing to see the number of changes greater than 1000 acres.

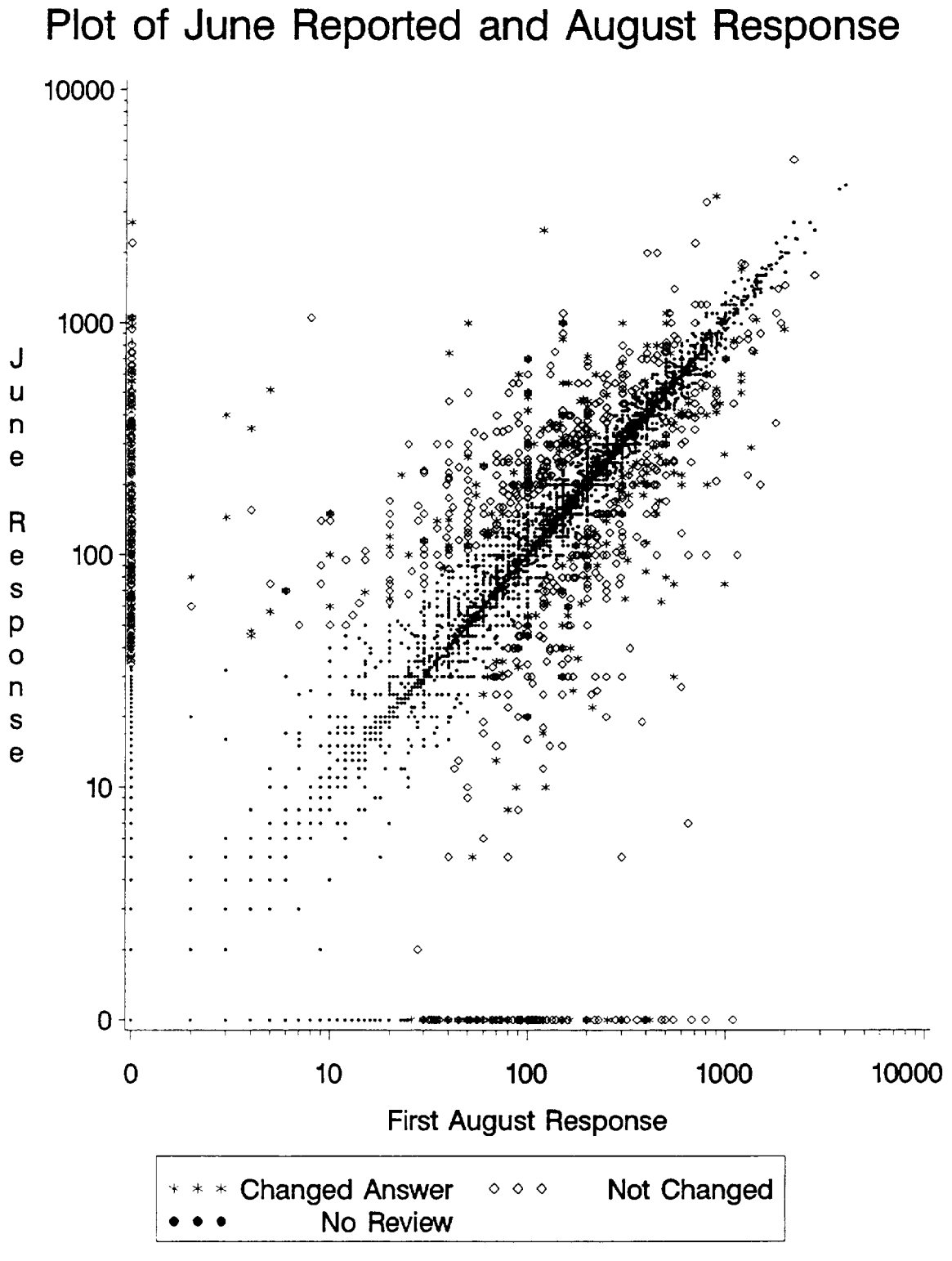

Plot of June Reported and August Response
10000
1000
100
10
0
June Response
0
10
100
1000
10000
First August Response
Changed Answer
Not Changed
No Review

**Figure 2**

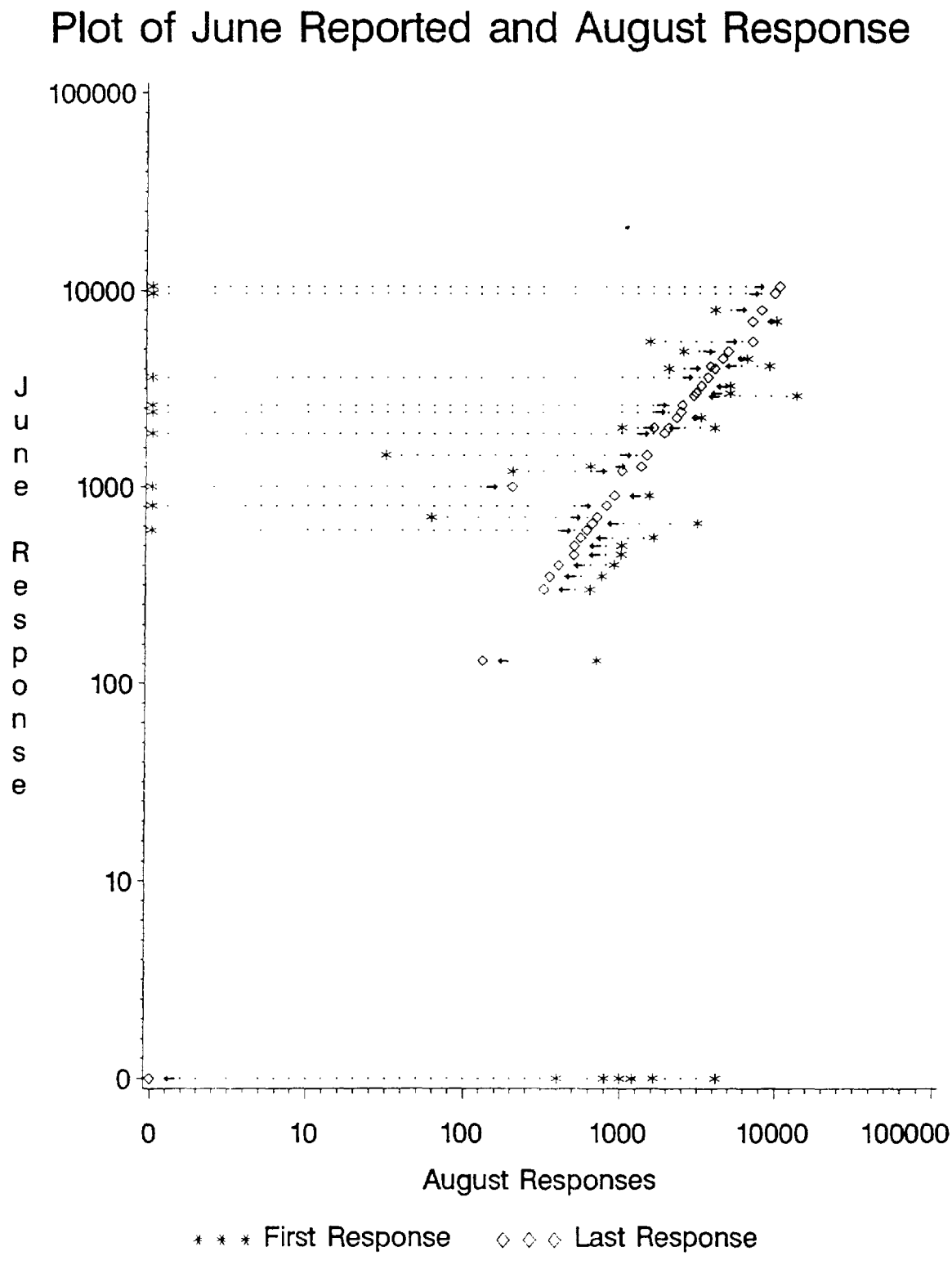
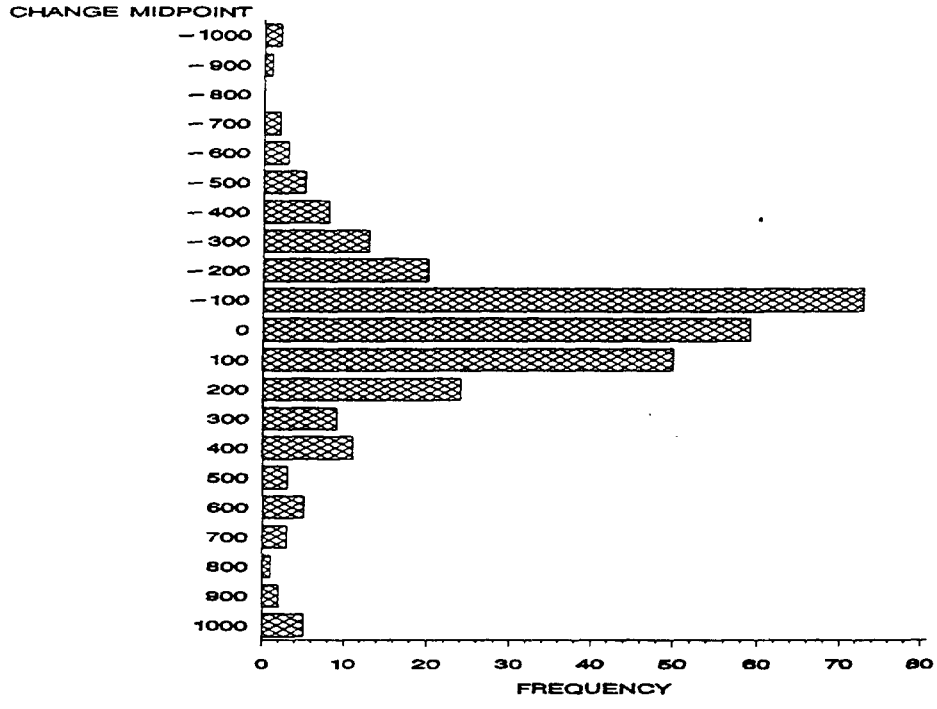

Plot of June Reported and August Response
100000
10000
1000
100
10
0
June Response
0
10
100
1000
10000
100000
August Responses
First Response
Last Response

**Figure 3**

## Changes Made to First Corn Response




## Changes Made to First Soybean Response

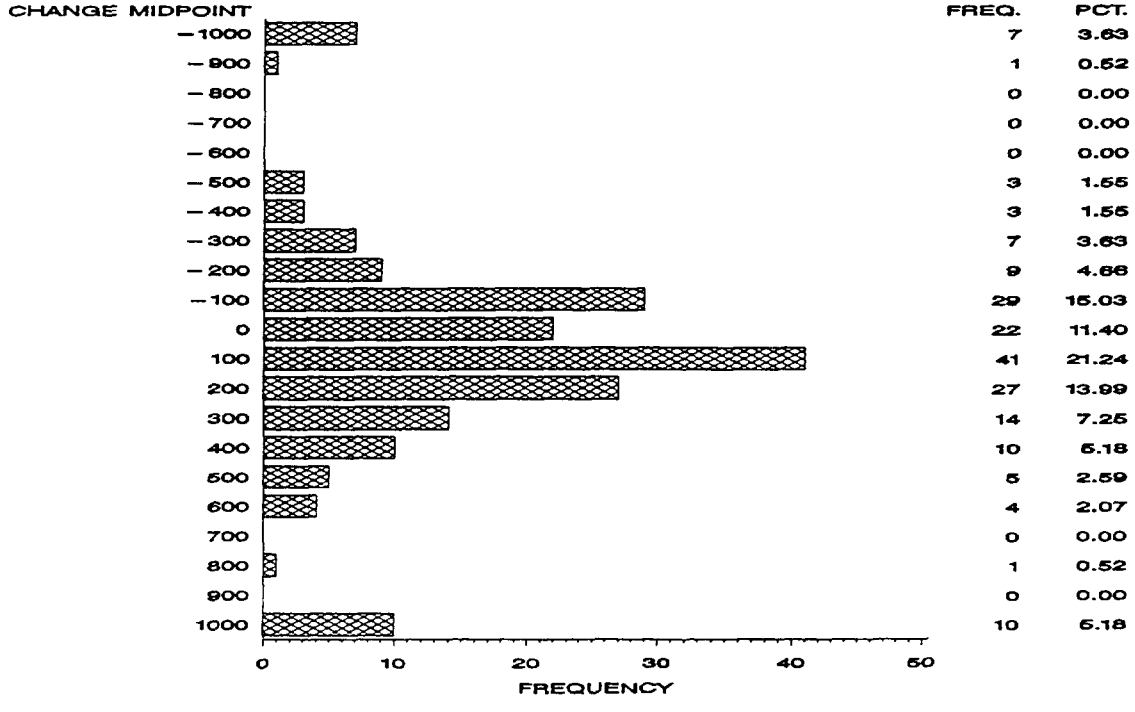



**Figure 4**

**Table 3: Editing of Acreage in the Agricultural Yield Surveys**

| Month and Crop | Number Cases Reporting Crop | Cases Reviewed in CATI with **NO** Change Made in Interview, But Change Made in Edit | | Cases **NOT** reviewed in CATI, But Change Made in Edit | Total Number of Cases Changed in Edit | Percent of Cases with Changes Made in the Edit |
|---|---|---|---|---|---|---|
| | | Changed to Another Value | Changed to Missing Value | | | |
| May Winter Wheat | 5,931 | 30 | 43 | 10 | 83 | 1.4 |
| August Corn | 6,893 | 16 | 95 | 6 | 117 | 1.7 |
| August Soybeans | 5,696 | 6 | 17 | 3 | 26 | 0.5 |
| Total | 18,520 | 52 | 155 | 19 | 226 | 1.2 |

In addition to the changes that were made during the interview by the respondent, changes made by the survey statisticians during the editing process were examined. This was possible this year since we kept both the "last" and the "final" responses on the data file. Table 3 shows that in 1.2 percent of the cases at the U.S. level the acreage was changed in the mainframe edit. Furthermore, most of these changes amounted to setting the acreage equal to missing. In testing the editing effects, none were significant since so few changes were made.

## Yield Results

For the months of June, July, September, October, and November, PRD were used to verify the current yield response. In each month the PRD value used was the previous month's reported yield. Data were captured in CATI for yield as they were for acreage. Winter wheat yield data were collected in June and July, and corn and soybean yield data were collected in September, October, and November.

Table 4 shows the number of times responses were outside the edit range and the frequency and quantity of the resulting changes to the responses. Irrigated and nonirrigated data were combined, as were single and double crop data for those states with these cropping practices. See Tables 7-14 in Appendix A for individual state totals and totals by cropping practice. For all months and crops, 23.1 percent of the "first" responses were outside the PRD limit and reviewed in the CATI. The respondent changed their response for 7.3 percent of the cases reviewed.

The U.S. average absolute change from the "first" response to the "last" was between 15 and 49 bushels. Despite these large changes most were offsetting with an average change of 5 bushels or less for all

**Table 4: Yield PRD Use in the 1993 Agricultural Yield Surveys**

| Month and Crop | Number Cases Reporting Crop | Cases Where Response Was Outside PRD Limits | | Cases Where Response Was Changed Given PRD | | Average Change Made in Response Due to PRD (bushels) 1/ | Average of Absolute Change Made in Response Due to PRD (bushels) |
|---|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | | |
| June Winter Wheat | 4,379 | 877 | 20.0 | 87 | 9.9 | 5 | 18 |
| July Winter Wheat | 4,953 | 1164 | 23.5 | 117 | 10.1 | -4 | 38 |
| September Corn | 7,700 | 1,795 | 23.3 | 125 | 7.0 | 0 | 48 |
| October Corn | 7,670 | 1,718 | 22.4 | 118 | 6.9 | 3 | 48 |
| November Corn | 7,967 | 2,016 | 25.3 | 122 | 6.1 | 21 | 49 |
| September Soybeans | 7,029 | 1,673 | 23.8 | 108 | 6.5 | 2 | 15 |
| October Soybeans | 6,672 | 1,435 | 21.5 | 120 | 8.4 | -3 | 19 |
| November Soybeans | 7,166 | 1,668 | 23.3 | 109 | 6.5 | 3 | 16 |
| Total | 53,536 | 12,346 | 23.1 | 906 | 7.3 | | |

1/ Average Change for only those cases that changed their response.

crop/month combinations except for corn in November. Statistical tests show that none of the differences between the "first" and "last" responses are significant. For winter wheat in June and July, none of the differences at any aggregate level are greater than a bushel. For corn and soybeans, only 10 and 6 percent of the states, respectively, had a difference of more than a bushel.

As in the acreage analysis, data were available to determine the amount and number of times the yield was changed in the edit. No more than 20 yields were changed in any state for any crop in any given month. Therefore, editing by the statistician had a negligible effect upon the yield estimates.

The analysis of the yield data indicated that for every crop and month at least 20 percent of the responses were outside the

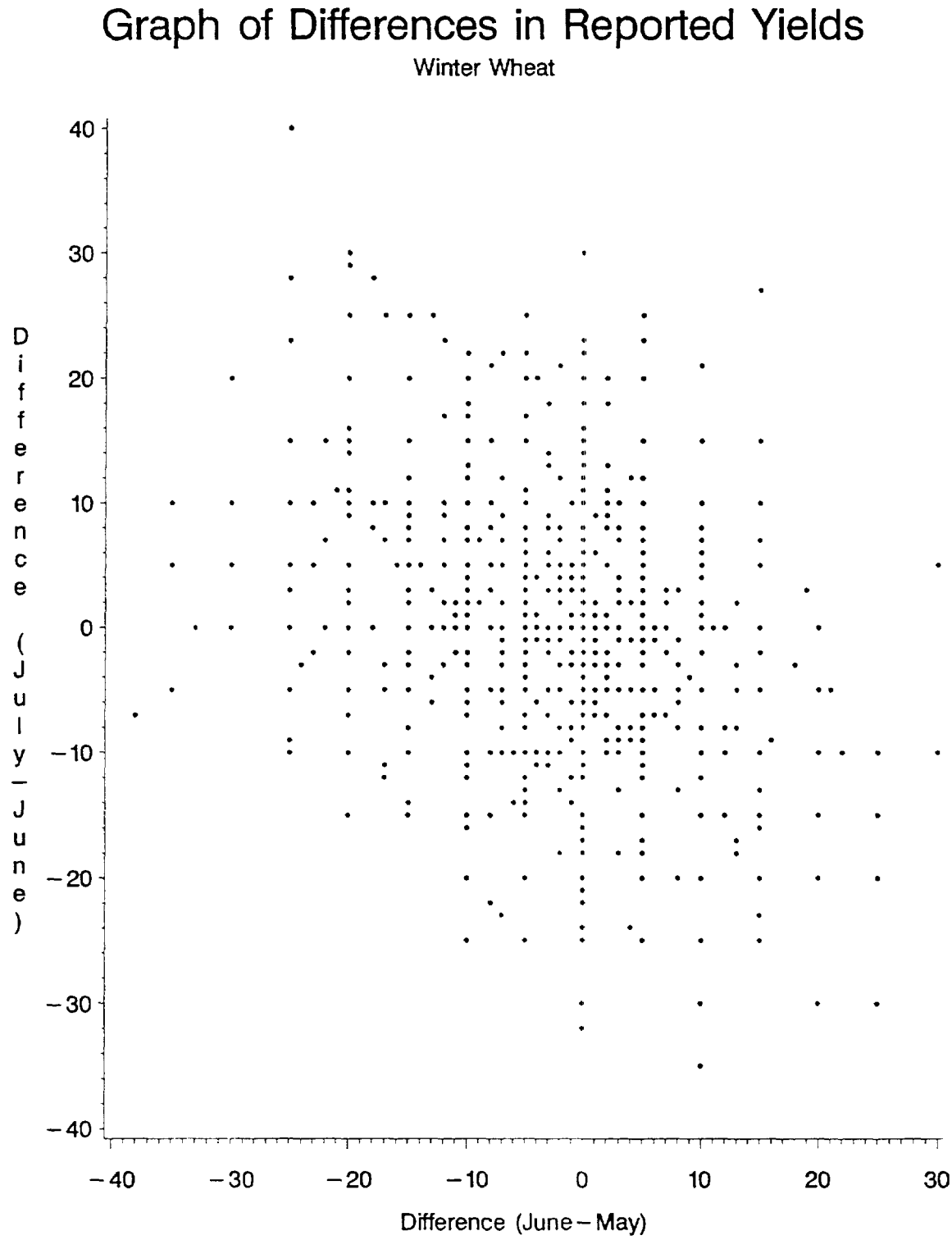

Graph of Differences in Reported Yields
Winter Wheat
Difference (July – June)
40
30
20
10
0
−10
−20
−30
−40
−40
−30
−20
−10
0
10
20
30
Difference (June – May)

**Figure 5**

25 percent range from the previous month. Figure 5 shows the difference in reported yields between May and June plotted against the difference between June and July. The plot shows the wide variation of farmer reported yields and illustrates that it is difficult for them to predict their yields early in the season. Their opinion is likely to be heavily influenced by recent events such as weather.

The differences displayed in Figure 5 do have some relationship. When a farmer reports a higher yield in June than May, they will likely report a lower yield in July than in June. Some of this relationship is inherent in the data. For example, if a yield drops 25 bushels from 45 to 20 it would not be possible to go down 25 bushels again since we cannot have a negative yield.

## DISCUSSION AND RECOMMENDATIONS

In the evaluation of PRD we must weigh both the benefits of PRD use and the associated costs. The major purpose and benefit of PRD use is to reduce response errors (both bias and variation) and improve the quality of the data. Another benefit is the reduction of respondent burden by eliminating callbacks to verify responses.

PRD use does not come without costs. Care must be taken not to introduce any new bias which is always possible when using PRD. We must acknowledge that when it is necessary to verify several responses during the original interview, the interview time will be increased. The verification can also cause respondent irritation. Other PRD costs are for the storage and handling of PRD and the programming of the interviewing instruments.

Given the number of **acreage** responses corrected and their effects, the benefits seem to outweigh the costs and PRD should continue to be used for acreage checks in the Agricultural Yield Surveys. The edit limits and review screens should be reexamined to enable the verifying of data by those operations reporting zero data one time and positive another time.

*Recommendation 1: Consider enhancing the review screen and edit limits for better accounting of zero responses one time and positive the other.*

PRD use with **yields** in the Agricultural Yield Surveys should be reevaluated since the large number of times that yields were verified in the interview resulted in little improvement in the indications. For yield responses only 1.7 percent of the respondents changed their answer, while 4.5 percent changed their acreage response despite a higher percentage (23.1 compared to 18.5) being checked during the interview. This small number of changes resulted in no statistical or practical difference in the indications.

Therefore, discontinuing this edit would eliminate a lot of checking during the interview and have little impact upon the indications. Additionally, changes made to yield responses in states with different cropping practices were no more prevalent or substantial than in other states, so there is no evidence that the checks are needed by those states.

*Recommendation 2: Consider dropping PRD use for yield checks.*

The recommendations for PRD use in acreage and yield were different. This can be explained by the fact that yield responses are forecasts whereas acreage responses are normally better known. PRD works best for numbers that are known better and are more stable.

PRD is a great tool that can increase data quality and data collection efficiency. It's potential uses should continue to be explored, especially with the increased use of CAPI/CATI. When PRD is first used in any survey its use should be evaluated to determine the impact and the costs/benefits. This evaluation should be considered a one time activity and should be done as part of the real-time summary process so the impact is known by those setting the estimates.

*Recommendation 3: First time use of PRD should be evaluated during the summary process.*

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# APPENDIX A - STATE TABLES

**Table 1: Acreage PRD Use in May 1993 Agricultural Yield Survey, Winter Wheat Harvested Acres**

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ No. | Percent | Cases Where Response Was Changed Given PRD No. | Percent | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| AL | 30 | 6 | 20.0 | 2 | 33.3 | -55 | 95 |
| AZ | 12 | 4 | 33.3 | 1 | 25.0 | 190 | 190 |
| AR | 331 | 82 | 24.8 | 40 | 48.8 | 47 | 268 |
| CA | 114 | 29 | 25.4 | 13 | 44.8 | 121 | 432 |
| CO | 190 | 44 | 23.2 | 19 | 43.2 | 110 | 517 |
| DE | 38 | 8 | 21.1 | 3 | 37.5 | -53 | 83 |
| FL | 9 | 2 | 22.2 | 0 | 0.0 | - | - |
| GA | 100 | 23 | 23.0 | 5 | 21.7 | -331 | 535 |
| ID | 190 | 34 | 17.9 | 8 | 23.5 | -70 | 144 |
| IL | 250 | 23 | 9.2 | 7 | 30.4 | 51 | 83 |
| IN | 245 | 22 | 9.0 | 3 | 13.6 | -158 | 158 |
| IA | 8 | 0 | 0.0 | - | - | - | - |
| KS | 525 | 78 | 14.9 | 17 | 21.8 | 345 | 452 |
| KY | 150 | 20 | 13.3 | 3 | 15.0 | -13 | 280 |
| LA | 12 | 4 | 33.3 | 1 | 25.0 | 40 | 40 |
| MD | 63 | 12 | 19.0 | 8 | 66.7 | 78 | 160 |
| MI | 154 | 14 | 9.1 | 5 | 35.7 | 16 | 82 |
| MN | 13 | 0 | 0.0 | - | - | - | - |
| MS | 78 | 17 | 21.8 | 5 | 29.4 | -116 | 372 |
| MO | 249 | 33 | 13.3 | 14 | 42.4 | 18 | 176 |
| MT | 249 | 47 | 18.9 | 25 | 53.2 | 338 | 777 |
| NE | 289 | 50 | 17.3 | 12 | 24.0 | -42 | 128 |
| NJ | 35 | 1 | 2.9 | 1 | 100.0 | 135 | 135 |
| NM | 64 | 23 | 35.9 | 7 | 30.4 | 131 | 246 |
| NY | 36 | 6 | 16.7 | 2 | 33.3 | 52 | 82 |
| NC | 198 | 24 | 12.1 | 8 | 33.3 | -188 | 382 |
| ND | 33 | 6 | 18.2 | 1 | 16.7 | -75 | 75 |
| OH | 458 | 39 | 8.5 | 10 | 25.6 | -9 | 99 |
| OK | 459 | 103 | 22.4 | 27 | 26.2 | 43 | 390 |
| OR | 128 | 18 | 14.1 | 6 | 33.3 | -497 | 531 |
| PA | 84 | 3 | 3.6 | 0 | 0.0 | - | - |
| SD | 165 | 40 | 24.2 | 21 | 52.5 | 92 | 312 |
| TN | 125 | 19 | 15.2 | 3 | 15.8 | 117 | 183 |
| TX | 272 | 68 | 25.0 | 15 | 22.1 | 49 | 217 |
| UT | 66 | 13 | 19.7 | 6 | 46.2 | 309 | 309 |
| VA | 95 | 13 | 13.7 | 6 | 46.2 | -10 | 82 |
| WA | 236 | 45 | 19.1 | 23 | 51.1 | 66 | 371 |
| WV | 20 | 0 | 0.0 | - | - | - | - |
| WI | 116 | 13 | 11.2 | 4 | 30.8 | -79 | 129 |
| WY | 42 | 7 | 16.7 | 4 | 57.1 | -170 | 595 |
| US | 5,931 | 993 | 16.7 | 335 | 33.7 | 61 | 332 |

1/ Review screen appeared for cases when (reported acreage + 100) divided by (PRD + 100) was greater than 1.25 or less than 0.75.

**Table 2: Acreage PRD Use in August 1993 Agricultural Yield Survey, Corn Harvested Acres**

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ | | Cases Where Response Was Changed Given PRD | | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | | |
| AZ | 8 | 3 | 37.5 | 2 | 66.7 | -53 | 53 |
| AR | 25 | 4 | 16.0 | 2 | 50.0 | 84 | 84 |
| CA | 34 | 17 | 50.0 | 6 | 35.3 | -15 | 148 |
| CO | 97 | 17 | 17.5 | 7 | 41.2 | -27 | 250 |
| DE | 22 | 6 | 27.3 | 4 | 66.7 | 160 | 215 |
| FL | 32 | 5 | 15.6 | 3 | 60.0 | -111 | 185 |
| GA | 162 | 29 | 17.9 | 6 | 20.7 | -74 | 133 |
| ID | 28 | 10 | 35.7 | 2 | 20.0 | -42 | 42 |
| IL | 509 | 76 | 14.9 | 22 | 28.9 | -29 | 272 |
| IN | 221 | 33 | 14.9 | 7 | 21.2 | 104 | 150 |
| IA | 801 | 109 | 13.6 | 19 | 17.4 | 2 | 262 |
| KS | 228 | 56 | 24.6 | 7 | 12.5 | -47 | 153 |
| KY | 191 | 29 | 15.2 | 4 | 13.8 | -68 | 68 |
| LA | 28 | 5 | 17.9 | 4 | 80.0 | -35 | 190 |
| MD | 52 | 17 | 32.7 | 10 | 58.8 | -21 | 108 |
| MI | 190 | 33 | 17.4 | 7 | 21.2 | -101 | 345 |
| MN | 626 | 137 | 21.9 | 20 | 14.6 | -131 | 200 |
| MS | 84 | 16 | 19.0 | 9 | 56.3 | -100 | 100 |
| MO | 331 | 85 | 25.7 | 11 | 12.9 | -94 | 182 |
| MT | 24 | 17 | 70.8 | 6 | 35.3 | -70 | 85 |
| NE | 632 | 111 | 17.6 | 39 | 35.1 | 139 | 290 |
| NJ | 38 | 10 | 26.3 | 1 | 10.0 | 410 | 410 |
| NM | 6 | 1 | 16.7 | 0 | 0.0 | - | - |
| NY | 87 | 24 | 27.6 | 2 | 8.3 | -50 | 50 |
| NC | 263 | 40 | 15.2 | 13 | 32.5 | 20 | 93 |
| ND | 86 | 45 | 52.3 | 3 | 6.7 | 94 | 117 |
| OH | 449 | 59 | 13.1 | 23 | 39.0 | 49 | 189 |
| OK | 33 | 11 | 33.3 | 5 | 45.5 | -205 | 317 |
| OR | 16 | 7 | 43.8 | 3 | 42.9 | 0 | 80 |
| PA | 229 | 33 | 14.4 | 7 | 21.2 | -66 | 81 |
| SD | 527 | 171 | 32.4 | 9 | 5.3 | 365 | 520 |
| TN | 142 | 21 | 14.8 | 5 | 23.8 | -46 | 86 |
| TX | 87 | 23 | 26.4 | 12 | 52.2 | 337 | 464 |
| UT | 21 | 2 | 9.5 | 0 | 0.0 | - | - |
| VA | 87 | 16 | 18.4 | 3 | 18.8 | -67 | 67 |
| WA | 33 | 9 | 27.3 | 3 | 33.3 | 17 | 67 |
| WV | 45 | 5 | 11.1 | 1 | 20.0 | -30 | 30 |
| WI | 405 | 78 | 19.3 | 7 | 9.0 | 4 | 56 |
| WY | 14 | 9 | 64.3 | 5 | 55.6 | -8 | 108 |
| US | 6,893 | 1,379 | 20.0 | 299 | 21.7 | 20 | 209 |

1/ Review screen appeared for cases when (reported acreage + 100) divided by (PRD + 100) was greater than 1.25 or less than 0.75.

**Table 3: Acreage PRD Use in August 1993 Agricultural Yield Survey, Soybean Planted Acres**

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ | | Cases Where Response Was Changed Given PRD | | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | | |
| AR | 256 | 70 | 27.3 | 14 | 20.0 | 237 | 431 |
| DE | 31 | 7 | 22.6 | 3 | 42.9 | 294 | 351 |
| FL | 20 | 7 | 35.0 | 0 | 0.0 | - | - |
| GA | 88 | 22 | 25.0 | 4 | 18.2 | -84 | 266 |
| IL | 506 | 67 | 13.2 | 15 | 22.4 | 67 | 198 |
| IN | 209 | 25 | 12.0 | 5 | 20.0 | 52 | 126 |
| IA | 692 | 74 | 10.7 | 17 | 23.0 | 95 | 197 |
| KS | 263 | 68 | 25.9 | 17 | 25.0 | -6 | 178 |
| KY | 134 | 24 | 17.9 | 4 | 16.7 | 207 | 219 |
| LA | 122 | 37 | 30.3 | 4 | 10.8 | 39 | 204 |
| MD | 47 | 11 | 23.4 | 3 | 27.3 | -20 | 100 |
| MI | 119 | 14 | 11.8 | 3 | 21.4 | 12 | 85 |
| MN | 516 | 75 | 14.5 | 10 | 13.3 | -775 | 1084 |
| MS | 194 | 47 | 24.2 | 12 | 25.5 | -293 | 699 |
| MO | 408 | 106 | 26.0 | 22 | 20.8 | 98 | 466 |
| NE | 455 | 67 | 14.7 | 25 | 37.3 | 33 | 209 |
| NJ | 34 | 7 | 20.6 | 0 | 0.0 | - | - |
| NC | 290 | 53 | 18.3 | 4 | 7.5 | 146 | 146 |
| ND | 63 | 8 | 12.7 | 4 | 50.0 | 738 | 773 |
| OH | 390 | 48 | 12.3 | 9 | 18.8 | 214 | 319 |
| OK | 29 | 14 | 48.3 | 3 | 21.4 | 212 | 212 |
| PA | 105 | 5 | 4.8 | 1 | 20.0 | -100 | 100 |
| SD | 364 | 142 | 39.0 | 7 | 4.9 | 55 | 103 |
| TN | 117 | 24 | 20.5 | 3 | 12.5 | -202 | 208 |
| TX | 23 | 8 | 34.8 | 3 | 37.5 | 310 | 310 |
| VA | 68 | 8 | 11.8 | 1 | 12.5 | 50 | 50 |
| WI | 153 | 17 | 11.1 | 0 | 0.0 | - | - |
| US | 5,696 | 1,055 | 18.5 | 193 | 18.3 | 31 | 335 |

1/ Review screen appeared for cases when (reported acreage + 100) divided by (PRD + 100) was greater than 1.25 or less than 0.75.

**Table 4: Difference in Ratios of May to March Reported, Winter Wheat Harvested Acres**

| State | May Expansions 1/ | | | Ratio of First / March Value | Ratio of Last / March Value | P - Value of Test in Difference in Ratios |
|---|---|---|---|---|---|---|
| | Using First Response | Using Last Response | Using March Value | | | |
| AL | 136,153 | 132,699 | 157,624 | 0.86 | 0.84 | 0.5477 |
| AZ | 54,486 | 55,925 | 73,858 | 0.74 | 0.76 | 0.2735 |
| AR | 1,323,996 | 1,362,619 | 1,364,371 | 0.97 | 1.00 | 0.3874 |
| CA | 1,487,028 | 1,592,256 | 1,821,387 | 0.82 | 0.87 | 0.3558 |
| CO | 3,016,512 | 3,136,760 | 2,910,565 | 1.04 | 1.08 | 0.1221 |
| DE | 77,162 | 75,192 | 80,378 | 0.96 | 0.94 | 0.2554 |
| FL | 34,721 | 34,721 | 21,570 | 1.61 | 1.61 | - |
| GA | 651,748 | 647,234 | 694,753 | 0.94 | 0.93 | 0.3083 |
| ID | 804,069 | 747,023 | 797,044 | 1.01 | 0.94 | 0.0880 |
| IL | 2,664,400 | 2,711,688 | 2,825,695 | 0.94 | 0.96 | 0.0972 |
| IN | 1,181,770 | 1,085,355 | 1,081,180 | 1.09 | 1.00 | 0.2173 |
| IA | 84,831 | 84,831 | 87,464 | 0.97 | 0.97 | - |
| KS | 11,114,409 | 11,562,998 | 11,615,762 | 0.96 | 1.00 | 0.0247 |
| KY | 631,059 | 627,411 | 643,894 | 0.98 | 0.97 | 0.8917 |
| LA | 175,088 | 189,848 | 210,331 | 0.83 | 0.90 | 0.3134 |
| MD | 184,856 | 183,274 | 198,887 | 0.93 | 0.92 | 0.7858 |
| MI | 774,601 | 760,647 | 815,804 | 0.95 | 0.93 | 0.4606 |
| MN | 25,269 | 27,871 | 20,022 | 1.26 | 1.39 | 0.2780 |
| MS | 469,812 | 463,052 | 565,877 | 0.83 | 0.82 | 0.5548 |
| MO | 2,616,332 | 2,596,534 | 2,687,394 | 0.97 | 0.97 | 0.8161 |
| MT | 2,968,072 | 3,042,552 | 2,976,835 | 1.00 | 1.02 | 0.3495 |
| NE | 3,841,166 | 3,846,613 | 3,821,018 | 1.01 | 1.01 | 0.3771 |
| NJ | 199,457 | 205,103 | 208,720 | 0.96 | 0.98 | 0.3634 |
| NM | 453,218 | 451,914 | 540,776 | 0.84 | 0.84 | 0.9163 |
| NY | 268,435 | 278,420 | 319,271 | 0.84 | 0.87 | 0.3758 |
| NC | 1,178,032 | 1,085,785 | 1,087,868 | 1.08 | 1.00 | 0.3635 |
| ND | 536,420 | 512,968 | 564,519 | 0.95 | 0.91 | 0.1931 |
| OH | 1,248,916 | 1,234,065 | 1,334,241 | 0.94 | 0.92 | 0.4986 |
| OK | 5,580,887 | 5,580,758 | 5,720,031 | 0.98 | 0.98 | 0.8815 |
| OR | 794,520 | 771,366 | 738,668 | 1.08 | 1.04 | 0.1065 |
| PA | 269,022 | 269,022 | 265,083 | 1.01 | 1.01 | - |
| SD | 2,659,149 | 2,587,686 | 2,643,955 | 1.01 | 0.98 | 0.7120 |
| TN | 524,292 | 534,311 | 525,881 | 1.00 | 1.02 | 0.3456 |
| TX | 8,085,640 | 8,642,987 | 9,711,414 | 0.83 | 0.89 | 0.6623 |
| UT | 127,756 | 173,857 | 207,067 | 0.62 | 0.84 | 0.0280 |
| VA | 464,968 | 459,741 | 444,859 | 1.05 | 1.03 | 0.6946 |
| WA | 1,899,954 | 1,904,185 | 1,936,686 | 0.98 | 0.98 | 0.5217 |
| WV | 13,543 | 13,670 | 11,702 | 1.16 | 1.17 | 0.3380 |
| WI | 213,685 | 193,819 | 223,960 | 0.95 | 0.87 | 0.3154 |
| WY | 511,738 | 378,166 | 416,844 | 1.23 | 0.91 | 0.3072 |

1/ The expansions do not cover the entire population since some strata were excluded from the survey. Furthermore, these missing strata prevent the calculation of an accurately weighted U.S. total.

**Table 5: Difference in Ratios of August to June Reported, Corn Harvested Acres**

| State | August Expansions 1/ | | | Ratio of First / June Value | Ratio of Last / June Value | P - Value of Test in Difference in Ratios |
|---|---|---|---|---|---|---|
| | Using First Response | Using Last Response | Using June Value | | | |
| AZ | 18,466 | 17,278 | 18,371 | 1.01 | 0.94 | 0.2617 |
| AR | 57,430 | 58,949 | 61,164 | 0.94 | 0.96 | 0.3243 |
| CA | 72,682 | 70,765 | 75,356 | 0.96 | 0.94 | 0.8334 |
| CO | 562,832 | 556,588 | 542,793 | 1.04 | 1.03 | 0.5178 |
| DE | 75,442 | 90,080 | 78,371 | 0.96 | 1.15 | 0.1717 |
| FL | 50,216 | 47,916 | 39,242 | 1.28 | 1.22 | 0.3118 |
| GA | 359,323 | 345,698 | 400,459 | 0.90 | 0.86 | 0.1196 |
| ID | 58,676 | 57,589 | 29,144 | 2.01 | 1.98 | 0.2816 |
| IL | 8,417,467 | 8,366,533 | 8,538,702 | 0.99 | 0.98 | 0.3556 |
| IN | 3,489,136 | 3,511,461 | 3,518,649 | 0.99 | 1.00 | 0.3144 |
| IA | 9,036,847 | 8,898,775 | 9,690,235 | 0.93 | 0.92 | 0.0361 |
| KS | 1,307,662 | 1,284,493 | 1,451,256 | 0.90 | 0.89 | 0.3024 |
| KY | 836,878 | 825,998 | 826,584 | 1.01 | 1.00 | 0.1153 |
| LA | 196,941 | 191,018 | 192,953 | 1.02 | 0.99 | 0.3769 |
| MD | 255,909 | 258,215 | 245,192 | 1.04 | 1.05 | 0.8981 |
| MI | 1,770,495 | 1,722,179 | 1,740,254 | 1.02 | 0.99 | 0.1931 |
| MN | 3,858,250 | 3,751,015 | 4,423,262 | 0.87 | 0.85 | 0.0205 |
| MS | 153,427 | 136,176 | 139,353 | 1.10 | 0.98 | 0.0223 |
| MO | 1,695,269 | 1,643,470 | 1,880,316 | 0.90 | 0.87 | 0.2467 |
| MT | 26,860 | 18,569 | 21,973 | 1.22 | 0.85 | 0.0137 |
| NE | 5,907,582 | 6,001,888 | 6,218,119 | 0.95 | 0.97 | 0.0719 |
| NJ | 65,332 | 70,153 | 57,584 | 1.13 | 1.22 | 0.3111 |
| NM | 31,564 | 31,420 | 27,867 | 1.13 | 1.13 | 0.4481 |
| NY | 359,494 | 354,666 | 372,605 | 0.96 | 0.95 | 0.1523 |
| NC | 706,587 | 714,946 | 713,284 | 0.99 | 1.00 | 0.4151 |
| ND | 231,646 | 237,524 | 446,872 | 0.52 | 0.53 | 0.6206 |
| OH | 2,582,751 | 2,571,830 | 2,478,623 | 1.04 | 1.04 | 0.7929 |
| OK | 195,233 | 130,536 | 113,089 | 1.73 | 1.15 | 0.2347 |
| OR | 5,085 | 6,419 | 7,590 | 0.67 | 0.85 | 0.5481 |
| PA | 853,922 | 820,764 | 743,646 | 1.15 | 1.10 | 0.0372 |
| SD | 1,845,556 | 1,876,628 | 2,521,735 | 0.73 | 0.74 | 0.3398 |
| TN | 422,797 | 406,261 | 390,590 | 1.08 | 1.04 | 0.1393 |
| TX | 1,130,160 | 1,187,757 | 1,133,301 | 1.00 | 1.05 | 0.1931 |
| UT | 14,027 | 14,027 | 18,060 | 0.78 | 0.78 | - |
| VA | 227,957 | 214,565 | 210,319 | 1.08 | 1.02 | 0.1354 |
| WA | 44,132 | 43,786 | 42,195 | 1.05 | 1.04 | 0.9213 |
| WV | 32,413 | 30,510 | 37,045 | 0.87 | 0.82 | 0.1497 |
| WI | 2,062,225 | 2,069,686 | 2,465,370 | 0.84 | 0.84 | 0.4280 |
| WY | 72,483 | 72,432 | 66,133 | 1.10 | 1.10 | 0.9921 |

1/ The expansions do not cover the entire population since some strata were excluded from the survey. Furthermore, these missing strata prevent the calculation of an accurately weighted U.S. total.

**Table 6: Difference in Ratios of August to June Reported, Soybean Planted Acres**

| State | August Expansions 1/ | | | Ratio of First / June Value | Ratio of Last / June Value | P - Value of Test in Difference in Ratios |
|---|---|---|---|---|---|---|
| | Using First Response | Using Last Response | Using June Value | | | |
| AR | 2,232,595 | 2,340,359 | 2,280,209 | 0.98 | 1.03 | 0.1265 |
| DE | 140,537 | 153,531 | 157,654 | 0.89 | 0.97 | 0.2811 |
| FL | 44,444 | 44,444 | 41,348 | 1.07 | 1.07 | - |
| GA | 288,603 | 281,703 | 328,258 | 0.88 | 0.86 | 0.4908 |
| IL | 7,775,327 | 7,786,059 | 7,797,449 | 1.00 | 1.00 | 0.6041 |
| IN | 2,977,117 | 3,006,158 | 3,062,459 | 0.97 | 0.98 | 0.2738 |
| IA | 7,027,145 | 7,100,548 | 7,054,581 | 1.00 | 1.01 | 0.1252 |
| KS | 1,461,021 | 1,491,035 | 1,489,953 | 0.98 | 1.00 | 0.1228 |
| KY | 761,439 | 786,051 | 816,952 | 0.93 | 0.96 | 0.0775 |
| LA | 937,522 | 953,786 | 989,248 | 0.95 | 0.96 | 0.5100 |
| MD | 300,953 | 295,687 | 337,284 | 0.89 | 0.88 | 0.3433 |
| MI | 994,938 | 989,049 | 1,028,415 | 0.97 | 0.96 | 0.6096 |
| MN | 4,660,305 | 3,878,248 | 3,938,210 | 1.18 | 0.98 | 0.3475 |
| MS | 1,263,415 | 1,232,568 | 1,226,784 | 1.03 | 1.00 | 0.2004 |
| MO | 3,412,442 | 3,445,367 | 3,647,130 | 0.94 | 0.94 | 0.6953 |
| NE | 2,025,308 | 2,021,574 | 2,044,793 | 0.99 | 0.99 | 0.9511 |
| NJ | 86,241 | 86,241 | 80,400 | 1.07 | 1.07 | - |
| NC | 955,770 | 963,615 | 1,026,915 | 0.93 | 0.94 | 0.1498 |
| ND | 519,411 | 584,547 | 612,358 | 0.85 | 0.95 | 0.0853 |
| OH | 2,825,541 | 2,855,776 | 2,852,508 | 0.99 | 1.00 | 0.2456 |
| OK | 301,319 | 314,977 | 310,955 | 0.97 | 1.01 | 0.2025 |
| PA | 225,121 | 223,955 | 219,543 | 1.03 | 1.02 | 0.2965 |
| SD | 1,425,819 | 1,425,145 | 1,825,994 | 0.78 | 0.78 | 0.9152 |
| TN | 792,531 | 785,755 | 783,033 | 1.01 | 1.00 | 0.2566 |
| TX | 262,603 | 271,815 | 298,907 | 0.88 | 0.91 | 0.1616 |
| VA | 281,042 | 283,020 | 298,816 | 0.94 | 0.95 | 0.3150 |
| WI | 527,436 | 527,808 | 547,561 | 0.96 | 0.96 | 0.2518 |

1/ The expansions do not cover the entire population since some strata were excluded from the survey. Furthermore, these missing strata prevent the calculation of an accurately weighted U.S. total.

Table 7: **Yield PRD Use in June 1993 Agricultural Yield Survey, Winter Wheat Yield**

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ No. | Percent | Cases Where Response Was Changed Given PRD No. | Percent | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| **All Winter Wheat, Combined Irrigated and Nonirrigated** | | | | | | | |
| AR | 278 | 65 | 23.4 | 5 | 7.7 | -9 | 13 |
| CO | 160 | 35 | 21.9 | 2 | 5.7 | 14 | 27 |
| GA | 65 | 15 | 23.1 | 4 | 26.7 | -1 | 9 |
| ID | 167 | 20 | 12.0 | 2 | 10.0 | 3 | 13 |
| IL | 167 | 31 | 18.6 | 0 | 0.0 | - | - |
| IN | 212 | 30 | 14.2 | 15 | 50.0 | -2 | 12 |
| KS | 488 | 112 | 23.0 | 4 | 3.6 | 10 | 15 |
| KY | 102 | 21 | 20.6 | 4 | 19.0 | 10 | 25 |
| MI | 135 | 22 | 16.3 | 1 | 4.5 | -43 | 43 |
| MS | 85 | 16 | 18.8 | 4 | 25.0 | 5 | 15 |
| MO | 182 | 41 | 22.5 | 3 | 7.3 | -6 | 36 |
| MT | 264 | 52 | 19.7 | 2 | 3.8 | -23 | 23 |
| NE | 235 | 40 | 17.0 | 0 | 0.0 | - | - |
| NC | 171 | 43 | 25.1 | 8 | 18.6 | -1 | 12 |
| OH | 413 | 60 | 14.5 | 8 | 13.3 | 11 | 19 |
| OK | 394 | 113 | 28.7 | 9 | 8.0 | 0 | 9 |
| OR | 132 | 9 | 6.8 | 2 | 22.2 | 58 | 58 |
| SD | 108 | 24 | 22.2 | 3 | 12.5 | 8 | 26 |
| TN | 78 | 17 | 21.8 | 1 | 5.9 | 40 | 40 |
| TX | 406 | 99 | 24.4 | 8 | 8.1 | 14 | 18 |
| WA | 137 | 12 | 8.8 | 2 | 16.7 | 36 | 36 |
| Total | 4,379 | 877 | 20.0 | 87 | 9.9 | 5 | 18 |
| **Winter Wheat, Irrigated Only** | | | | | | | |
| CO | 36 | 8 | 22.2 | 1 | 12.5 | 40 | 40 |
| ID | 67 | 8 | 11.9 | 0 | 0.0 | - | - |
| MT | 5 | 4 | 80.0 | 1 | 25.0 | -35 | 35 |
| OR | 25 | 4 | 16.0 | 1 | 25.0 | 90 | 90 |
| TX | 98 | 23 | 23.5 | 2 | 8.7 | 23 | 23 |
| WA | 22 | 3 | 13.6 | 1 | 33.3 | 62 | 62 |
| Total | 253 | 50 | 19.8 | 6 | 12.0 | 34 | 45 |
| **Winter Wheat, Nonirrigated Only** | | | | | | | |
| CO | 124 | 27 | 21.8 | 1 | 3.7 | -13 | 13 |
| ID | 100 | 12 | 12.0 | 2 | 16.7 | 3 | 13 |
| MT | 259 | 48 | 18.5 | 1 | 2.1 | -10 | 10 |
| OR | 107 | 5 | 4.7 | 1 | 20.0 | 25 | 25 |
| TX | 308 | 76 | 24.7 | 6 | 7.9 | 12 | 17 |
| WA | 115 | 9 | 7.8 | 1 | 11.1 | 10 | 10 |
| Total | 1,013 | 177 | 17.5 | 12 | 6.8 | 7 | 15 |

1/ Review screen appeared for cases when reported yield divided by the prior month yield was greater than 1.25 or less than 0.75.

**Table 8: Yield PRD Use in July 1993 Agricultural Yield Survey, Winter Wheat Yield**

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ No. | Percent | Cases Where Response Was Changed Given PRD No. | Percent | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| **All Winter Wheat, Combined Irrigated and Nonirrigated** | | | | | | | |
| AR | 288 | 112 | 38.9 | 17 | 15.2 | 2 | 22 |
| CO | 201 | 41 | 20.4 | 2 | 4.9 | 33 | 33 |
| GA | 105 | 31 | 29.5 | 1 | 3.2 | 24 | 24 |
| ID | 163 | 25 | 15.3 | 2 | 8.0 | 18 | 32 |
| IL | 234 | 32 | 13.7 | 3 | 9.4 | 45 | 45 |
| IN | 201 | 40 | 19.9 | 5 | 12.5 | 50 | 50 |
| KS | 462 | 164 | 35.5 | 9 | 5.5 | 3 | 12 |
| KY | 162 | 19 | 11.7 | 8 | 42.1 | 26 | 31 |
| MI | 140 | 20 | 14.3 | 1 | 5.0 | -25 | 25 |
| MS | 80 | 17 | 21.3 | 2 | 11.8 | 18 | 22 |
| MO | 232 | 48 | 20.7 | 4 | 8.3 | -1 | 11 |
| MT | 272 | 59 | 21.7 | 3 | 5.1 | 12 | 22 |
| NE | 316 | 84 | 26.6 | 11 | 13.1 | 9 | 16 |
| NC | 221 | 59 | 26.7 | 11 | 18.6 | 14 | 25 |
| OH | 404 | 36 | 8.9 | 8 | 22.2 | -9 | 27 |
| OK | 450 | 150 | 33.3 | 9 | 6.0 | 5 | 14 |
| OR | 190 | 15 | 7.9 | 1 | 6.7 | -5 | 5 |
| SD | 160 | 25 | 15.6 | 3 | 12.0 | 18 | 22 |
| TN | 97 | 25 | 25.8 | 0 | 0.0 | - | - |
| TX | 405 | 144 | 35.6 | 8 | 5.6 | 19 | 19 |
| WA | 170 | 18 | 10.6 | 4 | 22.2 | 15 | 30 |
| Total | 4,953 | 1,164 | 23.5 | 112 | 9.6 | 12 | 23 |
| **Winter Wheat, Irrigated Only** | | | | | | | |
| CO | 47 | 6 | 12.8 | 0 | 0.0 | - | - |
| ID | 62 | 6 | 9.7 | 0 | 0.0 | - | - |
| MT | 7 | 1 | 14.3 | 1 | 100.0 | -10 | 10 |
| OR | 39 | 1 | 2.6 | 0 | 0.0 | - | - |
| TX | 84 | 29 | 34.5 | 1 | 3.4 | 21 | 21 |
| WA | 27 | 5 | 18.5 | 1 | 20.0 | -30 | 30 |
| Total | 266 | 48 | 18.0 | 3 | 6.3 | -6 | 20 |
| **Winter Wheat, Nonirrigated Only** | | | | | | | |
| CO | 154 | 35 | 22.7 | 2 | 5.7 | 33 | 33 |
| ID | 101 | 19 | 18.8 | 2 | 10.5 | 18 | 32 |
| MT | 265 | 58 | 21.9 | 2 | 3.4 | 23 | 28 |
| OR | 151 | 14 | 9.3 | 1 | 7.1 | -5 | 5 |
| TX | 321 | 115 | 35.8 | 7 | 6.1 | 18 | 18 |
| WA | 143 | 13 | 9.1 | 3 | 23.1 | 30 | 30 |
| Total | 1,135 | 254 | 22.4 | 17 | 6.7 | 21 | 24 |

1/ Review screen appeared for cases when reported yield divided by the prior month yield was greater than 1.25 or less than 0.75.

Table 9 : **Yield PRD Use in September 1993 Agricultural Yield Survey, Corn Yield**

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ No. | Percent | Cases Where Response Was Changed Given PRD No. | Percent | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| **All Corn, Combined Irrigated and Nonirrigated** | | | | | | | |
| AL | 68 | 28 | 41.2 | 3 | 10.7 | 23 | 23 |
| DE | 46 | 20 | 43.5 | 4 | 20.0 | -18 | 73 |
| GA | 183 | 64 | 35.0 | 3 | 4.7 | -5 | 5 |
| IL | 416 | 35 | 8.4 | 5 | 14.3 | -58 | 58 |
| IN | 449 | 45 | 10.0 | 10 | 22.2 | -11 | 34 |
| IA | 535 | 92 | 17.2 | 10 | 10.9 | 4 | 37 |
| KS | 217 | 45 | 20.7 | 1 | 2.2 | 100 | 100 |
| KY | 341 | 43 | 12.6 | 4 | 9.3 | -23 | 33 |
| MD | 79 | 27 | 34.2 | 5 | 18.5 | -33 | 41 |
| MI | 258 | 26 | 10.1 | 4 | 15.4 | 26 | 44 |
| MN | 675 | 176 | 26.1 | 4 | 2.3 | -5 | 8 |
| MO | 281 | 42 | 14.9 | 0 | 0.0 | - | - |
| MT | 0 | 10 | - | 0 | 0.0 | - | - |
| NE | 808 | 155 | 19.2 | 10 | 6.5 | -52 | 60 |
| NY | 104 | 22 | 21.2 | 1 | 4.5 | 20 | 20 |
| NC | 362 | 172 | 47.5 | 13 | 7.6 | 6 | 23 |
| ND | 82 | 39 | 47.6 | 0 | 0.0 | - | - |
| OH | 807 | 227 | 28.1 | 23 | 10.1 | 67 | 81 |
| PA | 341 | 89 | 26.1 | 4 | 4.5 | -30 | 38 |
| SD | 491 | 126 | 25.7 | 5 | 4.0 | -14 | 19 |
| TN | 219 | 52 | 23.7 | 8 | 15.4 | -73 | 73 |
| TX | 247 | 55 | 22.3 | 4 | 7.3 | 10 | 60 |
| VA | 142 | 55 | 38.7 | 2 | 3.6 | 25 | 45 |
| WI | 549 | 150 | 27.3 | 2 | 1.3 | -18 | 18 |
| Total | 7,700 | 1,795 | 23.3 | 125 | 7.0 | -0 | 48 |
| **Corn, Irrigated Only** | | | | | | | |
| DE | 12 | 3 | 25.0 | 1 | 33.3 | 110 | 110 |
| KS | 89 | 14 | 15.7 | 0 | 0.0 | - | - |
| MD | 10 | 2 | 20.0 | 0 | 0.0 | - | - |
| NE | 441 | 75 | 17.0 | 6 | 8.0 | -68 | 81 |
| TX | 100 | 22 | 22.0 | 1 | 4.5 | 56 | 56 |
| Total | 652 | 124 | 19.0 | 8 | 6.5 | -30 | 82 |
| **Corn, Nonirrigated Only** | | | | | | | |
| DE | 34 | 17 | 50.0 | 3 | 17.6 | -60 | 60 |
| KS | 128 | 31 | 24.2 | 1 | 3.2 | 100 | 100 |
| MD | 69 | 25 | 36.2 | 5 | 20.0 | -33 | 41 |
| NE | 367 | 80 | 21.8 | 4 | 5.0 | -29 | 29 |
| TX | 147 | 33 | 22.4 | 3 | 9.1 | -6 | 61 |
| Total | 745 | 188 | 25.2 | 16 | 8.5 | -24 | 49 |

1/ Review screen appeared for cases when reported yield divided by the prior month yield was greater than 1.25 or less than 0.75.

Table 10: Yield PRD Use in September 1993 Agricultural Yield Survey, Soybean Yield

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ No. | Percent | Cases Where Response Was Changed Given PRD No. | Percent | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| **All Soybeans, Combined Irrigated and Nonirrigated, Combined Single and Double** | | | | | | | |
| AL | 38 | 14 | 36.8 | 0 | 0.0 | - | - |
| AR | 590 | 118 | 20.0 | 12 | 10.2 | -6 | 7 |
| DE | 45 | 17 | 37.8 | 3 | 17.6 | -4 | 9 |
| GA | 95 | 48 | 50.5 | 1 | 2.1 | 5 | 5 |
| IL | 479 | 67 | 14.0 | 8 | 11.9 | -2 | 15 |
| IN | 427 | 41 | 9.6 | 7 | 17.1 | -2 | 7 |
| IA | 468 | 76 | 16.2 | 8 | 10.5 | -2 | 11 |
| KS | 235 | 67 | 28.5 | 2 | 3.0 | 0 | 5 |
| KY | 233 | 42 | 18.0 | 2 | 4.8 | -7 | 7 |
| LA | 144 | 47 | 32.6 | 0 | 0.0 | - | - |
| MD | 64 | 27 | 42.2 | 4 | 14.8 | -5 | 13 |
| MI | 182 | 14 | 7.7 | 2 | 14.3 | 22 | 22 |
| MN | 637 | 161 | 25.3 | 6 | 3.7 | -2 | 15 |
| MS | 283 | 53 | 18.7 | 4 | 7.5 | 17 | 18 |
| MO | 406 | 68 | 16.7 | 2 | 2.9 | -8 | 8 |
| NE | 512 | 104 | 20.3 | 5 | 4.8 | 3 | 11 |
| NC | 396 | 174 | 43.9 | 10 | 5.7 | 1 | 24 |
| ND | 108 | 39 | 36.1 | 1 | 2.6 | -5 | 5 |
| OH | 733 | 209 | 28.5 | 18 | 8.6 | 17 | 26 |
| SD | 350 | 98 | 28.0 | 3 | 3.1 | -10 | 10 |
| TN | 211 | 64 | 30.3 | 7 | 10.9 | 2 | 12 |
| TX | 38 | 20 | 52.6 | 0 | 0.0 | - | - |
| VA | 115 | 53 | 46.1 | 2 | 3.8 | -7 | 7 |
| WI | 240 | 52 | 21.7 | 1 | 1.9 | 15 | 15 |
| Total | 7,029 | 1,673 | 23.8 | 108 | 6.5 | 2 | 15 |
| **Soybeans, Double Crop Only** | | | | | | | |
| IL | 70 | 22 | 31.4 | 3 | 13.6 | -11 | 11 |
| MO | 71 | 17 | 23.9 | 0 | 0.0 | - | - |
| Total | 141 | 39 | 27.7 | 3 | 7.7 | -11 | 11 |
| **Soybeans, Single Crop Only** | | | | | | | |
| IL | 409 | 45 | 11.0 | 5 | 11.1 | 3 | 17 |
| MO | 335 | 51 | 15.2 | 2 | 3.9 | -8 | 8 |
| Total | 744 | 96 | 12.9 | 7 | 7.3 | 0 | 14 |
| **Soybeans, Irrigated Only** | | | | | | | |
| KS | 34 | 6 | 17.6 | 0 | 0.0 | - | - |
| NE | 197 | 42 | 21.3 | 2 | 4.8 | 0 | 5 |
| Total | 231 | 48 | 20.8 | 2 | 4.2 | 0 | 5 |
| **Soybeans, Nonirrigated Only** | | | | | | | |
| KS | 201 | 61 | 30.3 | 2 | 3.3 | 0 | 5 |
| NE | 315 | 62 | 19.7 | 3 | 4.8 | 5 | 15 |
| Total | 516 | 123 | 23.8 | 5 | 4.1 | 3 | 11 |

1/ Review screen appeared for cases when reported yield divided by the prior month yield was greater than 1.25 or less than 0.75.

**Table 11: Yield PRD Use in October 1993 Agricultural Yield Survey, Corn Yield**

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ No. | Cases Where Response Was Outside PRD Limits1/ Percent | Cases Where Response Was Changed Given PRD No. | Cases Where Response Was Changed Given PRD Percent | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| **All Corn, Combined Irrigated and Nonirrigated** | | | | | | | |
| AL | 76 | 31 | 40.8 | 1 | 3.2 | 80 | 80 |
| CO | 181 | 37 | 20.4 | 2 | 5.4 | -60 | 120 |
| DE | 68 | 25 | 36.8 | 2 | 8.0 | -20 | 20 |
| GA | 204 | 77 | 37.7 | 4 | 5.2 | -18 | 18 |
| IL | 442 | 38 | 8.6 | 5 | 13.2 | 30 | 56 |
| IN | 468 | 37 | 7.9 | 16 | 43.2 | -36 | 48 |
| IA | 488 | 67 | 13.7 | 5 | 7.5 | -8 | 40 |
| KS | 131 | 27 | 20.6 | 0 | 0.0 | - | - |
| KY | 352 | 54 | 15.3 | 2 | 3.7 | -10 | 10 |
| MD | 91 | 34 | 37.4 | 11 | 32.4 | 1 | 46 |
| MI | 312 | 19 | 6.1 | 2 | 10.5 | 5 | 15 |
| MN | 529 | 140 | 26.5 | 5 | 3.6 | 6 | 26 |
| MO | 237 | 50 | 21.1 | 1 | 2.0 | 40 | 40 |
| MT | 0 | - | - | 0 | - | - | - |
| NE | 726 | 113 | 15.6 | 3 | 2.7 | -4 | 46 |
| NV | 0 | - | - | 0 | - | - | - |
| NY | 98 | 15 | 15.3 | 1 | 6.7 | -20 | 20 |
| NC | 339 | 164 | 48.4 | 8 | 4.9 | -11 | 22 |
| ND | 90 | 46 | 51.1 | 1 | 2.2 | -10 | 10 |
| OH | 823 | 126 | 15.3 | 22 | 17.5 | 52 | 67 |
| PA | 357 | 59 | 16.5 | 8 | 13.6 | -17 | 73 |
| SD | 516 | 131 | 25.4 | 4 | 3.1 | -21 | 21 |
| TN | 223 | 62 | 27.8 | 8 | 12.9 | -18 | 35 |
| TX | 264 | 153 | 58.0 | 4 | 2.6 | 40 | 89 |
| VA | 141 | 39 | 27.7 | 1 | 2.6 | -5 | 5 |
| WV | 0 | 52 | - | 0 | 0.0 | - | - |
| WI | 514 | 122 | 23.7 | 2 | 1.6 | 30 | 65 |
| Total | 7,670 | 1,718 | 22.4 | 118 | 6.9 | 3 | 48 |
| **Corn, Irrigated Only** | | | | | | | |
| CO | 152 | 31 | 20.4 | 0 | 0.0 | - | - |
| DE | 14 | 7 | 50.0 | 0 | 0.0 | - | - |
| KS | 60 | 9 | 15.0 | 0 | 0.0 | - | - |
| MD | 10 | 5 | 50.0 | 1 | 20.0 | 75 | 75 |
| NE | 404 | 57 | 14.1 | 2 | 3.5 | 10 | 55 |
| TX | 110 | 32 | 29.1 | 3 | 9.4 | 37 | 102 |
| Total | 750 | 141 | 18.8 | 6 | 4.3 | 34 | 82 |
| **Corn, Nonirrigated Only** | | | | | | | |
| CO | 29 | 6 | 20.7 | 2 | 33.3 | -60 | 120 |
| DE | 54 | 18 | 33.3 | 2 | 11.1 | -20 | 20 |
| KS | 71 | 18 | 25.4 | 0 | 0.0 | - | - |
| MD | 81 | 29 | 35.8 | 10 | 34.5 | -6 | 43 |
| NE | 322 | 56 | 17.4 | 1 | 1.8 | -30 | 30 |
| TX | 154 | 121 | 78.6 | 1 | 0.8 | 49 | 49 |
| Total | 711 | 248 | 34.9 | 16 | 6.5 | -13 | 49 |

1/ Review screen appeared for cases when reported yield divided by the prior month yield was greater than 1.25 or less than 0.75.

Table 12: Yield PRD Use in October 1993 Agricultural Yield Survey, Soybeans Yield

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ No. | Percent | Cases Where Response Was Changed Given PRD No. | Percent | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| **All Soybeans, Combined Irrigated and Nonirrigated, Combined Single and Double Crop** | | | | | | | |
| AL | 46 | 11 | 23.9 | 0 | 0.0 | - | - |
| AR | 557 | 118 | 21.2 | 11 | 9.3 | -3 | 16 |
| DE | 67 | 19 | 28.4 | 3 | 15.8 | -17 | 17 |
| GA | 119 | 44 | 37.0 | 4 | 9.1 | -2 | 4 |
| IL | 497 | 67 | 13.5 | 3 | 4.5 | 15 | 18 |
| IN | 452 | 47 | 10.4 | 16 | 34.0 | -26 | 38 |
| IA | 418 | 44 | 10.5 | 3 | 6.8 | -11 | 11 |
| KS | 147 | 40 | 27.2 | 2 | 5.0 | -5 | 5 |
| KY | 264 | 37 | 14.0 | 1 | 2.7 | -8 | 8 |
| LA | 121 | 38 | 31.4 | 3 | 7.9 | -4 | 4 |
| MD | 72 | 26 | 36.1 | 7 | 26.9 | -1 | 12 |
| MI | 209 | 15 | 7.2 | 1 | 6.7 | -10 | 10 |
| MN | 539 | 122 | 22.6 | 6 | 4.9 | -17 | 19 |
| MS | 264 | 55 | 20.8 | 4 | 7.3 | -6 | 11 |
| MO | 319 | 74 | 23.2 | 3 | 4.1 | -10 | 10 |
| NE | 440 | 103 | 23.4 | 3 | 2.9 | -0 | 14 |
| NC | 375 | 158 | 42.1 | 10 | 6.3 | -10 | 17 |
| ND | 116 | 51 | 44.0 | 3 | 5.9 | -11 | 11 |
| OH | 749 | 131 | 17.5 | 16 | 12.2 | 16 | 25 |
| SD | 342 | 96 | 28.1 | 6 | 6.3 | -1 | 11 |
| TN | 218 | 46 | 21.1 | 7 | 15.2 | 4 | 14 |
| TX | 44 | 19 | 43.2 | 2 | 10.5 | 50 | 50 |
| VA | 81 | 34 | 42.0 | 2 | 5.9 | -5 | 5 |
| WI | 216 | 40 | 18.5 | 4 | 10.0 | 17 | 18 |
| Total | 6,672 | 1,435 | 21.5 | 120 | 8.4 | -3 | 19 |
| **Soybeans, Double Crop Only** | | | | | | | |
| IL | 62 | 22 | 35.5 | 0 | 0.0 | - | - |
| MO | 56 | 20 | 35.7 | 0 | 0.0 | - | - |
| Total | 118 | 42 | 35.6 | 0 | 0.0 | - | - |
| **Soybeans, Single Crop Only** | | | | | | | |
| IL | 435 | 45 | 10.3 | 3 | 6.7 | 15 | 18 |
| MO | 263 | 54 | 20.5 | 3 | 5.6 | -10 | 10 |
| Total | 698 | 99 | 14.2 | 6 | 6.1 | 2 | 14 |
| **Soybeans, Irrigated Only** | | | | | | | |
| KS | 20 | 6 | 30.0 | 0 | 0.0 | - | - |
| NE | 174 | 39 | 22.4 | 1 | 2.6 | 20 | 20 |
| Total | 194 | 45 | 23.2 | 1 | 2.2 | 20 | 20 |
| **Soybeans, Nonirrigated Only** | | | | | | | |
| KS | 127 | 34 | 26.8 | 2 | 5.9 | -5 | 5 |
| NE | 266 | 64 | 24.1 | 2 | 3.1 | -11 | 11 |
| Total | 393 | 98 | 24.9 | 4 | 4.1 | -8 | 8 |

1/ Review screen appeared for cases when reported yield divided by the prior month yield was greater than 1.25 or less than 0.75.

Table 13: **Yield PRD Use in November 1993 Agricultural Yield Survey, Corn Yield**

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ | | Cases Where Response Was Changed Given PRD | | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | | |
| **All Corn, Combined Irrigated and Nonirrigated** | | | | | | | |
| AL | 101 | 40 | 39.6 | 3 | 7.5 | 33 | 50 |
| CO | 203 | 43 | 21.2 | 1 | 2.3 | 90 | 90 |
| DE | 51 | 19 | 37.3 | 1 | 5.3 | -15 | 15 |
| GA | 210 | 121 | 57.6 | 3 | 2.5 | -3 | 4 |
| IL | 588 | 38 | 6.5 | 3 | 7.9 | -23 | 23 |
| IN | 429 | 57 | 13.3 | 1 | 1.8 | 99 | 99 |
| IA | 463 | 95 | 20.5 | 4 | 4.2 | -17 | 52 |
| KS | 135 | 40 | 29.6 | 0 | 0.0 | - | - |
| KY | 331 | 41 | 12.4 | 2 | 4.9 | 19 | 39 |
| MD | 98 | 33 | 33.7 | 7 | 21.2 | -4 | 46 |
| MI | 340 | 31 | 9.1 | 2 | 6.5 | 48 | 73 |
| MN | 450 | 119 | 26.4 | 5 | 4.2 | -33 | 33 |
| MO | 270 | 53 | 19.6 | 3 | 5.7 | -14 | 14 |
| MT | 0 | - | - | 0 | - | - | - |
| NE | 818 | 198 | 24.2 | 10 | 5.1 | 14 | 25 |
| NY | 105 | 25 | 23.8 | 3 | 12.0 | 6 | 54 |
| NC | 416 | 208 | 50.0 | 5 | 2.4 | -1 | 25 |
| ND | 76 | 32 | 42.1 | 0 | 0.0 | - | - |
| OH | 819 | 152 | 18.6 | 41 | 27.0 | 50 | 76 |
| PA | 359 | 50 | 13.9 | 5 | 10.0 | 41 | 49 |
| SD | 510 | 153 | 30.0 | 8 | 5.2 | 12 | 23 |
| TN | 221 | 74 | 33.5 | 6 | 8.1 | 19 | 41 |
| TX | 255 | 196 | 76.9 | 2 | 1.0 | -30 | 30 |
| VA | 159 | 67 | 42.1 | 2 | 3.0 | -45 | 45 |
| WI | 560 | 131 | 23.4 | 5 | 3.8 | 16 | 28 |
| Total | 7,967 | 2,016 | 25.3 | 122 | 6.1 | 21 | 49 |
| **Corn, Irrigated Only** | | | | | | | |
| CO | 172 | 30 | 17.4 | 0 | 0.0 | - | - |
| DE | 12 | 2 | 16.7 | 0 | 0.0 | - | - |
| KS | 60 | 16 | 26.7 | 0 | 0.0 | - | - |
| MD | 11 | 4 | 36.4 | 0 | 0.0 | - | - |
| NE | 455 | 101 | 22.2 | 5 | 5.0 | 16 | 18 |
| TX | 108 | 63 | 58.3 | 2 | 3.2 | -30 | 30 |
| Total | 818 | 216 | 26.4 | 7 | 3.2 | 3 | 22 |
| **Corn, Nonirrigated Only** | | | | | | | |
| CO | 31 | 13 | 41.9 | 1 | 7.7 | 90 | 90 |
| DE | 39 | 17 | 43.6 | 1 | 5.9 | -15 | 15 |
| KS | 75 | 24 | 32.0 | 0 | 0.0 | - | - |
| MD | 87 | 29 | 33.3 | 7 | 24.1 | -4 | 46 |
| NE | 363 | 97 | 26.7 | 5 | 5.2 | 11 | 32 |
| TX | 147 | 133 | 90.5 | 0 | 0.0 | - | - |
| Total | 742 | 313 | 42.2 | 14 | 4.5 | 7 | 42 |

1/ Review screen appeared for cases when reported yield divided by the prior month yield was greater than 1.25 or less than 0.75.

**Table 14: Yield PRD Use in November 1993 Agricultural Yield Survey, Soybeans Yield**

| State | Number of Cases Reporting Crop | Cases Where Response Was Outside PRD Limits1/ | | Cases Where Response Was Changed Given PRD | | Average Change Made in Response Due to PRD | Average of Absolute Change Made in Response Due to PRD |
|---|---|---|---|---|---|---|---|
| | | No. | Percent | No. | Percent | | |
| **All Soybeans, Combined Irrigated and Nonirrigated, Combined Single and Double Crop** | | | | | | | |
| AL | 56 | 13 | 23.2 | 2 | 15.4 | 28 | 28 |
| AR | 540 | 119 | 22.0 | 10 | 8.4 | -16 | 20 |
| CO | 0 | - | - | 0 | - | - | - |
| DE | 45 | 21 | 46.7 | 0 | 0.0 | - | - |
| GA | 131 | 43 | 32.8 | 0 | 0.0 | - | - |
| IL | 687 | 80 | 11.6 | 4 | 5.0 | -1 | 7 |
| IN | 436 | 71 | 16.3 | 0 | 0.0 | - | - |
| IA | 400 | 81 | 20.3 | 3 | 3.7 | 11 | 18 |
| KS | 165 | 66 | 40.0 | 1 | 1.5 | -30 | 30 |
| KY | 242 | 38 | 15.7 | 2 | 5.3 | -8 | 8 |
| LA | 114 | 40 | 35.1 | 4 | 10.0 | 9 | 9 |
| MD | 73 | 24 | 32.9 | 3 | 12.5 | -6 | 9 |
| MI | 236 | 30 | 12.7 | 1 | 3.3 | -10 | 10 |
| MN | 496 | 150 | 30.2 | 3 | 2.0 | -1 | 11 |
| MS | 305 | 50 | 16.4 | 2 | 4.0 | -5 | 5 |
| MO | 375 | 88 | 23.5 | 1 | 1.1 | -8 | 8 |
| NE | 539 | 143 | 26.5 | 11 | 7.7 | 1 | 17 |
| NC | 444 | 130 | 29.3 | 15 | 11.5 | 3 | 9 |
| ND | 107 | 42 | 39.3 | 1 | 2.4 | 1 | 1 |
| OH | 767 | 148 | 19.3 | 31 | 20.9 | 12 | 25 |
| SD | 379 | 129 | 34.0 | 0 | 0.0 | - | - |
| TN | 209 | 46 | 22.0 | 7 | 15.2 | 5 | 14 |
| TX | 44 | 24 | 54.5 | 3 | 12.5 | -8 | 8 |
| VA | 111 | 34 | 30.6 | 4 | 11.8 | -7 | 7 |
| WI | 265 | 58 | 21.9 | 1 | 1.7 | 20 | 20 |
| Total | 7,166 | 1,668 | 23.3 | 109 | 6.5 | 3 | 16 |
| **Soybeans, Double Crop Only** | | | | | | | |
| IL | 100 | 25 | 25.0 | 0 | 0.0 | - | - |
| MO | 61 | 15 | 24.6 | 0 | 0.0 | - | - |
| Total | 161 | 40 | 24.8 | 0 | 0.0 | - | - |
| **Soybeans, Single Crop Only** | | | | | | | |
| IL | 587 | 55 | 9.4 | 4 | 7.3 | -1 | 7 |
| MO | 314 | 73 | 23.2 | 1 | 1.4 | -8 | 8 |
| Total | 901 | 128 | 14.2 | 5 | 3.9 | -2 | 7 |
| **Soybeans, Irrigated Only** | | | | | | | |
| KS | 23 | 6 | 26.1 | 0 | 0.0 | - | - |
| NE | 216 | 55 | 25.5 | 1 | 1.8 | 35 | 35 |
| Total | 239 | 61 | 25.5 | 1 | 1.6 | 35 | 35 |
| **Soybeans, Nonirrigated Only** | | | | | | | |
| KS | 142 | 60 | 42.3 | 1 | 1.7 | -30 | 30 |
| NE | 323 | 88 | 27.2 | 10 | 11.4 | -3 | 16 |
| Total | 465 | 148 | 31.8 | 11 | 7.4 | -5 | 17 |

1/ Review screen appeared for cases when reported yield divided by the prior month yield was greater than 1.25 or less than 0.75.

## APPENDIX B - VARIANCE OF A RATIO

The variance of the difference in ratios was calculated from the formula for a combined ratio estimate as described in Cochran (1977).

$$V(\hat{R}_d) = \frac{\sum_{h=1}^{L} \left( \frac{N_h(N_h - n_h)}{n_h(n_h - 1)} \sum_{i=1}^{n_h} (u_{hi} - \bar{u}_h)^2 \right)}{\left( \sum_{h=1}^{L} N_h \bar{x}_h \right)^2}$$

where

$\hat{R}_d = (\hat{R} - \hat{R}') =$ *Difference between Ratios*

$$\hat{R} = \frac{\hat{Y}}{\hat{X}} \qquad \hat{R}' = \frac{\hat{Y}'}{\hat{X}}$$

$$\hat{Y} = \sum_{h=1}^{L} N_h \bar{y}_h \qquad \bar{y}_h = \frac{\sum_{i=1}^{n_h} y_{hi}}{n_h}$$

$$\hat{Y}' = \sum_{h=1}^{L} N_h \bar{y}'_h \qquad \bar{y}'_h = \frac{\sum_{i=1}^{n_h} y'_{hi}}{n_h}$$

$$\hat{X} = \sum_{h=1}^{L} N_h \bar{x}_h \qquad \bar{x}_h = \frac{\sum_{i=1}^{n_h} x_{hi}}{n_h}$$

$$u_{hi} = y_{hi} - \hat{R}_d x_{hi}$$

$y_{hi}$ = initial response for the $i^{th}$ observation in stratum h

$y'_{hi}$ = final response for the $i^{th}$ observation in stratum h

$x_{hi}$ = June value for the $i^{th}$ observation in stratum h