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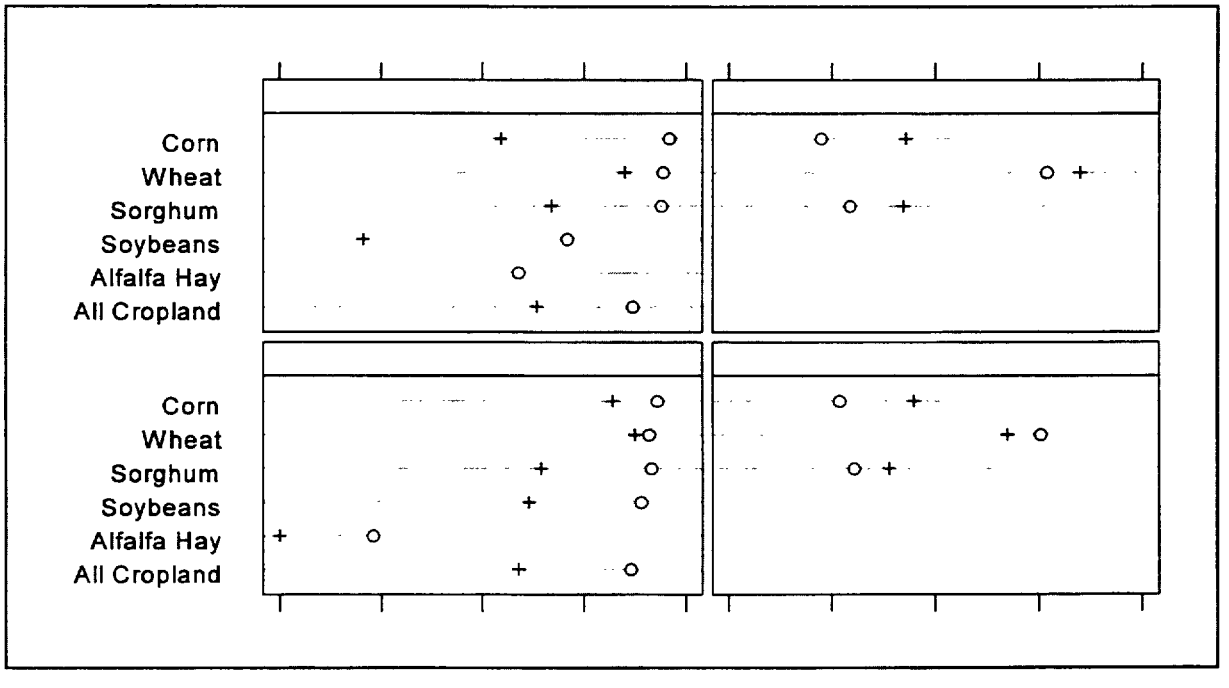
Estimating the Coverage of Farm Service Agency Crop Acreage Totals

Joseph L. Parsons



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ABSTRACT

The Farm Service Agency (FSA) of the U.S. Department of Agriculture is responsible for administering the Department's farm programs. In the course of administering farm programs, FSA has collected acreage information on crops from farmers who participate in farm programs and those that wish to maintain their eligibility to participate in future farm programs. This process is known as farmer certification. FSA provides summaries of these data to NASS. FSA acreage totals provide a benchmark for NASS's traditional estimators of planted acreage. Although most cropland areas are covered by FSA reports, crop acreages associated with farm operators who do not report to FSA are not represented in the FSA totals. Accurate estimates of the percent of acres covered combined with FSA provided planted acreage totals may facilitate the creation of an efficient planted acreage estimator.

This paper reports the results of an investigation conducted in two states (Kansas and Nebraska) designed to evaluate the feasibility of collecting coverage information from farmers. A series of questions to collect this information were added to the States' June Area Survey. A check of FSA records was conducted in August to evaluate the accuracy of the farmer reported data. The results of the record check study indicate corn, sorghum and wheat (program crops) certification coverage exceeded 98 percent of the acreage for those items in both states. The certification rate for soybeans was over 94 percent. The June Survey nonresponse bias for corn, sorghum, soybeans and wheat certified ranged from -0.1 percent to 1.2 percent. The net amount of response error associated with the June Survey certification data ranged from -1.8 to -8.2 percent for corn, wheat and sorghum.

KEY WORDS

Farm Service Agency; Coverage; Record check study; Farmer certification; Estimator.

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SUMMARY

The Farm Service Agency (FSA) of the U.S. Department of Agriculture collects a wealth of data from farmers in support of their mission of administering the Nation's farm programs. NASS has long used this information for maintaining and updating its list of farmers. FSA acreage totals also serve as benchmarks for NASS planted acreage estimates. This project is part of an overall effort to make better use of FSA administrative data (see Weaver,1994 ; Benz, 1996a).

In April 1996, Congress passed and the President signed into law the "Federal Agriculture Improvement and Reform Act of 1996". It is unclear at this time what administrative data FSA will collect in 1996 or future years. NASS needs to keep apprised of all developments surrounding this legislation. Once FSA has decided what data are needed to administer the new Farm Bill, the potential for using this information to develop indications of planted acres should be re-evaluated.

The focus of this project was to evaluate the feasibility of estimating the proportion of crop acreages that are covered in FSA totals using farmer reported data. These coverage indications, together with the appropriate FSA total, may be used to form a planted acreage indication for a specific crop. Specifically, the goals of this project included:

- Estimate the proportion of total corn, sorghum and wheat acreages that are included in FSA feed grains and wheat program acreage totals in Kansas and Nebraska and use the information to create planted acreage indications.
- Estimate the proportion of major crops that are included in FSA "certified" totals in Kansas and Nebraska and use the information to create planted acreage indications.
- Evaluate the effect of nonresponse error on the coverage indications.
- Determine impact of response error on June reported program and certification coverage levels.
- Investigate the quality of the FSA totals.

Each spring, farmers who have a history of planting certain crops (acreage bases) may enter into a contract with the Commodity Credit Corporation, an entity of the FSA, to participate in one or more farm programs (under the previous farm bill). To comply with the regulations of the program participants must certify. Farmer certification is completed by reporting the crop, use, and acreage of each field within a farm at the local FSA office. Farmers who are not in a program may also certify in order to obtain catastrophic crop insurance, maintain acreage bases and other reasons.

The **first phase** of the project involved adding a series of questions to the June Area Survey. The questionnaire was amended to inquire if the land operated inside the enumerated land area

(segment) was in the feed grains (which includes corn and sorghum) or wheat programs. Respondents were also asked if they would certify the cropland inside the segment with the FSA.

After the farmer certification period had passed, a **second phase** of the study was implemented to evaluate farmer's ability to self-report the program and certification status of cropland they operate. The program and certification status of all land areas inside the June Area tracts were enumerated with local FSA offices. The results of the first and second phases were compared. A **third phase** was added in which all areas that were not certified, and areas where the results of the first two phases were in disagreement were confirmed with FSA offices by telephone. The phase three data were treated as "truth" in the subsquent analyses.

Indications of coverage by crop and program were generated from first and third phases of the project. Using status responses from FSA, the expanded number of acres inside segments from all records reported as participating were divided by the expanded total number of acres from all reports for the item. This value was compared to a ratio computed using status responses from FSA but expanded using the number of acres inside segments from useable June records divided by the expanded total number of acres from useable reports for the item. The difference reflects the amount of nonresponse bias for an item. Nonresponse biases ranged from 0.2 to 3.2 percent for program items and -0.1 to 0.8 percent for the rate of certified acres in the two states. Tract operators that had at least some cropland within the tract and did not certify tended to refuse at a higher rate than those who did certify, however, the differences were not significant at the 5 percent level.

Response errors were computed by comparing participation rates generated using only records where complete June responses were obtained. Farmer reported rates were compared to rates generated using FSA reported response for the same tracts. For program items the net response error ranged from -3.2 to 2.7 percent. Farmers tended to report that they would not certify when they ultimately did certify with FSA. Certification rates reported by farmers were between 1.8 to 19.3 percent less for complete June tracts than FSA reported as actually occurring. Crops not eligible for program participation showed the largest net response bias.

Indications generated using the phase three coverage rates and FSA totals compared favorably to the final Agricultural Statistics Board values in the two states. The cv's associated with the indications were much smaller than those for the JAS Tract Expansion of planted acreage. Also, the relative absolute difference between the FSA based indications and the Board values were approximately one-half the size of the relative absolute differences between the JAS Tract Expansions and the Board.

INTRODUCTION

The National Agricultural Statistics Service (NASS) is responsible for estimating the number of acres planted to specific crops as part of its mission. The Farm Service Agency (FSA)[1] also of the U.S. Department of Agriculture is responsible for administering the Nation's farm programs and in this capacity collects an extensive amount of crop acreage information from farmers.

For many years NASS has received planted acreage totals by crop and use from FSA. Unfortunately, the data are an incomplete accounting of total acreage for a crop because some farmers do not report acreage to FSA. Further, it is suspected by many NASS statisticians that the level of reporting to FSA varies between years and geographic regions as farm program rules change. Traditionally, FSA totals have been used as a lower bound for planted acreage estimates. Although useful, these totals have had limited benefit because the level of completeness has been unknown.

NASS utilizes surveys from area and list frames in a multiple-frame concept to estimate crop acreages. Multiple-frame estimators in NASS usually have two components, a list or "overlap" (OL) domain and a "not on list" or "non-overlap" (NOL) domain based on classifying area frame tracts. Both sources are usually sampled to create an efficient estimator with good coverage properties.

Analogously, FSA data could also be utilized in a multiple-frame estimator where the FSA totals represent the list and a sample of land areas not reported to FSA estimate the acreage not on the FSA list. Unlike a typical NASS multiple-frame estimator, the list portion of this estimator would be free of sampling error. The FSA acreage totals are not based on a survey, but rather are sums of crop acreages from all reporting FSA tracts in each state. Because FSA list coverage frequently exceeds 90 percent for program crops, this estimator should be more precise, in terms of sampling error, than NASS survey estimators of planted acreage. However, the non-sampling error properties of this potential FSA based estimator are not well known. It is expected that area frame respondent's willingness and ability to provide the necessary information for this estimator to determine the NOL domain and correspondingly, the FSA coverage, will be paramount to its success. This project seeks to evaluate farmers' ability to report this information so that NASS can estimate the percent of coverage associated with FSA totals based on survey data.

Each year in June, NASS conducts a major area-based survey to estimate crop acreages and total hog inventory. The survey involves the enumeration of land areas, averaging about one square mile each, called segments. For this project a set of questions regarding farmers plans to participate in farm programs and report data to FSA were added to the survey in Kansas and Nebraska. In late August, following the time period farmers usually report crop information to FSA, all

1 Formerly known as the Agricultural Stabilization and Conservation Service (ASCS) and more recently the Consolidated Farm Service Agency (CFSA). For consistency we will refer to the Agency as FSA throughout this paper.

segments in the two states were compared to FSA records. A third phase consisted of verifying the status of some of the land areas with FSA.

Though coverage rates can be determined from the second or third phase directly from FSA, this method would be prohibitively expensive, operationally. The marginal cost of adding questions to the June Area Survey, however, is minimal.

This report is part of a research initiative to make better, and more complete use of the FSA information available to NASS. It should be noted that, due to a new farm bill, it is unclear at this time what administrative data FSA will collect in 1996 or future years. The emphasis of this report is to: 1) Estimate of the proportion of total corn, sorghum and wheat acreages that are included in FSA feed grains and wheat program acreage totals in Kansas and Nebraska and use the information to create planted acreage indications. 2) Estimate the proportion of major crops that are included in FSA "certified" totals in Kansas and Nebraska. 3) Evaluate the effect of June Area Survey nonresponse error on the coverage estimates. 4) Determine impact of June Area Survey response error on program and certification coverage levels. 5) Investigate the quality of the FSA totals.

BACKGROUND

NASS has long been interested in making better use of the FSA data available to it. Research into other uses of FSA data is not new. A small-scale mail survey, reporting promising results, was conducted in 1968 to test the efficacy of using FSA farm serial numbers as a reporting unit (Moore & Guinn, 1969). A small-scale study examining the feasibility of using FSA lists as a sampling/reporting units was conducted in Tennessee (Guinn, 1992). Weaver, (1994) evaluated FSA list coverage in four states, finding indications of higher coverage from FSA lists than the current NASS list frame. FSA list coverage ranged from 5-23 percent higher than the NASS list frame in the states evaluated. Coverage, defined as having an FSA identification number, exceeded 99 percent in Kansas.

Since 1992, NASS has had a Memorandum of Understanding with FSA outlining access to acreage, name and address information. FSA data have been used since 1983, on a national basis, to update and build the NASS list frame (Anderson, 1993). Names derived from FSA lists of farm operators have been used to find new operations to add to NASS lists. FSA acreage data are also aggregated to a NASS farm level and have been used to update list frame control data. NASS statisticians have used state acreage summaries as check data from FSA in various capacities for decades.

How FSA organizes and collects acreage information is helpful in understanding the creation of coverage estimates. FSA utilizes both farm and tract numbers to identify land areas. FSA defines a tract as a contiguous area of land that is under one ownership and is operated as a farm or part of a farm (Agricultural Stabilization and Conservation Service, 1992). Usually tract numbers do not change when land changes ownership. Farm units are composed of tract(s) and often change identifying numbers when ownership changes for part of the farm. Acreage bases (crop histories)

are attached to a specific farm and farm units may be entered into a particular program for which the farm is eligible. Two reports that farmers make to FSA are relevant to this investigation. The first is the farm program sign-up (completed using CCC Form 477). During the sign-up period, farmers may enter eligible farms into contracts with the Commodity Credit Corporation (CCC), an entity of FSA, agreeing to comply with the rules of the current farm program in exchange for payments based on the number of acres enrolled into the program. The sign-up period usually runs from around February through Mid-April (for example 1995 sign-up in Nebraska ran from January 30 through April 28).

In addition to entering the farm program, farmers may certify their farm crop acreages with the local FSA office. Certification is completed on FSA Form 578 and requires the farmer to identify the crops and acreages by field for the farm unit, including non-program crops. All farmers who are in the farm program must certify; those not currently in the farm program wishing to protect their program crop acreage bases must also certify. Failure to certify is treated by FSA as a report of zero planted acres for a commodity. A zero report reduces the acreage base for the tract. Although the date varies by state, farm operators regardless of program status usually must certify their farms by mid-July.

FSA compiles the acreage data and provides it to NASS. The data become more complete as the local FSA offices enter and update the information. NASS receives Total Farm Acreage Reports (TFA) beginning during the first part of June and continuing through March of the following year. These reports are run for both for NASS state offices and headquarters upon request. The TFA is a report of acreage planted by county and state for each program crop (Consolidated Farm Service Agency, 1995). This report includes the number of acres in the program and the total number of acres by crop. The Universal Farm Acreage Crop (UFA) Report (PA-119R) contains certified acreage data for all crops and is usually only run once or twice late in the crop year. Both reports contain irrigated and non-irrigated totals. These reports would provide the "list" portion of an FSA based "multiple-frame" estimate.

DATA COLLECTION

The initial phase of data collection consisted of adding several questions regarding program participation and certification status to the June Area Survey (JAS) in Kansas and Nebraska. Kansas and Nebraska were selected for several reasons. Kansas had participated in Weaver's 1993 study and had experience working with FSA offices. Both states had concerns regarding the relationship between recent FSA totals and their survey indications of planted acreage. In addition, both states have significant amounts of several program crops. Kansas represents a large proportion of U.S. winter wheat and sorghum production and Nebraska is a large corn and sorghum producer.

The second phase of data collection consisted of obtaining the same information from FSA county offices to evaluate the original responses. Originally the project

was conceived as two phases, however a third phase was added. The third phase consisted of callbacks to county offices to verify information collected in the second phase. Each of these phases are discussed in the following paragraphs.

June Area Survey. Following Section D -- Crops and Land Use On Tract, additional questions were added to the June Area Survey. A copy of the additional questions is provided in Appendix A. Each of the questions is of similar construction. To illustrate the concepts behind these questions we will use corn certified as an example. The certified question inquires about an operator's intention to certify his acreage. (The question is asked only if cropland is present in the JAS tract). A ratio can be calculated by dividing the "useable" certified acres by the total "useable" acres reported in Section D. Formally, the farmer reported corn certified proportion or ratio, $R_{Farmer \cdot cc}$, for example can be estimated from the June Area Survey as follows:

$$R_{Farmer \cdot cc} = \frac{\sum_{i=1}^{m} \sum_{j=1}^{n_i} \left(\delta_{ij} y_{ij} e_{i\cdot} + \gamma_{ij} z_{ij} e_{i\cdot} \right)}{\sum_{i=1}^{m} \sum_{j=1}^{n_i} \lambda_{ij} y_{ij} e_{i\cdot}}$$

where:

- i = segment index, $i = 1,\ldots,m$
- j = tract index within segment $j = 1,\ldots,n_i$
- n_i = Number of tracts in the i^{th} segment,
- m = Number of segments in a particular state,
- y_{ij} = Sum of field level corn planted acres (IC530) [IC = item code],
- z_{ij} = number of acres of corn certified if only part of the tract is certified (IC236),
- δ_{ij} = 1 if IC235 = 1 (1 = all cropland certified), 0 otherwise ,
- γ_{ij} = 1 if IC235 = 2 (2 = only part of cropland acres certified) and IC236 $\neq$ -1 (missing), 0 otherwise,
- λ_{ij} = 1 if IC235 = 1, IC235 = 2 and IC236 $\neq$ -1, or IC235 = 3 (3 = none of the cropland acres certified), 0 otherwise,
- $e_{i\cdot}$ = June area frame expansion factor for the i^{th} segment.

As shown in the formula above, the calculation of the ratio is complicated by "partials". A "partial" occurs when only part of the cropland within the JAS tract will be certified. This can happen because NASS area tracts may be covered by multiple FSA farms or only part of the JAS tract may be covered by FSA identification numbers. For a "partial" to occur each of the FSA defined areas within the JAS tract would have to have the crop and have a different certification disposition. The prevalence of this complication will be discussed later.

The indicated proportion of corn acres certified from the June Area Survey is subject to nonresponse. If the certification question or the entire section was incomplete the record was not used in calculating the ratio. Calculations of the ratios and their variances were incorporated into the Survey Processing System (SPS) summary. Variance estimation for the ratios are analogous to other closed

segment item-to-item ratios, such as a ratio of harvested to planted acreage (Kott,1990). Although the calculation of each of the ratios is similar there are some subtle differences in their construction; details are given in Appendix B.

Due to extremely wet weather many areas in Kansas and Nebraska remained unplanted during June Area Survey enumeration period. A July update to the June Area Survey was conducted in 9 states including Kansas and Nebraska (Clark, 1995). Although the research questions were not re-asked, changes in the crops and acreages planted in the tract affected the ratio indications.

Enumerators received training on these questions at the state training schools in both states. After the training they completed a short evaluation form on their perceptions of the project. A copy of the pre-survey evaluation appears in Appendix C. Enumerators also received evaluation forms after the June and August data collection periods to record their perceptions of the questions and the process (Appendix C). Most enumerators thought that few farmers found the questions "sensitive" and that the questions were less sensitive than they expected. In addition to the evaluation forms, the appendix contains a discussion of the enumerator's perceptions.

County Office Visits. During the second phase of the project, enumerators collected data from FSA county offices in late August. The purpose of this visit was to determine how accurately farm operators reported their certification and program acres in June. Enumerators took the photos of the JAS segments and, with the help of FSA county office employees, compared the JAS photography to FSA photography of the same area. FSA farm and tract boundaries and identification numbers are indicated on FSA photography. Per instructions, enumerators requested a photocopy of the FSA photography and outlined NASS segment and tract boundaries onto the photocopy. This step facilitated collecting FSA farm and tract information for each JAS tract. Enumerators collected the following information for each JAS tract:

1. If any part of the JAS tract was covered by an FSA tract number.
2. FSA Farm No. (unique within county).
3. FSA Tract No. (unique within county).
4. Feed Grains Program participation indicator.
5. Wheat Program participation indicator.
6. Certified indicator.
7. Indicator of whether the FSA tract was certified in a county other than the one in which it was located.
8. Indicator of whether any other FSA tracts fell inside the JAS tract's boundary.
9. An indicator if all the land inside the JAS tract was covered by FSA tract numbers.

Items 2-8 were repeated until all FSA tracts covering the JAS tract were recorded. FSA

personnel were given a worksheet containing the farm and tract numbers and were asked to record information for items 4 through 7. A copy of the screening form is included in Appendix D.

Pre-contact letters were sent to each county office signed by both the State Statistician and the FSA State Executive Director in the two states. By all accounts the county office personnel were helpful, interested, and well prepared for the enumerator's visit. However, FSA tracts that are serviced in a county other than the one where the tract is located caused some difficulty. In some cases the FSA office for the county where the land was located was unaware of what county administered the tract or the identification number for the tract.

County Office Follow-ups. The last phase of data collection involved recontacting selected county offices on "discrepant" records. Because the data from the county offices would be considered "truth" in comparing answers obtained in June it was especially important that the county office data be free of errors. The data from the first two phases were compared and FSA was recontacted for records that were in disagreement. Also, all areas that contained cropland and were designated as not being certified by FSA were double checked (except for a few extremely small areas). No farmers were recontacted in regard to their program (or certification) responses.

Data Manipulation. The data from the second phase were hand edited by survey statisticians in the state offices for consistency and checked with a LXES editing instrument. The data were then separated into JAS tracts that contained cropland and all other tracts. Only JAS tracts with cropland would affect coverage rates and received further consideration.

In order to compare FSA county answers to the farmer's answers some data manipulation was necessary. A problem in comparing FSA county answers to farmer's answers was that more than one FSA tract could cover the JAS tract and each of the FSA tracts could have a different disposition (were certified etcetera). Thus determining if the two data sources were at odds at the JAS tract level could be impossible.

To overcome this difficulty the FSA information was allocated field-by-field. For JAS tracts completely covered by a single FSA tract there was not a problem; all fields were given the disposition of the FSA tract. The same was true for JAS tracts completely covered by multiple FSA tracts of the same disposition. However, for JAS tracts covered by multiple FSA tracts of different dispositions or JAS tracts only partially covered by FSA tracts, the photocopies of FSA photography were compared to photocopies of NASS segments to determine which FSA tract covered each JAS field. This required 623 and 565 fields in Kansas and Nebraska, respectively, to be reviewed. June responses were also placed on the field level records and compared when pertinent. For example, responses of wheat program participation were only compared when wheat was reported in a field.

Data listings of discrepant fields and fields not certified were created resulting in

callbacks to 60 and 58 offices in Kansas and Nebraska, respectively. With legal descriptions and identification numbers, the FSA offices were generally able to locate the necessary information with ease. The callbacks resulted in 27 updates to the Kansas data and 15 updates to the Nebraska data set. The third phase did not create any large shifts in the results but did provide an additional level of quality assurance.

RESULTS

One of the objectives of this study was to find the proportion of acres that were in a program (or certified) for a set of crops. Hence the focus will be on cropland areas. We define cropland as any crop, summer fallow, or cropland pasture as given in Section D of the JAS. Under this definition cropland may exceed land in the JAS tract because of dual utilizations or double-cropping. Table 1 provides an overview of the number and amount of areas within the June Area Survey that contained cropland. In Kansas, 1,223 of the 2,374 (51.5%) JAS tracts had agricultural activity and contained cropland areas. In Nebraska 1,073 out of 2,344 (45.8%) JAS tracts contain cropland areas. We denote these tracts as Ag.-Crop tracts. Only 54.6 percent of the fields in Kansas and 57.4 percent of the fields in Nebraska contain cropland.

Weaver (1994), found 99.7 percent of land in farms to be covered by FSA identification numbers. However, the focus of this study is the coverage of cropland areas, specifically the coverage for particular crops. Because cropland is a subset of land in farms we should expect a similar result. Using the farm and tract number information gathered in the August county visits and the June acreage information, an indication of the areas not

Table 1:

Selected 1996 June Area Survey Statistics

Item	State	
	Kansas	Nebraska
	N	N
	%	%
Segments	456	390
JAS Tracts	2,374	2,344
Ag. Tracts	1,681	1,466
	70.8	62.5
	1,223	1,073
Ag.-Crop Tracts	51.5	45.8
JAS Fields	7,238	7,886
Fields in Ag. Tracts	6,545	7,008
	90.4	88.9
Fields in Ag.-Crop Tracts	5,700	6,246
	78.8	79.2
Crop Fields	3,953	4,528
	54.6	57.4
Segments Containing Crops	415	341
	91.0	87.4

Table 2:

Cropland Covered by FSA Tract Id. Numbers

Item	State	
	Kansas	Nebraska
	N	N
	%	%
Ag.-Crop Tracts	1,223	1,073
Number of Ag.-Crop Tracts	11	13
Where Cropland not 100%	0.90	1.20
Covered by FSA Id's		
Number of FSA Tracts	1,565	1,403
Covering Ag.-Crop Tracts	N/A	N/A
Crop Fields	3,953	4,528
Crop Fields not Covered	12	19
by FSA Id.'s	0.30	0.42
Expanded Cropland Acres (000)	27,880	19,228
Expanded Cropland Acres	12	53
not Covered by FSA Id's (000)	0.04	0.28

Table 3:

Proportion of Item in Program or Certified (Farmer Reported)

Item	Kansas				Nebraska			
	June	Updated	Diff	Updated	June	Updated	Diff	Updated
	%	%	%	(c.v.) %	%	%	%	(c.v.) %
Program								
Corn	88.0	88.6	0.6	3.5	89.0	89.0	0.0	1.9
Wheat	97.0	97.0	0.0	0.7	93.5	93.5	0.0	3.3
Sorghum	87.6	88.5	0.9	2.4	86.6	87.8	-1.2	4.1
Certified								
Corn	91.4	90.9	-0.5	3.0	96.4	96.4	0.0	0.9
Wheat	97.0	97.0	0.0	0.8	97.6	97.5	0.1	1.2
Sorghum	92.8	93.4	0.6	1.7	91.8	92.9	-1.1	2.7
Soybeans	81.6	84.1	2.5	4.3	92.3	92.3	0.0	2.4
Alfalfa Hay	71.8	72.0	0.2	11.9	80.0	80.0	0.0	5.5
All Cropland	92.3	92.7	0.4	1.0	92.0	91.9	0.1	1.3

covered by FSA identification numbers can be tabulated. Table 2 illustrates how FSA identification numbers (farm and tract) cover the cropland areas of the two states studied. In both states the cropland area not covered is under 0.3% of the total cropland area. FSA identification numbers must cover a land area in order for that area to be in a program and/or certified. However, areas with identification numbers may not report information to FSA in a particular year. The high proportion of acres covered by FSA identification numbers does imply FSA has had a record of almost all cropland in the two states at some point in time.

It is suspected that the proportion of a particular crop that is reported to FSA (or entered into a farm program) may vary across time and geographic area. By adding questions to the June Area Survey and using the acreage information collected in Section D, an indication of the proportion of acres covered by FSA totals could be computed. Table 3 shows the proportion of acres covered for selected crops in the two states, as reported on the JAS. The indicated level of coverage is high for all crops.

Farmers in many areas of the U.S. including Kansas and Nebraska experienced unusual planting delays due to wet weather in 1995. Many farmers were still unsure of what crop, if any, they would plant in the affected areas during the JAS data collection period. To address this issue NASS conducted an update survey in 9 states, including Kansas and Nebraska to verify the crop that was planted in the affected areas. The effect of the July Update generally had only a small effect on estimates as shown in Table 3. In a "normal" year an update survey would be not be done and therefore from this point forward we will use the updated information in all comparisons.

In general, farmers were willing to report their program and certification status and based on enumerator feedback the

additional questions were not considered "sensitive" by most. However, in order to assess the quality of farmer reports and the effects of nonresponse, survey answers were compared to FSA records.

Using the answers obtained from the county FSA offices a new indication of the proportion of acres covered by FSA totals can be constructed and compared to the answers obtained using farmer reported data. To minimize burden on the FSA offices, no attempt was made to determine acres of specific crops within the NASS segment boundaries from FSA records. However, we can utilize the field-level data reported or observed in the JAS to construct the proportion. The ratio using FSA responses is calculated similarly to the farmer reported ratio discussed earlier except that all tracts are "useable". More formally, as an example, the indication of corn acres certified based on August FSA information can be calculated as follows:

$$R_{FSA \cdot cc} = \frac{\sum_{i=1}^{m} \sum_{j=1}^{n_i} \sum_{k=1}^{p_{ij}} \delta_{ijk} y_{ijk} e_{i\cdot\cdot}}{\sum_{i=1}^{m} \sum_{j=1}^{n_i} \sum_{k=1}^{p_{ij}} y_{ijk} e_{i\cdot\cdot}}$$

where:

- i = segment index, $i = 1,\ldots,m$
- j = tract index within segment $j = 1,\ldots,n_i$
- k = field index within tract $k = 1,\ldots,p_{ij}$
- p_{ij} = Number of fields in the j^{th} tract of the i^{th} segment,
- n_i = Number of tracts in the i^{th} segment,
- m = Number of segments in a particular state,
- y_{ijk} = Field level corn planted acres (IC530),
- δ_{ijk} = 1 if FSA tract covering field is certified, 0 otherwise,
- $e_{i\cdot\cdot}$ = June area frame expansion factor for the i^{th} segment.

Certification status is considered field-by-field because different dispositions may exist between portions of a JAS tract. Although it is possible that only part of a crop field may be certified or in a farm program no such cases were found in the two states. Estimators for other crops certified follow directly. Also, the proportion of a crop in a farm program can be calculated similarly.

Nonresponse Errors. The values obtained from the estimator $R_{FSA \cdot cc}$ may differ from the farmer reported estimator $R_{Farmer \cdot cc}$ in two respects. $R_{FSA \cdot cc}$ includes those who refused or could not respond on the June Area Survey while $R_{Farmer \cdot cc}$ does not. Also, the $R_{Farmer \cdot cc}$ includes responses from farmers who have incorrectly categorized their certification status. We can separate the nonresponse bias from the response errors by examining the proportion certified cross-classified by response status to the certification question on the JAS. For example, Table 4 shows the amount and proportion of Nebraska corn acres by response status to the JAS certification question and the FSA county office reported certification status. The table indicates that farmers who responded to the certification question in June certified 99.3 percent of their corn acres while those farmers who would not or could not

Table 4:
Nebraska: Corn – Acres Certified with FSA by Response to JAS Certification Question

Expanded Acres (in Thousands)			
Provide a Response to Certification Question on JAS?	Certification Status		
	Certified	Not Certified	Response Status
Yes	6,019	42	6,061
No	1,656	70	1,727
Total Certified	7,675	112	7,787

Percent of Total			
Provide a Response to Certification Question in JAS?	Certification Status		
	Certified	Not Certified	Response Status
Yes	99.3	0.7	100.0
No	95.9	4.1	100.0
Total Certified	98.6	1.4	100.0

respond to the question in June certified 95.9 percent of their acres (a difference of 3.4 percentage points). The non-response error is produced through two components, the nonresponse rate and the difference between nonrespondents and respondents on the statistic of interest (Groves, 1989).

Because we have true responses for both respondents and nonrespondents we can calculate the nonresponse error.

Though the difference in Nebraska corn certification rates between respondents and nonrespondents in the JAS was 3.4 percent, the resulting nonresponse error was much less (0.7 percentage points=99.3%-98.6%) because nonrespondents, to the certification question, account for only 22% of the JAS tract expansion for corn in Nebraska. Rates of program participation and certification for major crops by response are given in Appendix E.

Table 5 shows the percent of acres in a program (certified) combined for respondents and nonrespondents of the JAS. Also shown is the percent in a program (certified) for those responding in the JAS. The nonresponse error is the difference of the two ratios. The difference between the two ratios reflect the amount of error that can be attributed solely to the fact that some of those surveyed did not

Table 5:

Proportion of Expanded Acres in Program (Certified)
All Tracts vs. Responding Tracts – Nonresponse Errors
(Per FSA)

	Kansas				Nebraska			
Item	% of Acres All Tracts	% of Acres Responding Tracts	% Non-response Error	"All Tracts" (c.v.) %	% of Acres All Tracts	% of Acres Responding Tracts	% Non-response Error	"All Tracts" (c.v.) %
Program								
Corn	84.5	85.9	1.4	3.8	85.4	88.7	3.2	2.0
Wheat	95.4	95.6	0.2	0.9	95.1	96.7	1.6	1.7
Sorghum	85.9	86.9	1.0	2.5	86.1	89.0	2.9	3.9
Certified								
Corn	99.2	99.1	-0.1	0.4	98.6	99.3	0.7	0.5
Wheat	98.9	98.8	-0.1	0.3	98.2	99.5	1.2	1.2
Sorghum	98.8	98.7	-0.1	0.5	98.3	98.6	0.2	0.5
Soybeans	94.2	94.9	0.8	1.8	97.8	97.9	0.0	0.8
Alfalfa Hay	91.8	91.3	-0.5	5.8	84.6	85.0	0.4	4.2
All Cropland	97.4	97.2	-0.2	0.5	97.3	97.9	0.6	0.5

answer the program status questions. The calculation of the differences assumes that had nonrespondents actually responded that they would have reported their program or certification status correctly (would have given the responses retrieved from the FSA county offices).

In general, participation rates were higher for respondents than for all surveyed, indicating that nonrespondents may tend to participate at lower rates than respondents. The difference in participation rates is greater for Nebraska than for Kansas. The coefficient of variation (cv) for the ratio of acres in a program (or certified) is also given in Table 5. The cv's are generally smaller than those generated from using only farmer reported data. This is because Table 5 includes data for nonrespondents. The nonrespondent records increase the effective sample size. There are at least marginal differences between participation rates for respondents and nonrespondents. Could these results simply be due to sampling error?

To examine this issue, a contingency table analysis was conducted. Table 6 shows counts of Ag.-Crop JAS tract operators by response and participation status. Assuming there is no difference in the rate of response, the proportion of respondents that certify should be close to the proportion of non-certifiers that respond. A Chi-Squared test can be used to measure if the proportion of responding operators certify at a different rate than their nonresponding counterparts. Small Chi-Square values would tend to indicate that the participation rates are significantly different.

JAS tracts that contained both acres of the item in a program (certified) and acres not in a program were excluded from the counts as given in the footnotes of the table. The left side of the table provides unweighted counts of operators. In the right side of the table, sampling weights and the relative amount of the item an operator had within the JAS tract were considered. On the right hand side of the table, the counts represent the number of "average" JAS tract operators that had the item of interest where the total number of operators was scaled to equal the number observed in the survey. For example, a tract operator that had a large acreage of feed grains might account for three "average" feed grain operators while an operator that has a small expanded acreage might account for only 0.5 of an "average" feed grain tract operator. The left hand side of the table indicates possible differences in rates of participation by responding and nonresponding tract operators. The right hand side of the table indicates possible differences weighted by expanded acres.

The results vary depending on whether we consider the relative amount of the item an operator controls. Generally, more evidence is available that there is a difference in the rates between responders and nonresponders when weighting is considered and in Nebraska (smaller p-values). However, after considering the multivariate implications of the tests performed, only the weighted participation in the Feed Grains program in Nebraska is significant at a 5 percent level. This implies that, in general, June respondents and nonrespondents are not statistically

Table 6:

Number of Operators, Unweighted and Weighted, Having Item within JAS Tract Cross-Classified by August Program (Certification) Status and JAS Response Status

Provided a Response to Certification (Program) Question on JAS?	Unweighted Number of Operators Certification or Program Status			Weighted Number of Operators Certification or Program Status		
	Certified (in Program)	Not Certified (not in Prgm.)	Total Respond?	Certified (in Program)	Not Certified (not in Prgm.)	Total Respond?
Kansas - Certification Status - Cropland 1/						
Yes	948	66	1,014	996	27	1,023
No	181	22	203	188	6	194
Total Certified	1,129	88	1,217	1,184	33	1,217
	Chi-square p-value=0.030			Chi-square p-value=0.657		
Nebraska - Certification Status - Cropland 1/						
Yes	791	60	851	817	19	836
No	198	21	219	223	11	234
Total Certified	989	81	1,070	1,040	30	1,070
	Chi-square p-value=0.205			Chi-square p-value=0.043		
Kansas - Feed Grains Program - Feed Grains (Corn and Sorghum) 2/						
Yes	286	72	358	314	53	367
No	42	15	57	39	9	48
Total Program	328	87	415	353	62	415
	Chi-square p-value=0.285			Chi-square p-value=0.406		
Nebraska - Feed Grains Program - Feed Grains (Corn and Sorghum) 2/						
Yes	458	104	562	499	64	563
No	109	41	150	112	37	149
Total Program	567	145	712	611	101	712
	Chi-square p-value=0.017			Chi-square p-value<0.001 **		
Kansas - Wheat Farm Program - Wheat 3/						
Yes	592	104	655	609	33	642
No	104	13	117	121	9	130
Total Program	696	76	772	729	42	772
	Chi-square p-value=0.618			Chi-square p-value=0.447		
Nebraska - Wheat Farm Program - Wheat 3/						
Yes	162	46	208	180	7	187
No	46	10	56	40	6	46
Total Program	208	25	233	220	13	233
	Chi-square p-value=0.048			Chi-square p-value=0.016		

1/ Six JAS tracts in Kansas and 3 tracts in Nebraska contained both certified and uncertified cropland and were excluded from this analysis.

2/ Eight JAS tracts in Kansas and 8 tracts in Nebraska contained feed grains that were both in and out of the program and were excluded from this analysis.

3/ Six JAS tracts in Kansas and zero tracts in Nebraska contained wheat acreage that were both in and out of the program and were excluded from this analysis.

** Significant at 5% level using Bonferroni's inequality.

Table 7:

Proportion of Expanded Acres in Program/Certified
(FSA County Office Reported Program (Certification) Status for Responding JAS Tracts
Compared to Farmer Reported Program (Certified) Status – "June Updated" File)

Item	Kansas			Nebraska		
	% of Acres Responding Tracts	% of Acres From "June Updated"	Net Response Error	% of Acres Responding Tracts	% of Acres From "June Updated"	Net Response Error
Program						
Corn	85.9	88.6	2.7	88.7	89.0	0.3
Wheat	95.6	97.0	1.4	96.7	93.5	-3.2
Sorghum	86.9	88.5	1.6	89.0	87.8	-1.2
Certified						
Corn	99.1	90.9	-8.2	99.3	96.4	-2.9
Wheat	98.8	97.0	-1.8	99.5	97.5	-2.0
Sorghum	98.7	93.4	-5.3	98.6	92.9	-5.7
Soybeans	94.9	84.1	-10.8	97.9	92.3	-5.6
Alfalfa Hay	91.3	72.0	-19.3	85.0	80.0	-5.0
All Cropland	97.2	92.7	-4.5	97.9	91.9	-6.0

different in their tendency to certify (or be in a program).

A comparison of the left and right sides of the table indicate that non-certifiers generally have less of the item of interest. This can be seen by noting the counts for non-certifiers is smaller in the weighted side of the table. This suggests that non-certifers are smaller operators. This and other differences between certifiers and non-certifiers are discussed in Appendix F.

Errors of Response. We were able to examine nonresponse errors because the FSA county office data collection phase obtained "true" answers for program and certification status. In addition to examining nonresponse errors we can also examine errors of response. For this comparison we restrict ourselves to only those JAS tracts from which we received a response to the relevant program or certification question in June. Table 7 shows the comparison between the proportion of acres in a program (certified) using the county office reports versus the farmer reported information. The difference between the farmer and county office generated proportions we denote as net response error.

The net response error ranged from -3.2 percent to 2.7 percent for program items. Ignoring the implications of nonresponse, the table indicates that farmers had a small tendency to report that they were in a program when they were not. Part of the difference could be because farmers may sign-up to be in a program and then withdraw. This can occur because an operator planted more of an item than would have be allowed under the program. The farmer must then choose between destroying part of the acres planted or leaving the program. This reason was mentioned by some county offices during the callback phase of the project.

Generally, farmers were much better at self-reporting their program status compared to their certification status. For all cropland and for each specific item farmers tended to under-report their certification. The smallest differences of -1.8 and -2.0 percent in Kansas and Nebraska, respectively, occurred for wheat.

The reason for the small differences for wheat may be because there are few acres that are not in the wheat program that go on to be certified. For responding JAS tracts in the two states only about 3 percent of the wheat acres not in the program are certified compared to 10-13 percent of feed grain acreage. We suspect that those not in a program may not have understood the term certification and possibly confused it with participating in a program. The largest differences occurred for the non-program crops, alfalfa and soybeans. The proportion of Kansas alfalfa acres reported certified in June was 19.3 percent less than what was actually certified. When farmers certify they report for all crops. However, the focus is usually on program crops and operators that only have a non-program crop in the NASS tract may not consider that they certified the non-program crop acreage. Questionnaire improvements may be useful to emphasize that all crops, not just program crops, are certified with FSA.

While net response error is a useful measure to illustrate the difference between the measures of participation, the statistic masks the total amount of error that is occurring. Figure 1 shows errors as a percent of "Complete" acres. "Complete" acres are those acres for which the relevant program or certification question was answered in June. Since we are using the FSA response as truth, farmers reporting they participated with FSA when they did not would increase the net response error in the positive direction (denoted as • Farmer=No, FSA=Yes in the figure) and errors occurring because farmers reported they did not participate when they, in fact, did would offset these errors in the negative direction. The net response error for program items tends to be small and the errors are offsetting. The errors for certification items, however, are relatively large and negative. The errors, as a percentage of complete acres are largest for certification of non-program crops, soybeans and alfalfa hay.

The percent of complete acres may be strongly influenced by a single record, especially for an item that is relatively rare or where few operators grow the item. Table 8 shows counts of tract operators that had a particular item. The first column details the number of operators that had the item in the June Survey, including NASS tracts that were observed. The second column shows the number of tracts that did not participate with FSA. For example all or part of 32 NASS tracts of the 151 NASS tracts that had corn in Kansas did not enter into the Feed Grains program with FSA (according to FSA records). The other four columns of the table focus on NASS tracts for which a response to the relevant JAS program or certification question was obtained. One-hundred and twenty-five records of the 151 records that had corn responded. Of those 125 records 27 did not participate in the program. Seven of those 27 tracts were reported, during the June survey, in the program when they were not. Additionally, 4 tracts were reported not to be in the program while FSA records indicated the land areas were in the program.

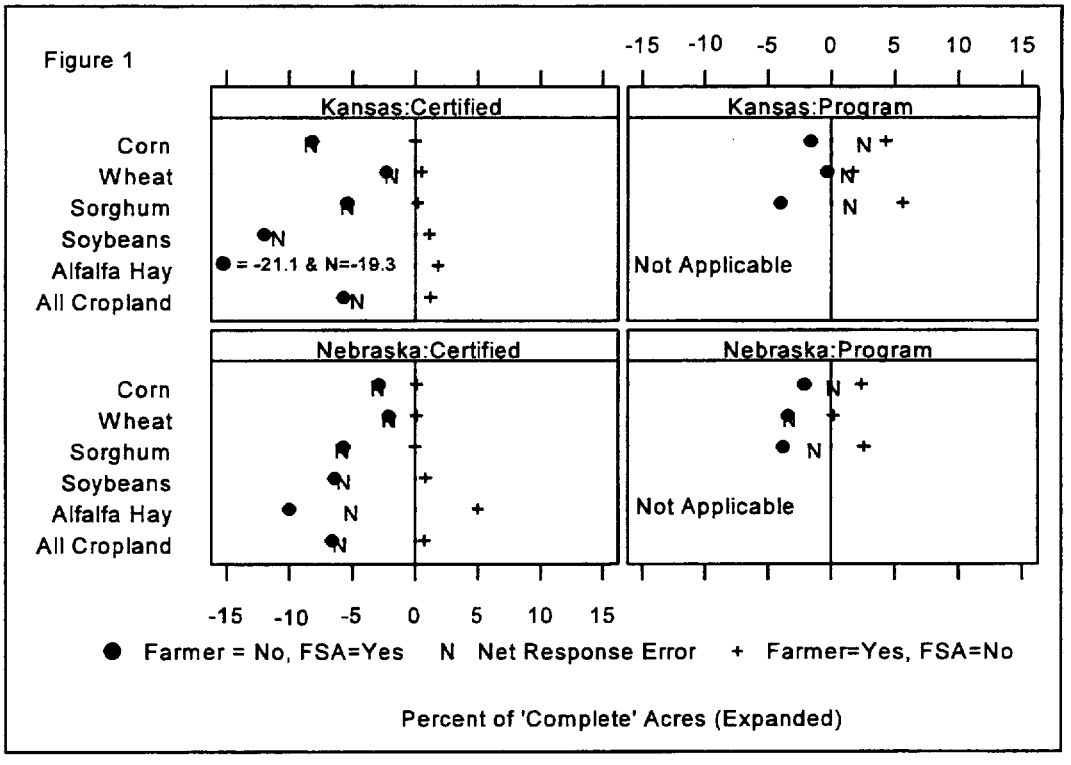


Table 8:

Components of Net Response Error (Counts of NASS Tracts)

Item	Number of NASS Tracts That Had the Item.... Number	and did not Participate According to FSA (FSA=No)	Number of NASS Tracts That Had the Item and Responded to the Relevant Prgm. (Cert.) Question on the June Survey... Number	and did not Participate According to FSA (FSA=No)	Farmer= Yes FSA=No 1/	Farmer=No FSA=Yes
Kansas: Program						
Corn	151	32	125	27	7	4
Wheat	778	72	659	59	16	8
Sorghum	300	64	260	52	16	14
Nebraska: Program						
Corn	639	127	505	91	21	12
Wheat	233	23	177	14	4	4
Sorghum	159	28	126	20	3	6
Kansas: Certified						
Corn	151	5	111	5	0	12
Wheat	778	25	637	21	5	22
Sorghum	300	9	258	8	1	24
Soybeans	227	24	181	17	4	22
Alfalfa Hay	125	6	101	5	1	12
All Cropland	1,223	86	959	67	17	102
Nebraska: Certified						
Corn	639	19	503	11	2	20
Wheat	233	5	173	2	2	6
Sorghum	159	9	126	6	0	7
Soybeans	416	15	320	12	2	21
Alfalfa Hay	290	30	226	25	10	25
All Cropland	1,073	81	793	60	14	90

1/ Tracts where farmer indicated in the June Area Survey that the item was in a particular program and FSA records indicate that he was not in the program.

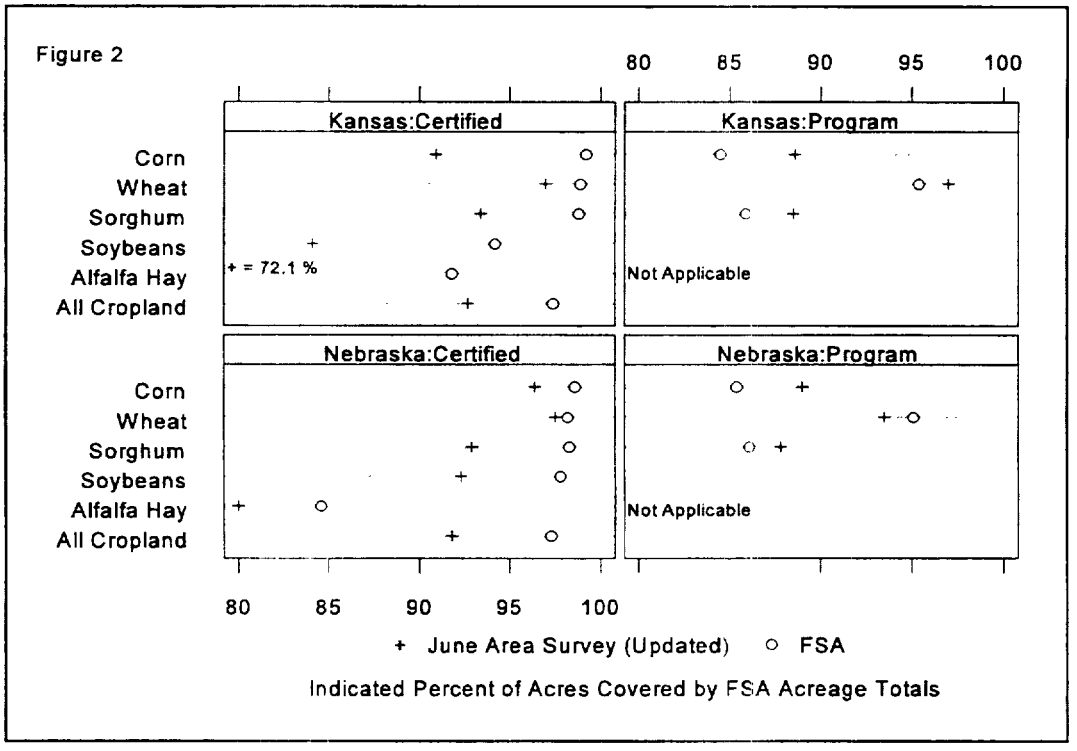
The errors based on counts of operators tend to follow the pattern given in Figure 1 using percent of complete acres. However, Table 8 illustrates a point that is not apparent in Figure 1. Sixty-seven tracts did not certify some or all of the cropland in the tract in Kansas, however, an additional 102 tracts reported that they did not certify when they did in fact certify. In both states, the number of cropland tracts that were incorrectly reported as not-certified was larger than the number of tracts that were not certified. Also striking is the relatively small number of tracts that were not certified for some items. Only 11 tracts containing corn were not certified in Nebraska.

It appears that farmers were better able to self-report their program status than their certification status. Also, farmers were better able to report certification status for program crops compared to non-program items. We suspect that some farmers may not realize they are certifying non-program items when they certify their program crops. When a NASS tract consists of only non-program crops the operator may fail to realize these acres are also certified.

We have illustrated the effect of nonresponse and response errors in the data. However, the nonresponse and response errors often tend to cancel. In Figure 2 the FSA and JAS updated values are plotted. The difference between the values can be described as the total net error. The total net error is the amount of error that exist after offsetting errors are taken into account.

FSA Based Planted Acreage Indications. The FSA coverage information together with totals provided by FSA can be used to create an estimator of planted acreage for an item. The estimator is:

Figure 2



$$\hat{Y} = Y_{FSA}\left(\frac{1}{R_{F\cdot\cdot}}\right)$$

Where:

Y_{FSA} = FSA total from Total Farm Acreage (TFA) or Universal Farm Acreage (UFA) reports (described earlier) for the particular crop,

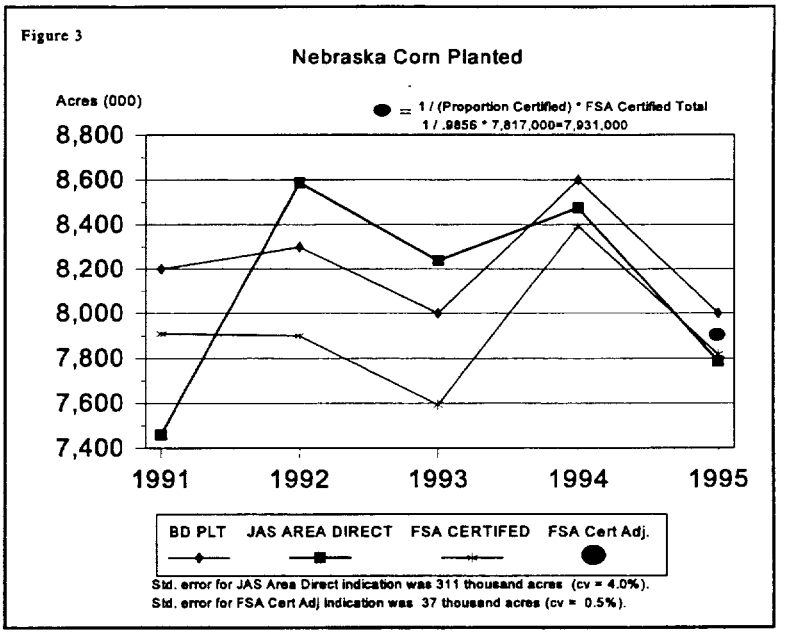
$R_{F\cdot\cdot}$ = proportion of the crop covered by FSA program or certified total calculated using either the FSA or farmer reported participation status, $R_{FSA\cdot}$ or $R_{Farmer\cdot}$

This estimator will expand the FSA total to account for areas not covered by FSA data. The CV of the estimator is equal to the CV for the ratio that is being used in the estimator since the FSA totals are free of sampling error.

Figure 3 illustrates the comparison of the FSA based estimator to NASS's main estimator of planted acreage - the JAS Tract (Direct) Expansion. The FSA based estimator would appear to provide a reasonable indication of planted acreage with a much lower cv than the tract estimator.

However, the FSA based estimator could not be expected to replace the JAS Direct expansion as both require field level data from the JAS. Also, the FSA data are not available in June. In the best case, the FSA data would not be useful until the first part

Figure 3



of August. Nevertheless, the coverage adjustment transforms the FSA totals from a lower bound for an estimate into a useful acreage indication. Table 9 shows FSA based indications, the related JAS direct expansion and the Agricultural Statistics Board values for selected items in the two states.

The estimators utilizing FSA data provided reasonable indications of total crop acreage, often very close to final Board values. The absolute relative deviation from

Figure 4

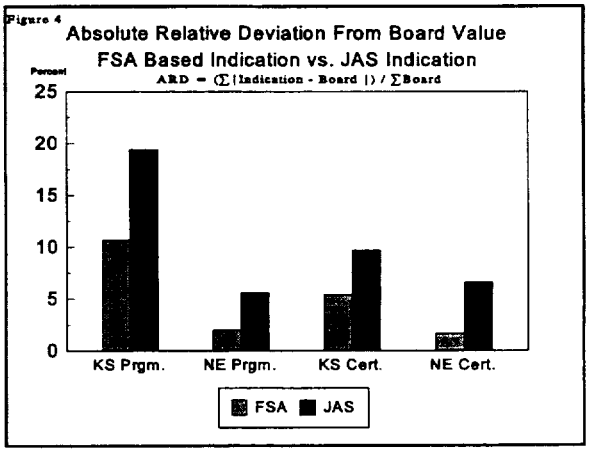


Table 9:

Comparison of FSA Based and JAS Direct Indications of Planted Acres

Item 1/	FSA Total	FSA Based Indication	JAS Direct Indication	Board	|FSA - Board|	|JAS - Board|
Kansas: Program			in Thousands			
Corn	1,754	2,075	2,010	2,150	75	140
Wheat 2/	9,993	10,472	11,073	11,700	1,228	627
Sorghum	2,399	2,793	2,384	3,300	507	916
Nebraska: Program						
Corn	6,775	7,931	7,787	8,000	69	213
Wheat 2/	1,905	2,003	1,937	2,150	147	213
Sorghum	979	1,137	946	1,250	113	304
Kansas: Certified						
Corn	2,010	2,026	2,010	2,150	124	140
Wheat	10,742	10,858	11,073	11,700	842	627
Sorghum	3,286	3,326	2,384	3,300	26	916
Soybeans	2,005	2,130	1,847	2,100	30	253
Alfalfa Hay (Harv.)	726	791	836	850	59	14
Nebraska: Certified						
Corn	7,817	7,931	7,787	8,000	69	213
Wheat	2,017	2,053	1,937	2,150	97	213
Sorghum	1,192	1,212	946	1,250	38	304
Soybeans	2,989	3,055	2,882	3,100	45	218
Alfalfa Hay (Harv.)	1,126	1,330	1,255	1,350	20	95

1/ Data -- Kansas Program & Nebraska Program -- Total Farm Acreage Report 12/07/96
Data -- Kansas Certified -- Univeral Farm Acreage Report 3/01/96
Data -- Nebraska Certified -- Universal Farm Acreage Report 03/05/96

2/ FSA excludes grazing and other uses for small grains in the Total Farm Acreage Report.

the Board value for the 1995 FSA based indications was approximately one-half of the size of the absolute relative deviation between the Board and the 1995 JAS indication as shown in Figure 4. The smaller deviations may be due to the consideration the Board gave to the FSA based indications. (FSA wheat program totals exclude wheat for other uses, so wheat was excluded from the absolute relative deviation calculations.)

Quality of FSA Acreage Totals. Even the absence of reporting and nonresponse errors, three potential problems remain with using FSA data to estimate planted acreage: quality, timeliness and future availability. Based on a limited evaluation we will report on the quality of FSA data. Timeliness and future availability will be addressed in the recommendations section of the paper.

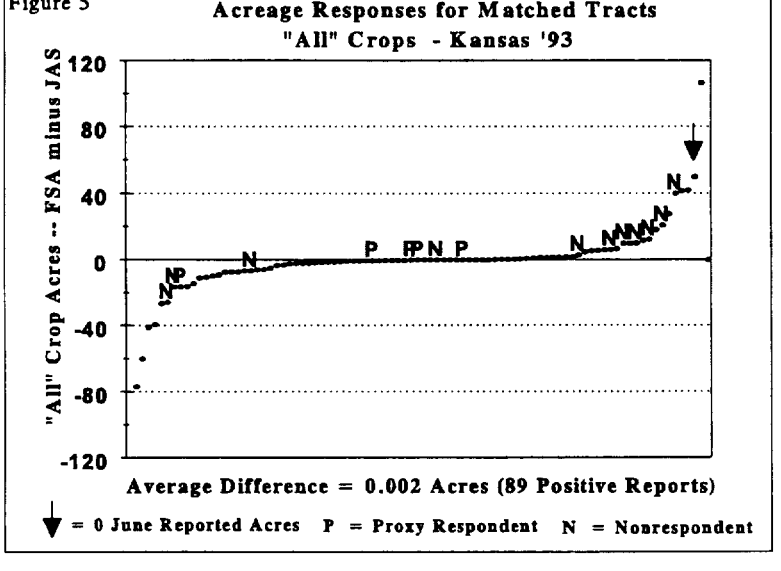
While FSA planted acreage data may have high coverage in many areas, little is known about the non-sampling errors associated with the data. One potential problem is that farmers may certify their acreage in a county other than where the crop is physically grown. Usually this occurs in a neighboring county but farmers may certify in another state under certain

conditions. There were 66 FSA tracts involving 57 NASS tracts in Kansas and 58 FSA tracts involving 53 NASS tracts in Nebraska that were certified in a county other than where the land was located. No FSA tracts were certified in another state that involved a sampled Ag.-Crop NASS tract in the two states. The cross county certifications may affect county-level use of FSA data but would not impact its use here.

In addition to acreage being allocated to the wrong geographic area, acreage may be misstated or the crop may be incorrectly identified in FSA records. These potential data errors were a concern early in this project. To evaluate this concern, data from Weaver's project, which involved the 90 Kansas JAS segments rotating into the sample in 1993, were re-analyzed. Acreage data were extracted from the 1993 FSA administrative data files for FSA tracts whose boundaries were identified as matching the boundaries of a NASS tract.

The FSA tract data were compared to NASS tract data. The NASS tract values for specific crops were subtracted from the FSA reported values. The resulting differences were arrayed in increasing order. Figure 5 shows the comparison for all cropland in Kansas.

Figure 5



Non-respondents and proxy respondents (someone other than the operator) to the JAS are indicated on the chart. Most of the reports to both NASS and FSA are nearly identical and many of the differences occur when the data for the June Area Survey is observed or reported by a proxy, suggesting that the JAS data may not be of the highest quality for that particular tract. Generally, the differences between FSA and NASS reported data were not large. However, data quality problems may vary by area and crop. NASS should remain cautious for quality problems in any administrative data source it uses. Additional charts for other major Kansas crops are given in Appendix G.

CONCLUSIONS

One of NASS's strategic goals is to, "Continually seek to improve the accuracy, timeliness, and relevancy of agricultural and rural statistics". An objective in obtaining this goal is to, "Maximize the use of alternative data sources to substantiate or strengthen survey data." (NASS, 1994).

The focus of this project was to evaluate the feasibility of estimating the proportion of crop acreages that are covered in FSA totals using farmer reported data. The results of the survey were

encouraging although there are aspects that require improvement.

The coverage level of cropland by FSA identification numbers exceeded 99 percent. The certification coverage level of program crops exceeded 98 percent in both states. The certification coverage level for all cropland exceeded 97 percent in both states.

Farmers were willing to discuss their participation status and did not consider it to be a 'sensitive topic". Based on evaluations by enumerators, participation questions on the survey did not hamper cooperation efforts or add a significant amount of time to the survey interview.

The bias associated with the June Survey coverage indications due to non-response was generally small, ranging from -0.5 to 3.2 percent, although larger for the proportion of acres in a farm program compared to certification rates.

June reported data was also affected by response errors. These errors were caused by farmers reporting that they would certify (be in a program) when they were not and vice versa. The two errors tended to cancel each other out. However, for certification farmers tended to report they would not certify when, in fact, they did go on to certify. The net response error associated with the June Survey data ranged from -3.2 to 2.7 percent for program items and -19.3 to -1.8 percent for certification items. Crops not eligible for program participation showed the largest net response bias. The total net error ranged from -19.8 percent to 4.1 percent.

The estimators utilizing FSA data provided reasonable indications of total crop acreage, often very close to final Board values. The absolute relative deviation from the Board value for the FSA based indications was approximately one-half the size of the deviation between the Board and the JAS indication.

Based on a small investigation, farmer's FSA acreage reports tended to be closely related to the values farmers report on the JAS, suggesting that FSA acreage data may have similar qualities to the field-level JAS data. However, the FSA acreage data does have errors and these errors may vary substantially over geographic region and time. NASS should exercise caution and monitor the quality of any administrative data source it uses.

RECOMMENDATIONS

1. NASS SHOULD MONITOR THE FSA's IMPLEMENTATION OF THE 1996 FARM BILL AND THE AVAILABILITY OF FARMER REPORTED ACREAGE DATA.

As this paper goes to press a new farm bill is being implemented. The new farm bill, which may be amended, will be in effect for the next seven years. The new farm bill contains provisions that are much different than previous bills. Because of this, it is unclear at this time what acreage data, if any, FSA will collect from farmers at the tract level. In addition, the terms associated with reporting data to FSA may change. Because of the new terminology and rules many farmers may not be familiar with the reporting rules by the time the June Area Survey would be conducted in

1996. For these reasons we recommend that no follow up study be conducted in 1996 until it is clear what data would be available to NASS.

2. IF FSA CERTIFICATION AND/OR PROGRAM INFORMATION ARE AVAILABLE IN FUTURE YEARS THE FOLLOWING SHOULD BE CONSIDERED:

2A. REPEAT THE PROJECT IN THE TWO ORIGINAL STATES.

The survey should be conducted again in Kansas and Nebraska to begin to build a history of coverage estimates. Also, this will provide a benchmark to determine if the improvements suggested below were successful.

2B. EXPAND THE WORK TO INCLUDE OTHER STATES.

The work was conducted in two midwestern states with high levels of coverage. The work should be expanded to other areas with lower levels of expected coverage and different farming practices. However, the work should first be expanded to states with large acreages (e.g. greater than a million acres) of a widely dispersed crop. This would allow the relatively rare event of not certifying to be measured for the item. Certification levels of specialized and/or highly localized crops would be difficult to measure with an area-based survey.

2C. RETAIN A FOLLOW-UP PHASE FOR ALL STATES.

Each state may have different error characteristics, for that reason we recommend continuing to do the August phase of the work, especially during the first year of the work in a state. Operationally, it may be sufficient to check, by telephone, with FSA on the status of the cropland areas reported as not certified.

2D. FOCUS ON CERTIFICATION AND DO NOT ASK ABOUT PROGRAM PARTICIPATION.

Although farmers were better able to accurately report their program participation status, program participation will likely no longer be pertinent under the new farm bill. We recommend only asking about certification, or its successor, and more carefully emphasizing to the farmer and the enumerator what is being asked.

2E. IMPROVE THE TIMELINESS OF FSA REPORTS FOR GREATER USEABILITY.

FSA acreage totals are not 'final' until near the end, or sometimes after, the current crop year. The acreage totals continue to change over the course of the crop year. This occurs for several reasons: some counties are slow in entering data, verification of field acreage creates minor changes, etcetera. Even if accurate coverage estimates can be created they will not be useable until the FSA files become nearly "final". However, a massive amount of data have been available relatively early in the crop year. For example, by the first week of July in 1994 the Total Farm Acreage report showed over

5.4 million acres of corn planted in Nebraska. In August the number reported was 8.3 million acres and 8.4 million acres in September. The final Board estimate for Nebraska corn planted in 1994 was 8.6 million acres. Over the past ten years the Board planted acreage for Nebraska has ranged from 7.3 to 8.6 million acres.

We propose that consideration be given to creating a report that would total matched, planted tract crop acreages for the current and previous years as well as the number of matching tracts. A summary of this type would give indications of change over thousands of matched tracts. In addition, these tracts would be "comparable" since they represent the same land areas in both crop years. Adjustments for areas with high levels of missing data should also be incorporated into any ratio (See Parsons and Iwig, 1995). Using data from one state Benz (1996b) found mixed results predicting final totals using preliminary data. A reasonable goal would be to provide the Agicultural Statistics Board with FSA based acreage indications by the August acreage board.

2F. CONDUCT RESEARCH TO EVALUATE THE QUALITY OF DATA REPORTED TO FSA.

Before NASS commits to relying on FSA or any other administrative data source we should seek to evaluate the non-sampling error characteristics associated with the source.

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APPENDIX A -- SECTION D - RESEARCH (JUNE AREA QUESTIONNAIRE)

Page 5a

SECTION D RESEARCH - CROPS AND LAND USE ON TRACT

The next few questions are part of a research study aimed at reducing the number of times farmers report similar crop information to different USDA Agencies.

50. [*Was **CORN** or **SORGHUM** reported in the tract?*]

☐ **YES** - [*Continue*] ☐ **NO** - [*Enter 3 in Code Box 230 and go to item 52.*]

51. Of the total corn and sorghum acres inside the blue boundary, how much is the 1995 Feed Grains Farm Program? (*Farm program sign-up is completed on CCC Form 477.*)

☐ **ALL** = 1 [*Enter code, and go to item 52.*]
☐ **PART** = 2 [*Enter code, and continue.*]
☐ **NONE** = 3 [*Enter code, and go to item 52.*]

Code: 230

[*Ask only if **CORN** was reported in the tract.*]
a. How many of the **corn** acres inside the blue boundary are in the 1995 Feed Grains Program? . . . . . Acres: 231 .

[*Ask only if **SORGHUM** was reported in the tract.*]
b. How many of the **sorghum** acres inside the blue boundary are in the 1995 Feed Grains Program? . . . . . Acres: 232 .

52. [*Was **WHEAT** reported in the tract?*]

☐ **YES** - [*Continue*] ☐ **NO** - [*Enter 3 in Code Box 233 and go to Item 54.*]

53. Of the total wheat acres inside the blue boundary, how much is the 1995 Wheat Farm Program? (*Farm program sign-up is completed on CCC Form 477.*)

☐ **ALL** = 1 [*Enter code, and go to item 54.*]
☐ **PART** = 2 [*Enter code, and continue.*]
☐ **NONE** = 3 [*Enter code, and go to item 54.*]

Code: 233

a. How many of the **wheat** acres inside the blue boundary are in the 1995 Wheat Program? . . . . . Acres: 234 .

54. [*Was **CROPLAND** reported in the tract?*]

☐ **YES** - [*Continue*] ☐ **NO** - [*Enter 3 in Code Box 235 and go to Item 56.*]

55. Of the cropland acres inside the blue boundary, how much has or will be certified with the Consolidated Farm Service Agency (formerly ASCS) for the 1995 crop year? (*Has or will CFSA Form 578 be completed for the land within the blue boundary? Certification does not require a farm to be entered in a farm program.*)

☐ **ALL** = 1 [*Enter code, and go to Section E.*]
☐ **PART** = 2 [*Enter code, and continue.*]
☐ **NONE** = 3 [*Enter code, and go to item 56.*]

Code: 235

[*Ask only if part of the cropland acres will be certified in 1995. Describe unusual situations in notes.*]

[*Ask only if **CORN** was reported in the tract.*]
a. How many of the **corn** acres inside the blue boundary have or will be certified with CFSA (formerly ASCS)? . . . . . Acres: 236 .

[*Ask only if **SORGHUM** was reported in the tract.*]
b. How many of the **sorghum** acres inside the blue boundary have or will be certified with CFSA (formerly ASCS)? . . . . . Acres: 237 .

[*Ask only if **WHEAT** was reported in the tract.*]
c. How many of the **wheat** acres inside the blue boundary have or will be certified with CFSA (formerly ASCS)? . . . . . Acres: 238 .

A

56. Of the total acres inside the blue boundary, how much is accounted for by one or more Consolidated Farm Service Agency (CFSA) farm or tract numbers?

		Code
☐ ALL	=1 [*Enter code, and go to* ***Section E.***]	239
☐ PART	=2 [*Enter code, and continue.*]	
☐ NONE	=3 [*Enter code, and go to* ***Section E.***]	

57. [*If only part of the total acres are coverd by a Consolidated Farm Service Agency (CFSA) number(s) describe situation in notes below.*]

Notes for Item 51: _____

Notes for Item 53: _____

Notes for Item 55: _____

Notes for Item 57: _____

General Notes on Research Section D: _____

Office Use
241

Completion Code for Research Section D Only	
1 - Incomplete Blank - Otherwise	240

APPENDIX B -- FORMULAS FOR COMPUTING COVERAGE RATIOS

We estimate farm program participation proportion for corn by finding the ratio of "known" corn acres in the program divided by the "known" total acres of corn. Corn farm program participation is defined as:

$$Corn\ Program\ Participation = \frac{\sum_{i=1}^{m}\sum_{j=1}^{n_i}\left(\delta_{ij}y_{ij}e_{i\cdot}+\gamma_{ij}z_{ij}e_{i\cdot}\right)}{\sum_{i=1}^{m}\sum_{j=1}^{n_i}\lambda_{ij}y_{ij}e_{i\cdot}}$$

where:

- i = segment index, $i = 1,\ldots,m$
- j = tract index within segment $j = 1,\ldots,n_i$
- n_i = Number of tracts in the i^{th} segment,
- m = Number of segments in a particular state,
- y_{ij} = Sum of field level corn planted acres (IC530),
- z_{ij} = IC231 value
- δ_{ij} = 1 if IC230 = 1, 0 otherwise,
- γ_{ij} = 1 if IC230 = 2 and IC231 $\neq$ -1, 0 otherwise,
- λ_{ij} = 1 if IC230 = 1 or IC230=2 and IC231 $\neq$-1, or IC230=3, 0 otherwise,
- $e_{i\cdot}$ = June area frame expansion factor for the i^{th} segment.

Similarly, we define grain sorghum program participation by substituting for y_{ij}, z_{ij}, γ_{ij}, and λ_{ij},

where:

- y_{ij} = Sum of field level grain sorghum planted acres (IC570),
- z_{ij} = IC232 value,
- γ_{ij} = 1 if IC230 = 2 and IC232 $\neq$ -1, 0 otherwise,
- λ_{ij} = 1 if IC230 = 1 or IC230=2 and IC232 $\neq$ -1, or IC 230=3, 0 otherwise.

For wheat program participation substitute y_{ij}, z_{ij},δ_{ij}, γ_{ij}, and λ_{ij} in the above equation,

where:

- y_{ij} = Sum of field level wheat planted acres (IC540),
- z_{ij} = IC234 value
- δ_{ij} = 1 if IC233 = 1, 0 otherwise,
- γ_{ij} = 1 if IC233 = 2 and IC234 $\neq$ -1, 0 otherwise,
- λ_{ij} = 1 if IC233 = 1 or IC233=2 and IC234 $\neq$ -1, or IC 233=3, 0 otherwise.

Certification of corn is the ratio of "known" corn acres certified divided by the "known" total acres of corn. Define corn certification as:

$$\textit{Corn Certification Coverage} = \frac{\sum_{i=1}^{m}\sum_{j=1}^{n_i}\left(\delta_{ij}y_{ij}e_{i\cdot}+\gamma_{ij}z_{ij}e_{i\cdot}\right)}{\sum_{i=1}^{m}\sum_{j=1}^{n_i}\lambda_{ij}y_{ij}e_{i\cdot}}$$

where:

- i = segment index, $i = 1,\ldots,m$
- j = tract index within segment $j = 1,\ldots,n_i$
- n_i = Number of tracts in the i^{th} segment,
- m = Number of segments in a particular state,
- y_{ij} = Sum of field level corn planted acres (IC530),
- z_{ij} = IC236 value
- δ_{ij} = 1 if IC235 = 1, 0 otherwise,
- γ_{ij} = 1 if IC235 = 2 and IC236 $\neq$ -1, 0 otherwise,
- λ_{ij} = 1 if IC235 = 1 or IC235=2 and IC236 $\neq$ -1, or IC235= 3, 0 otherwise,
- $e_{i\cdot}$ = June area frame expansion factor for the i^{th} segment.

Grain sorghum and wheat certification coverage levels can be found in an analogous manner.

To reduce respondent burden, the acreages of major nonprogram crops were not asked in the "partial" section of Question 55. However, if we ignore both "partials" and incomplete reports we can obtain a measure of certification coverage for major nonprogram crops. For soybeans, alfalfa hay and "all" cropland the coverage level is:

$$\textit{Certification Coverage} = \frac{\sum_{i=1}^{m}\sum_{j=1}^{n_i}\delta_{ij}y_{ij}e_{i\cdot}}{\sum_{i=1}^{m}\sum_{j=1}^{n_i}\lambda_{ij}y_{ij}e_{i\cdot}}$$

where:

- i = segment index, $i = 1,\ldots,m$
- j = tract index within segment $j = 1,\ldots,n_i$
- n_i = Number of tracts in the i^{th} segment,
- m = Number of segments in a particular state,
- y_{ij} = Sum of field level soybeans planted (IC600), alfalfa hay harvested (IC653) or all cropland, respectively,
- δ_{ij} = 1 if IC235 = 1, 0 otherwise,
- λ_{ij} = 1 if IC235 = 1, or 3, 0 otherwise,
- $e_{i\cdot}$ = June area frame expansion factor for the i^{th} segment.

APPENDIX C -- ENUMERATOR EVALUATION ANALYSIS

As the individuals who interact with respondents, the field enumerators are an important resource in determining problems with questionnaires and other items that may affect data quality. For that reason we polled the enumerators working on this project at several points: immediately after explaining the project at the training school, after the June Survey data collection and after visits to the FSA county offices in August. Copies of the evaluation forms follow this discussion.

June Survey. The June data files indicate that a total of 83 enumerators collected data on Ag-Crop tracts during June in the two states (40 in Kansas and 43 in Nebraska). In Kansas 29 of the enumerators responded to the pre-survey questionnaire and 43 of the Nebraska enumerators responded. On the post-June survey evaluation 29 and 40, respectively, responded in Kansas and Nebraska. The average responding enumerator in Kansas had worked on over 7 June surveys and the average Nebraska enumerators had worked over 12 (Question 9 post-survey). Three Kansas enumerators and 6 Nebraska enumerators reported working less than 1 year (Question 5 pre-survey).

Question 1 of the pre-survey questionnaire asks how well the enumerators thought they understood the topic (farm program sign-up and certification) prior to the training session. On a 5-point scale where 1 indicates not at all to 5 indicating extremely well, the mean values were 3.07 and 2.79 for Kansas and Nebraska enumerators, respectively. So it would appear the average enumerator had at least a moderate understanding of the topic prior to the training. Question 4 of the pre-survey questionnaire asked how well prepared they felt to do their job based on the training for the research questions. Most indicated the hour-long training session had them good to excellently prepared to do their job. The mean response was 4.21 and 4.33 in Kansas and Nebraska, respectively. Consistent with the pre-survey reports, in the post survey questionnaire (Question 8) only 4 of the 69 responding enumerators thought that the training was inadequate.

Enumerators were queried on how "sensitive" they thought respondents would find the questions in Research Section D. Enumerators and respondents perception of the sensitivity of questions could affect the answers to the questions and the willingness of respondents to complete the interview. Figure C.1 shows enumerator's responses to the question before and after the survey. In both states, enumerators indicated that the questions were less sensitive than they expected. The result held in the aggregate and when responses were matched for enumerators. This was further evidenced by Question 5 of the post-June questionnaire which asked enumerators if any respondents ended the interview prematurely because of Research Section D questions. Only one enumerator reported a break-off interview due to the research questions.

Question 3 of the pre-survey questionnaire and Question 2 of the post-survey questionnaire inquire about how well respondents were able to answer without their records. A 5-point scale was used

with 1 indicating almost none would be able to answer to 5 indicating almost all. Figure C.2 indicates that enumerators perceived that most farmers would be able to answer without their records. Enumerators were more positive about respondents ability to answer after the survey as the modal response category shifted from the most category to the almost all category.

Enumerators generally thought that almost all respondents understood the terms that were used in the questionnaire as shown in Figure C.3 (Question 3 post-survey). However, Figure C.4 shows, a number of enumerators indicated there was some uncertainty by farmers on whether they would certify for the 1995 crop year (Question 4 post-survey).

Questions 6 and 7 of the post-survey evaluation focused on "partial" situations. That is, for example, when only part cropland inside the NASS tract would be certified with FSA. The JAS questionnaire branched to a set of sub-questions for those situations. Most enumerators did not report any "partials". Of those who did, they generally rated the questionnaire as performing "good".

Question 7 was a hypothetical question asking enumerators preference between the current questionnaire design for the research questions versus an alternative design that was considered but not used. Enumerators in both states preferred the design currently being employed 3 to 1. Generally, it would appear that enumerators were, slightly, pleasantly surprised by the willingness and ability of respondents to answer the questions. Many of the enumerators commented on the post-survey evaluation that the section caused no problems and went very quickly.

August County FSA Data Collection.
After enumerators visited the FSA county offices they asked to complete an evaluation form and send back to the state office. Fewer enumerators were needed for August phase of the project. Nineteen Kansas and 34 Nebraska enumerators worked on the August phase of the project. Fourteen of the Kansas enumerators and 19 of the Nebraska enumerators returned the form.

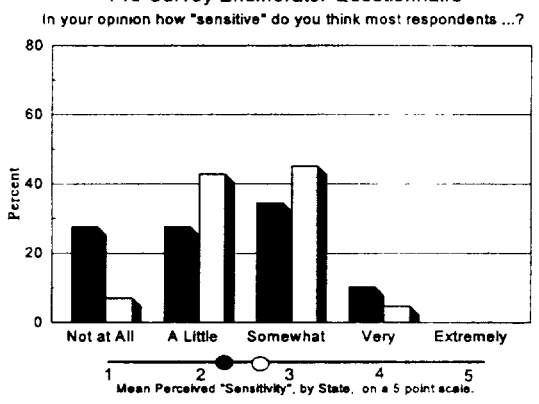
The August evaluation form was structured for open-ended answers as opposed to the closed-form of the earlier evaluations. Enumerators reported that they were very well received by the county offices. The workload in most of the county offices had slowed from the peak certification period and enumerators were given plenty of assistance. They also reported a letter sent to the county offices signed by the State FSA Director and the State Statistician was very helpful in establishing a rapport with the county personnel.

Most enumerators did not find collecting the data to be difficult. Most found the training to be adequate. A few enumerators reported some particular situations were they were unsure what to do. Much of the ambiguity came from collecting farm and tract information over non-cropland areas.

Overall enumerators reported the interaction with the county FSA personnel to a very positive experience.

APPENDIX C -- ENUMERATOR EVALUATION ANALYSIS -- FIGURES

Figure C.1



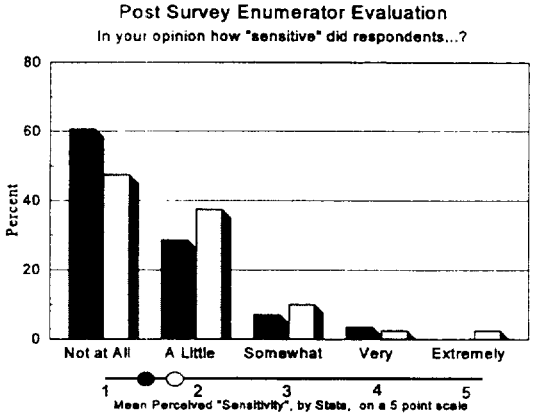
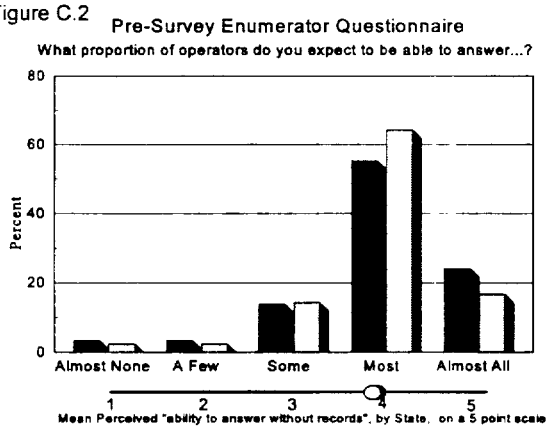


Figure C.2



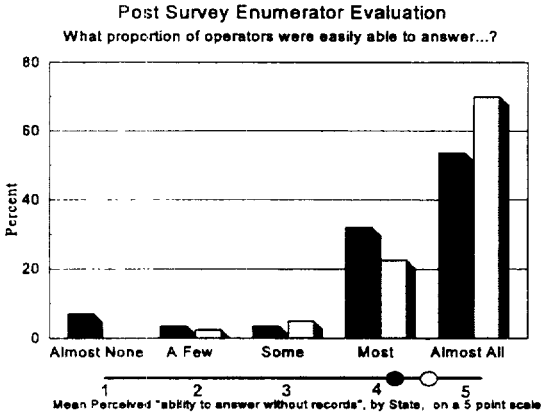


Figure C.3

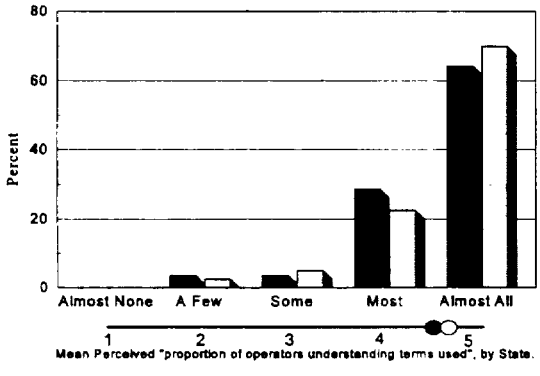
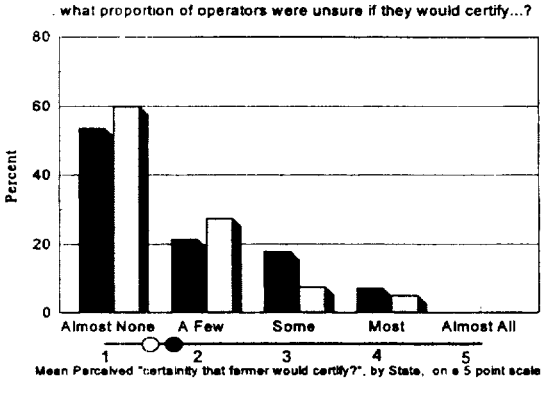


Figure C.4



APPENDIX C -- PRE-SURVEY ENUMERATOR QUESTIONNAIRE

FSA Questionnaire

State You Work In _____ Your Enumerator Number _____

Circle the number that best describes your answer.

1. Before this training, how well did you understand the topic we discussed? (i.e. farmer certification, program sign-up etc.)

1	2	3	4	5
Not at All	A Little	Some	Very Well	Extremely Well

2. How "sensitive" do you think most respondents will find these questions?

1	2	3	4	5
Not at All Sensitive	A Little Sensitive	Somewhat Sensitive	Very Sensitive	Extremely Sensitive

3. What proportion of operators do you expect will be able to easily answer the Section D research questions without referring to their records?

1	2	3	4	5
Almost None	A Few	Some	Most	Almost All

4. How well do you feel the training you have received on this section has prepared you to do your job?

1	2	3	4	5
Very Poorly	Poor	Fair	Good	Excellent

5. How long have you worked as a NASS field enumerator?

1	2	3	4	5
Less than 6 Months	6 Months to 1 Year	1 to 2 years	2 to 5 years	More than 5 years

6. Please note any comments about the questions on this form, Section D Research, or the training you have just received.

_____

_____

APPENDIX C -- POST-JUNE SURVEY ENUMERATOR EVALUATION

FSA Questionnaire

State You Work In _____ Your Enumerator Number _____

The following questions refer to the items in Section D--Research. Circle the number that best describes your answer.

1. In your opinion, how "sensitive" did most respondents find these questions?

1	2	3	4	5
Not at All Sensitive	A Little Sensitive	Somewhat Sensitive	Very Sensitive	Extremely Sensitive

2. What proportion of operators were able to easily answer the Section D--Research questions without referring to their records? (Please discuss situations that made answering these questions difficult for respondents in the notes section below).

1	2	3	4	5
Almost None	A Few	Some	Most	Almost All

3. What proportion of operators, in your opinion, seemed to understand the terms (such as certification) used in Section D Research?

1	2	3	4	5
Almost None	A Few	Some	Most	Almost All

4. In your opinion, what proportion of operators were unsure if they would certify for the 1995 crop year?

1	2	3	4	5
Almost None	A Few	Some	Most	Almost All

5. Did this section result in any break-off interviews? (Respondent refused to finish the interview after hearing Section D-Research questions. If yes, please describe number times and circumstances in notes.)

1	2
Yes	No

6. Some respondents only had part of their land in a farm program or only certified part of the land they operated inside the segment.

For respondents who had these "partial situations" how well did the questionnaire work?

1	2	3	4	5	6
Very Poor	Poor	Fair	Good	Excellent	Not Applicable (no partials)

7. One way to avoid the "partials" mentioned in Question 6 would be to change the questionnaire. One possible way to change the questionnaire would be to add some lines to the field page in Section D to replace the questions in Section D--Research. Under this suggested design, there would be a lines for each field asking if the field was or would be in the feed grains program, wheat program, and certified.

Considering the interviewing you have just completed which design do you think would work better, the current design or the one suggested above?

1	2
Current Design	Suggested Design

8. Did the training you received on Section D--Research adequately prepare you to do your job? (How could the training be improved? Please make any suggestions below in notes)

1	2
Training Adequate	Training Inadequate

9. Including this one, how many June Area Surveys have you worked as a field enumerator?

_____

10. Please note any comments pertaining to Section D--Research regarding training, design of the questionnaire, respondents reactions to the questions etc. (Use back of page, if necessary)

_____

_____

_____

APPENDIX C -- AUGUST ENUMERATOR EVALUATION FORM

FSA County Office Questionnaire

State You Work In _____ Your Enumerator Number _____

How were you received in the FSA offices? Did you or the FSA officials refer to the letter sent by the State Statistician and the State Executive Director?

_____

_____

_____

Did the county offices appear to be extremely busy or comment on the timing of our visits? Did the county offices expect you to make an appointment?

_____

_____

_____

How difficult did you find it to complete your tasks? Did you encounter situations that you were unsure what to do? (If yes, describe)

_____

_____

_____

Did the training and instructional materials adequately prepare you to do your job? Do you have any suggestions for improvement or areas of the training that you felt were extremely worthwhile?

_____

_____

_____

Do you have any suggestions for improvements in the data collection form? In the procedures to complete this work? Additional comments?

_____

_____

APPENDIX D -- AUGUST DATA COLLECTION INSTRUMENT

KANSAS AGRICULTURAL STATISTICS SERVICE

Project Code 520

1995 CFSA SCREENING FORM

COUNTY	**SHAWNEE**
COUNTY EXECUTIVE DIRECTOR	**Earline Jirik**
ADDRESS	**3231 SW Van Buren Suite 1**
TOWN	**Topeka**
TELEPHONE	**(913) 555-2121**

STATE: KANSAS	COUNTY: SHAWNEE	SEGMENT	LINE NO.
20	177	1003	00

Enter Starting Time [001] Go to next page

1995 CFSA SCREENING FORM

20	177	1003

1	2		3				4	5						6	7
	NASS Tract		Status reported during June Ag. Survey				Is any Part of the NASS tract covered by a CFSA tract no.?	Record CFSA Farm and Tract Number if any part of CFSA tract falls inside the Blue NASS tract boundary						Is any part of another CFSA tract inside the NASS tract?	Has all the land within the NASS tract been described? Yes = 1 No = 3
										In 1995 is the CFSA tract...? Yes = 1 No = 3					
Line No.	No.	Letter	Ag Tract	Tract Acres	Wheat in Tract	Corn or Grain Sorghum in Tract	Yes = 1 No = 3 *(If No go to next line)*	Farm No.	Tract No.	in the Feed Grains Program	in the Wheat Program	Certified	certified in a county other than the one it is located in? (if yes, where?)	Yes = 1 No = 3 *(If Yes goto Col.5, if No goto Col.7)*	*(If yes goto next line no. If No, note below and on map copy)*
1	010 1	A	No	60	N\A	N\A	020	021	022	023	024	025	026	027	028
								031	032	033	034	035	036	037	
								041	042	043	044	045	046	047	
								051	052	053	054	055	056	057	
2	010 2	B	No	3	N\A	N\A	020	021	022	023	024	025	026	027	028
								031	032	033	034	035	036	037	
								041	042	043	044	045	046	047	
								051	052	053	054	055	056	057	
3	010 3	C	No	3	N\A	N\A	020	021	022	023	024	025	026	027	028
								031	032	033	034	035	036	037	
								041	042	043	044	045	046	047	
								051	052	053	054	055	056	057	

Notes on Tract A _____

Notes on Tract B _____

Notes on Tract C _____

1995 CFSA SCREENING FORM

20	177	1003

1	2		3				4	5							6	7
	NASS Tract		Status reported during June Ag. Survey				Is any Part of the NASS tract covered by a CFSA tract no.?	Record CFSA Farm and Tract Number if any part of CFSA tract falls inside the Blue NASS tract boundary.		In 1995 is the CFSA tract ? Yes = 1 No = 3					Is any part of another CFSA tract inside the NASS tract?	Has all the land within the NASS tract been described? Yes = 1 No = 3
Line No	No	Letter	Ag Tract	Tract Acres	Wheat in Tract	Corn or Grain Sorghum in Tract	Yes = 1 No = 3 *(If No go to next line)*	Farm No	Tract No.	in the Feed Grains Program	in the Wheat Program	Certified	certified in a county other than the one it is located in? (If yes, where?)		Yes = 1 No = 3 *(If Yes go to Col. 5, if No goto Col. 7)*	*If yes go to next line no. If No, note below and on map copy!*
4	010 5	E	No	9	N\A	N\A	020	021	022	023	024	025	026		027	089
								031	032	033	034	035	036		037	
								041	042	043	044	045	046		047	
								051	052	053	054	055	056		057	
5	010 6	F	YES	40	No	No	020	021	022	023	024	025	026		027	089
								031	032	033	034	035	036		037	
								041	042	043	044	045	046		047	
								051	052	053	054	055	056		057	
6	010 7	G	Yes	12	Yes	No	020	021	022	023	024	025	026		027	089
								031	032	033	034	035	036		037	
								041	042	043	044	045	046		047	
								051	052	053	054	055	056		057	

Notes on Tract E _____

Notes on Tract F _____

Notes on Tract G _____

1995 CFSA SCREENING FORM

20	177	1003	00

Answer After Completing Data Collection

1 Have you accounted for all of the tracts listed on the form?
☐ Yes - Continue ☐ No - Make corrections below

2 Do you have two copies of CFSA photography to cover all NASS tracts?
☐ Yes - Continue ☐ No - Obtain copies and continue

3 Have you correctly drawn off and properly labeled NASS tract and segment boundaries onto one copy of the CFSA photography?
☐ Yes - Continue ☐ No - Correct copies and continue

4 Are CFSA farm and tract numbers legible on the CFSA photography?
☐ Yes - Continue ☐ No - Correct copies and continue

5 Are any of the CFSA Tracts reported to another county office?
☐ Yes - Note tract and county on form
☐ No - Conclude interview and thank CFSA Staff

Name of CFSA Personnel Assisting You _____

Segment Notes -- _____

_____

_____

Ending Time	002
Enumerator Number	003
Supervisor Number	004
Julian Date	005

APPENDIX E -- PARTICPATION RATES BY RESPONSE

Table E.1

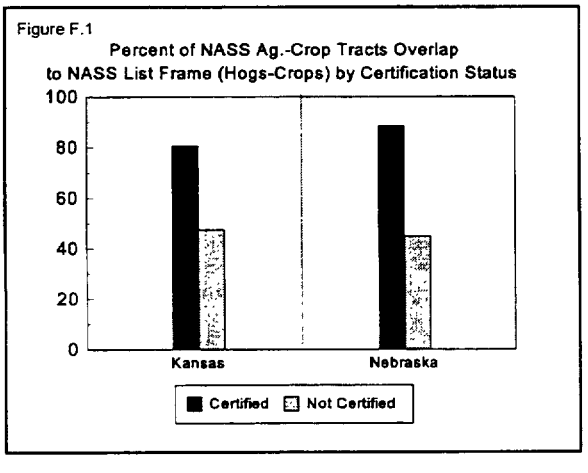
Item	Provide a Response to Program Question on JAS?	Expanded Acres (000) Program Status			Percent of Total Program Status		
		Program	Not Program	Response Status	Program	Not Program	Response Status
Kansas Corn	Yes	1,527	251	1,778	85.9	14.1	100.0
	No	241	73	313	76.8	23.2	100.0
	Total	1,768	323	2,091	84.5	15.5	100.0
Wheat	Yes	8,789	401	9,190	95.6	4.4	100.0
	No	1,776	105	1,883	94.4	5.6	100.0
	Total	10,567	506	11,073	95.4	4.6	100.0
Sorghum	Yes	1,862	281	2,142	86.9	13.1	100.0
	No	185	56	241	76.9	23.1	100.0
	Total	2,047	337	2,384	85.9	14.1	100.0
Nebraska Corn	Yes	5,423	694	6,117	88.7	11.3	100.0
	No	1,229	441	1,670	73.6	26.4	100.0
	Total	6,652	1,135	7,787	85.4	14.6	100.0
Wheat	Yes	1,501	52	1,553	96.7	3.3	100.0
	No	341	43	384	88.8	11.2	100.0
	Total	1,842	95	1,937	95.1	4.9	100.0
Sorghum	Yes	668	82	751	89.0	11.0	100.0
	No	146	49	195	74.8	25.2	100.0
	Total	814	132	946	86.1	13.9	100.0

Table E.2

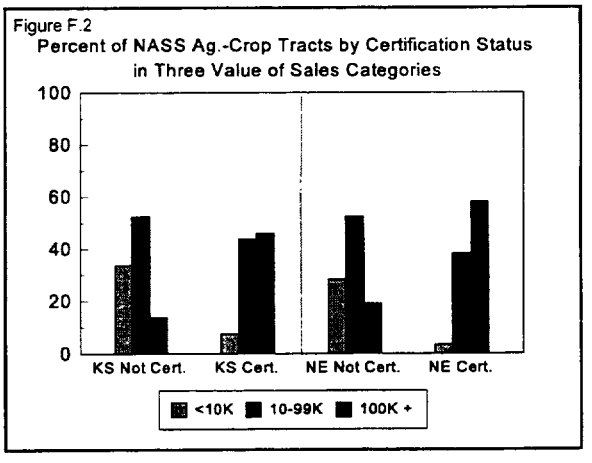
Item	Provide a Response to Certification Question on JAS?	Expanded Acres (000) Certification Status: Certified	Not Certified	Response Status	Percent of Total Certification Status: Certified	Not Certified	Response Status
Kansas Corn	Yes	1,777	17	1,794	99.1	0.9	100.0
	No	297	0	297	100.0	0.0	100.0
	Total	2,074	17	2,091	99.2	0.8	100.0
Wheat	Yes	8,940	109	9,050	98.8	1.2	100.0
	No	2,015	9	2,023	99.6	0.4	100.0
	Total	10,955	118	11,073	98.9	1.1	100.0
Sorghum	Yes	2,084	28	2,112	98.7	1.3	100.0
	No	270	1	271	99.6	0.4	100.0
	Total	2,355	29	2,384	98.8	1.2	100.0
Soybeans	Yes	1,417	76	1,492	94.9	5.1	100.0
	No	322	32	355	90.8	9.2	100.0
	Total	1,739	108	1,847	94.2	5.8	100.0
Alfalfa Hay	Yes	642	61	703	91.3	8.7	100.0
	No	126	7	133	94.7	5.3	100.0
	Total	768	68	836	91.8	8.2	100.0
All Cropland	Yes	22,500	656	23,156	97.2	2.8	100.0
	No	4,642	83	4,725	98.3	1.7	100.0
	Total	27,142	739	27,880	97.4	2.6	100.0
Nebraska Corn	Yes	6,019	42	6,061	99.3	0.7	100.0
	No	1,656	70	1,727	95.9	4.1	100.0
	Total	7,675	112	7,787	98.6	1.4	100.0
Wheat	Yes	1,479	8	1,487	99.5	0.5	100.0
	No	423	26	449	94.2	5.8	100.0
	Total	1,903	34	1,937	98.2	1.8	100.0
Sorghum	Yes	740	11	751	98.6	1.4	100.0
	No	190	5	195	97.5	2.5	100.0
	Total	930	16	946	98.3	1.7	100.0
Soybeans	Yes	2,069	45	2,115	97.9	2.1	100.0
	No	751	17	768	97.8	2.2	100.0
	Total	2,820	62	2,882	97.8	2.2	100.0
Alfalfa Hay	Yes	846	149	995	85.0	15.0	100.0
	No	216	44	260	83.1	16.9	100.0
	Total	1,062	193	1,255	84.6	15.4	100.0
All Cropland	Yes	14,689	322	15,011	97.9	2.1	100.0
	No	4,027	190	4,217	95.5	4.5	100.0
	Total	18,717	512	19,228	97.3	2.7	100.0

APPENDIX F -- CHARACTERISTICS OF NON-CERTIFIED TRACTS

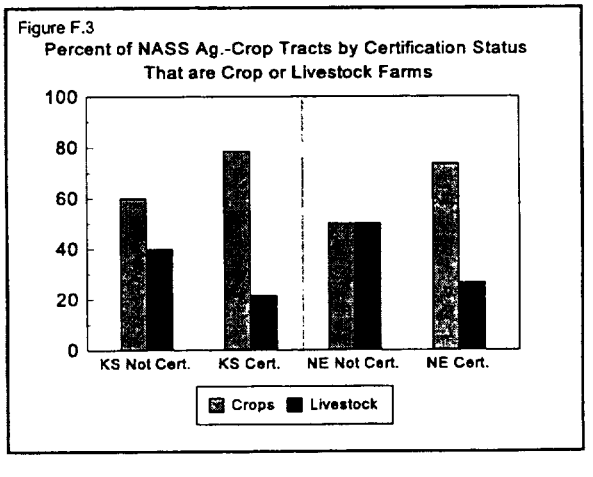
As shown earlier in Table 8, all or part of 86 NASS Ag.-Crop tracts in Kansas and 81 tracts in Nebraska did not certify with FSA. These tracts represent the NOL of an FSA frame for crops in the two states. The characteristics of these tracts are of interest for several reasons. Because NASS uses FSA information to build and maintain its list frame these tracts may shed some light on those that may be missed using FSA as a list frame source. Also, if FSA data is used to form a sampling frame, understanding the characteristics of its NOL may be useful in modeling the areas not covered by the frame. Six NASS tracts in Kansas were partially certified. That is, some of the cropland within the NASS tract was certified and a portion of the cropland was not certified with FSA. Four records in Nebraska were partially certified. These records are excluded from the analysis. Figure F.1 compares the proportion of certified and non-certified tracts in the two states that are represented on NASS's Hogs-Crops list. For both states, certified tracts are nearly twice as likely to be on NASS's Hogs-Crops list.



Not surprisingly, as shown in Figure F.2, non-certified tracts tend to be in a smaller value of sales class. Compared to certified NASS Ag.-Crop tracts, non-certified tracts are more often in the less than $10,000 sales category, somewhat less likely to be in the 10-99 thousand dollar sales category and much less likely to be in the 100,000 dollar plus category.



By definition all of the tracts under study must have some cropland, however, non-certified tracts tend to be more likely associated with livestock type farms as compared to certified tracts. This result holds in both states (See Figure F.3).



In comparing the response code on the back of the June questionnaire by certification status it appears that non-certified tracts in the two states have a somewhat lower response rate as shown in Figure F.4.

Non-certifying tracts tend to differ, at least marginally, from their certifying counterparts in other ways. Some of these differences are highlighted below in Table F.1.

Figure F.4

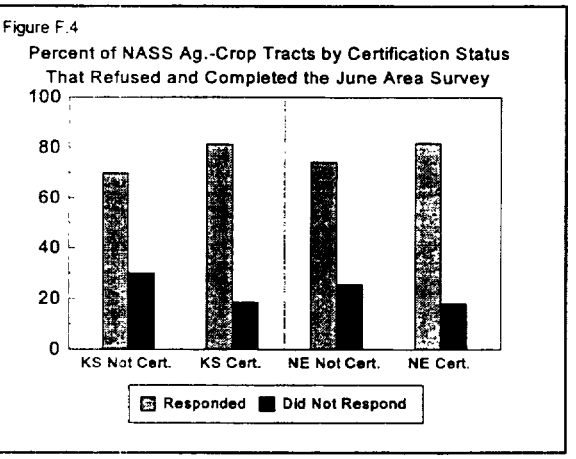
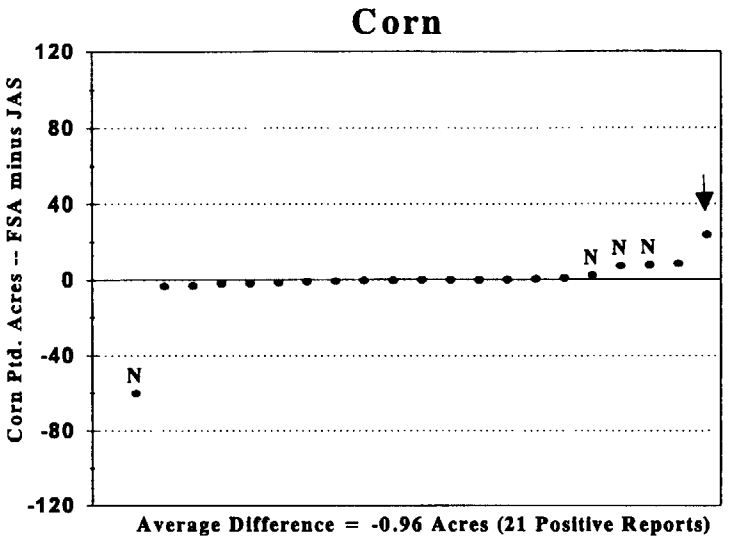


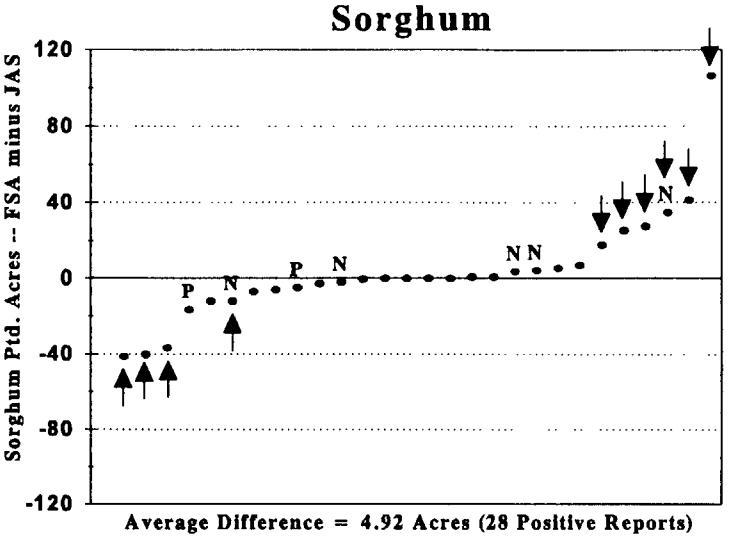
Table F.1

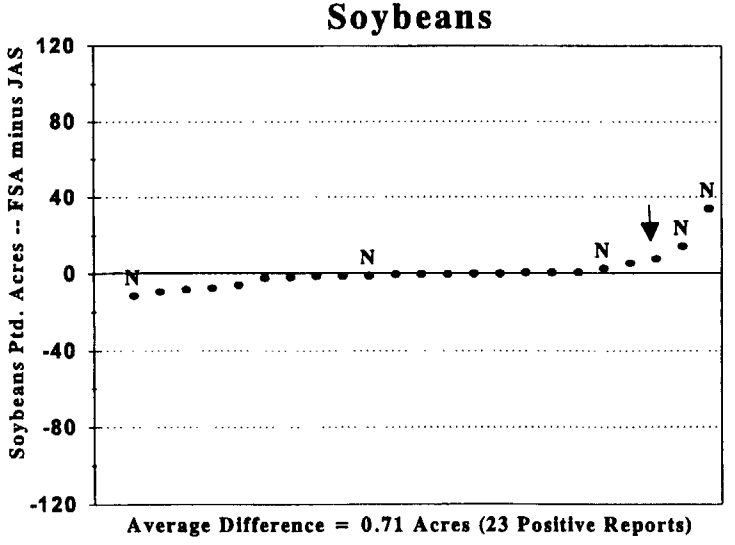
Differences Between Certified and Non-Certified NASS Ag.-Crop Tracts

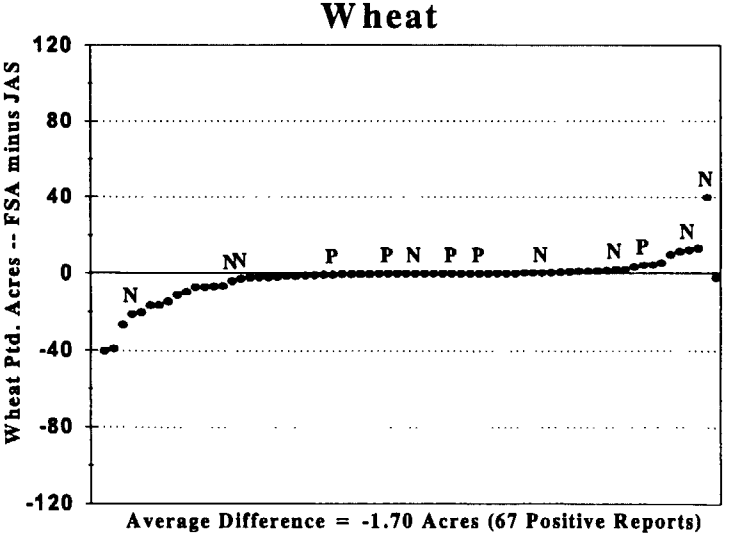
Difference	Evidence
Non-certifying tracts are more likely to be individual operations.	Non-certifying tracts were recorded as individual operations 96.3 and 93.5 percent of the time in Kansas and Nebraska, respectively Certified tracts were recorded as individual operations 84.3 and 85.9 percent of the time in Kansas and Nebraska, respectively.
Non-certifying tracts tend to have less crop acreage in the tract.	Eighty-eight point eight and 80.8 percent of non-certified tracts had fewer than 80 acres of cropland in the tract, while 33.8 and 33.9 percent of certifying Ag.-Crop tracts in Kansas and Nebraska had less than 80 acres of cropland.
Non-certifying tracts tend to appear in land-use strata associated with urban and non-cropland areas.	In Kansas and Nebraska, respectively, 37.5 and 28.2 percent of non-certified tracts appear in land-use strata defined as being less than 50 percent cultivated. For certifying tracts the percentages are 23.3 and 11.6 percent in the two states.
Non-certifying tracts were associated with farms smaller in land area than their certifying counterparts.	Farmers that controlled non-certifying tracts usually farmed less than 500 acres In Kansas 68.8 percent of non-certified tracts were associated with farms of 500 acres or less. In Nebraska the percentage was 61.5 percent. For certifying tracts the percentages were 20.1 and 27.0 percent, respectively
Farms associated with non-certified tracts are less likely to hire paid workers.	In Kansas 15.0 percent of non-certifying tracts did had hired labor compared to 31.1 percent of certified tracts. In Nebraska 14.1 percent of non-certified tracts hired labor compared to 33.2 percent of certified tracts.
Non-certifying tracts are less likely to have program crops.	In Kansas, 12.8 percent of certifying Ag.-Crop tracts had corn, 25.4 percent had sorghum, and 66.1 percent had wheat. Only 3.8 percent of non-certifying tracts had corn planted in the tract, 11.25 percent had sorghum and 27.5 percent had wheat. In Nebraska, 62.5 percent of certifying tracts had corn, 15.0 percent had sorghum and 23.0 percent had wheat. The percentages for non-certifying tracts were 24.4, 11.5 and 6 4 percent, respectively.
Certified Ag.-Crop tracts and non-certified tracts were, nearly, equally likely to have cattle.	In Kansas, 49.8 percent of non-certified tracts were a part of a farm that had cattle, compared to 58.8 percent of certified tracts. In Nebraska. 60. 3 percent of non-certified tracts had cattle and 60.6 percent of certified tracts had cattle.

Acreage Responses for Matched Tract Records -- 1993 Kansas Data









▲ = Zero FSA Reported Acres ▼ = Zero June Reported Acres N= Nonrespondent P= Proxy Respondent