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GAO

Report to the Chairman, Subcommittee on Department Operations, Research, and Foreign Agriculture, Committee on Agriculture
House of Representatives

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FARM PAYMENTS AND LOANS

Consistency Needed in USDA Crop Yield Estimates

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GAO

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The Honorable Berkley Bedell
Chairman, Subcommittee on
Department Operations, Research,
and Foreign Agriculture,
Committee on Agriculture
House of Representatives

Dear Mr. Chairman:

In response to your March 19, 1985, request, this report discusses the methods used by three U.S. Department of Agriculture agencies to estimate crop yields. In addition, the report demonstrates how differing crop yield estimates affect the agencies' calculations of farmers' program benefits and recommends that the Secretary of Agriculture act to achieve consistency among the agencies' estimates.

As arranged with your office, we are sending copies of this report to the Secretary of Agriculture and the Director, Office of Management and Budget. Copies will also be made available to other interested parties upon request.

Sincerely yours,

J. Dexter Peach

J. Dexter Peach
Director

Executive Summary

Purpose

In 1985 three U.S. Department of Agriculture (USDA) agencies made more than $15 billion in loans and payments to producers under programs in which the benefits were partially based on differing estimates of crop yields.

At the request of the Chairman, Subcommittee on Department Operations, Research, and Foreign Agriculture, House Committee on Agriculture, GAO reviewed the agencies' yield estimation practices to, among other things, identify

- the impact of differences in estimated yields used by the three agencies, and
- possible improvements to the yield estimation process.

Background

Within USDA, the Agricultural Stabilization and Conservation Service (ASCS), Federal Crop Insurance Corporation (FCIC), and Farmers Home Administration (FmHA) make payments and loans to farmers who enroll in the agencies' programs. ASCS, to control surpluses, pays farmers for diverting part of their cropland from production. ASCS also makes payments to compensate producers when market prices for their crops are below established prices These payments are based, in part, on the quantity of crops each producer grows (the crop yield).

FCIC, in exchange for premiums paid by participating producers, compensates farmers if their crops are reduced or destroyed by specified natural disasters. Computation of indemnity payments is based, in part, on crop yield data.

FmHA loans farmers money to acquire and operate farms and to help them recover from emergency disasters. Determination of the borrowers' estimated crop sales proceeds, used to help decide whether farmers receive loans, is based, in part, on estimated crop yields.

Results in Brief

Since the agencies' programs have different purposes, some farmers enroll their cropland in more than one program. Because each agency independently develops an estimated yield, the same cropland parcel can receive three different yield estimates. The agencies develop independent yield estimates largely because their differing program objectives have suggested or required a certain method for estimating cropland yields Unlike FCIC and FmHA, ASCS procedures are largely directed by legislation.

Use of differing yield estimates means that there is no consistent basis for loan and payment calculations; therefore, farmers' payments under one agency's programs can be overstated or understated when compared with the payments calculated using one of the other agencies' yield estimates. This suggests an inequitable distribution of program benefits.

The large majority of farmers and USDA officials GAO interviewed said that using a single yield estimate for a parcel of cropland is more desirable from the standpoint of logic and fairness and is also feasible

Principal Findings

Impact on Farmers

By reviewing the records of cropland enrolled in more than one agency's programs, GAO identified the differences in yield estimates developed by each agency and measured the resulting inconsistencies in program benefits. GAO estimated how each agency's payments to individual farmers for their 1984 crops would have differed if the other agencies' estimated yields had been used to calculate the payment amounts. GAO found that the impact of different yield estimates was significant for many sampled farmers. For example, table 1 shows how one wheat farmer's estimated payments and crop sales proceeds would have differed.

Table 1: Comparison of a Farmer's Payments and Crop Sales Proceeds Using Each Agency's Yield Estimate

	Using ASCS yield estimate	Using FCIC yield estimate	Using FmHA yield estimate
Total ASCS payments	$28,688	$21,311	$32,788
Maximum possible FCIC payments	32,120	23,860	36,708
FmHA's estimated crop sales proceeds	35,343	26,255	40,392

Improvements

To estimate the crop yield for a specific parcel of cropland, USDA agencies currently use various methods, which include the parcel's historical production, national yield surveys, and knowledge of local farming practices. While agency officials identified some factors that could inhibit adopting a single yield for use in their programs, the large majority of each agency's officials as well as farmers GAO interviewed said that using a single yield for the same cropland is both feasible and desirable Further, most of the officials and farmers said that the most accurate

and fair cropland yield estimate would be based primarily on actual historical production data from each specific parcel of cropland.

Recommendations

GAO recommends that the Secretary of Agriculture

- direct the Administrator of ASCS, the Administrator of FmHA, and the Manager of FCIC to jointly develop a method for estimating a single crop yield that is consistent with each agency's objectives, and to use the crop yield resulting from this method when determining the level of loans and/or payments to producers participating in ASCS, FCIC, and/or FmHA programs;
- seek any required legislative change to permit using the yield estimate resulting from the method jointly developed when calculating the amount of loans and/or payments for producers enrolled in ASCS programs; and
- direct these officials to give primary consideration to basing the yield estimation method on the actual historical production from each specific cropland unit.

To help assure consistency in crop yield estimates, GAO also recommends that the Secretary designate one agency to develop yield estimates for all crops or designate an agency to develop yield estimates for each crop on a crop-by-crop basis.

Agency Comments

Although requested, USDA did not provide official written comments in time to be included in this report. However, in discussing the report, headquarters officials of each USDA agency agreed with the concept of using a single or common yield approach The views of these officials have been incorporated into the report where appropriate.

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Abbreviations

APH	Actual Production History
ASCS	Agricultural Stabilization and Conservation Service
CED	County Executive Director
COC	County Office Committee
FCIC	Federal Crop Insurance Corporation
FmHA	Farmers Home Administration
GAO	General Accounting Office
IYC	Individual Yield Coverage
PIK	Payment-in-Kind
RCED	Resources, Community, and Economic Development Division (GAO)
SRS	Statistical Reporting Service
USDA	U.S. Department of Agriculture

Introduction

To assure that the nation's supply of food and fiber remains stable, along with the prices of agricultural commodities and the incomes of producers who grow them, the federal government administers several farm programs designed to assist producers and control the production of certain crops. Within the U.S. Department of Agriculture (USDA), several agencies operate voluntary programs that insure producers against loss, loan money to producers who cannot find credit elsewhere, and reimburse producers who refrain from growing crops that are in excess supply. In fiscal year 1985, these agencies made payments and loans totaling $15.1 billion.

Important factors in determining the amount of benefits a producer receives from a particular program are crop yields, or estimates of the amount of a particular crop a producer's land will yield in a given year. Other factors include the number of acres the producer farms and the loan and payment rates established for USDA programs annually. Since each program has a different purpose, some producers enroll their land in more than one program. However, each USDA agency then independently estimates the crop yield for that land. As a result, USDA may assign one parcel of land up to three different estimates of what it is likely to yield in a year.

Three USDA Agencies Use Crop Yield Estimates in Determining Benefits

The Agricultural Stabilization and Conservation Service (ASCS), the Federal Crop Insurance Corporation (FCIC), and the Farmers Home Administration (FmHA) operate farm programs under which producers receive payments or loans in certain circumstances. Each agency develops estimated yields for producers enrolled in its programs to help determine the payments or loans participants should receive. In fiscal year 1985, these three agencies made loans, insurance payments, and crop-reduction payments totaling more than $15 billion.

ASCS Uses Yield Estimates to Calculate Payments

ASCS administers two programs—acreage reduction and land diversion—to help avoid large commodity surpluses. When the Secretary of Agriculture determines that a major commodity—such as wheat, corn, rice, or cotton—is likely to be in oversupply, the Secretary institutes an acreage reduction program. Under acreage reduction programs, producers remove a specified portion of their cropland from production of program crops. In exchange, producers become eligible to receive price-support commodity loans and deficiency payments. Producers receive deficiency payments, in cash or commodities, to supplement their

incomes when the national average price received by farmers for one of their program crops falls below an established target price.

Whether or not an acreage reduction program for a particular commodity is in effect, the Secretary may institute paid land diversion programs after determining that the number of acres on which that commodity is grown should be adjusted to desirable goals. Producers who enroll in paid land diversion programs are required to take a specified percent of their cropland out of production (in addition to any acreage removed for an acreage reduction program). In return, producers receive a direct payment, in cash or commodities, for the commodities that they would have grown had they not participated in the land diversion program. These payments are called diversion payments. Payments made in commodities are called payments-in-kind, or PIK payments.

ASCS uses crop yield estimates in determining the amounts of deficiency and diversion payments each participating producer is entitled to receive each crop year.[1] Thus, estimated crop yields are integral factors in determining the payments to producers participating in these ASCS programs.

FCIC Uses Yield Estimates to Calculate Insurance Indemnity Payments

FCIC administers a nationwide program of crop insurance to protect producers' investments against such unavoidable risks as floods, drought, hail, and insect infestation. FCIC offers insurance for the major crops ASCS programs cover, as well as for other grains, fruits, nuts, and vegetables. Producers that FCIC insures directly pay cash premiums for the insurance, and if an insured loss occurs, collect cash payments—called indemnity payments—for their loss In addition, FCIC administers a reinsurance program for other agriculture insurers. Under this program, FCIC enters into an agreement with insurers—called reinsured companies—who sell producers crop insurance, service the policies, collect premiums, and adjust any losses on the policies. As the reinsurer, FCIC is liable for the major share of any losses incurred by participating producers.

FCIC uses an estimated crop yield for each cropland unit, or parcel, insured to estimate potential payments and to determine actual payments if a natural disaster occurs. When a producer's crops are damaged or destroyed, FCIC calculates the loss as a percentage of the producer's

[1]The year in which a crop is harvested

estimated yield and uses this figure to determine the amount of the indemnity payment the producer is entitled to receive. FCIC is limited by legislation to guarantee not more than 75 percent of a producer's normal yield during a representative period of time.

FmHA Uses Yield Estimates to Estimate Borrowers Crop Sales Proceeds

FmHA makes direct loans and guarantees some loans made by private lenders, primarily to family farmers who are unable to obtain credit from other lenders at reasonable rates and terms. FmHA operating loans provide short to intermediate term credit for operating expenses such as seed, fertilizer, equipment, and livestock. In addition to providing farm operating loans, FmHA has programs for farm ownership loans, through which producers can buy, improve, or refinance farm real estate. It also provides emergency loans to help producers recover from losses inflicted by natural disasters such as drought, floods, and hailstorms. FmHA's loan benefits are available to eligible producers of all agricultural crops, including those covered by ASCS and/or FCIC programs.

FmHA uses loan applicants' estimated crop yields to help determine the proceeds from crops that the applicants are expected to produce and sell. The proceeds from these crops is an important factor in estimating a producer's net income, which is one indicator of the producer's ability to repay loans. Although FmHA uses many factors in deciding whether or not to lend money, loan repayment ability is important to that decision.

Agencies' Program Operations Exceeded $15 Billion in 1985

Table 1.1 indicates the size of the programs the three agencies operated in fiscal year 1985 in which crop yield estimates were used to make producer loan and payment calculations.

Table 1.1: Payments and Loans Made by ASCS, FCIC, and FmHA Programs for Fiscal Year 1985

Millions of Dollars

Agency	Payment or loan	Amount
ASCS	Diversion payments	$1,525 2
	Deficiency payments	6,301 7
	PIK payments	702 4
FCIC	Indemnity payments[a]	633 8
FmHA	Farmer program loans	
	Operating loans	4,706 8
	Ownership loans	719 8
	Emergency loans	490 9

[a]Through April 9, 1986 Indemnities paid were offset by $440 million in premium income
Source Our analysis of USDA data

ASCS, FCIC, and FmHA Develop Yield Estimates Differently

Crop yield estimates play an important role in determining benefits to producers under programs administered by each of the three USDA agencies. Because each agency's programs have different objectives, farmers may voluntarily enroll in any or all programs for which they are eligible. However, when cropland is enrolled in more than one agency's programs, each agency develops an independent crop yield estimate using its own procedures. Thus, USDA may assign up to three different yield estimates for the same parcel of cropland for a given year. Similarly, land growing crops covered by two agencies' programs may receive two different estimates. For example, a producer's 100 acres of corn might receive yield estimates of 65 bushels per acre from FCIC and 75 bushels per acre from ASCS.

Obviously, a given parcel of cropland will produce only one quantity, or yield, when a crop matures and is harvested. When USDA agencies estimate two or more different yields for the same parcel of cropland, there is no consistent basis for calculating program benefits. This suggests that program benefits paid for the cropland are not consistent among agencies because the benefits are calculated using different yield estimates. For example, if the producer with 100 acres of corn mentioned previously had received ASCS deficiency payments of $7,500 based on the 75 bushel-per-acre yield, the same payments would have been $6,500 if FCIC's 65 bushel-per-acre yield was used in the calculation. Furthermore, if one yield estimate more accurately approximates the cropland's yield, logic suggests that benefits calculated using the other one or two estimates do not fairly compensate producers for crop reduction or loss or do not fairly indicate a producer's ability to repay loans.

Figure 1.1: How Much Will a Parcel of Wheat Cropland Yield?

Source USDA

Agency crop yield estimates differ, for example, for a parcel of wheat cropland such as the one in figure 1.1 in 1984, ASCS estimated 35 bushels per acre; FCIC, 26 bushels per acre; and FmHA, 40 bushels per acre.

Objectives, Scope, and Methodology

We initiated this review in response to a March 19, 1985, letter from the Chairman, Subcommittee on Department Operations, Research, and Foreign Agriculture, House Committee on Agriculture. Our objectives were to answer the following questions:

- What differences exist in the yields assigned by the various agencies?
- What is the dollar impact resulting from variations in yield calculations?
- Is there duplication among USDA agencies in their efforts to compute yields?
- What are the advantages or disadvantages of eliminating this duplication?
- Are there ways to improve the methods employed by these agencies in determining yields?

Yield Estimate Differences

To identify differences in the yields assigned by the three USDA agencies, we identified specific parcels of cropland enrolled in at least two of the agencies' programs and compared the yields the different agencies had estimated for the land.

To find cropland enrolled in multiple agency programs, we initially selected six states—Minnesota, Nebraska, Kansas, Iowa, Texas, and Arkansas—that are large agricultural states and receive substantial USDA loans and payments. Next, for each county in these six states, we obtained USDA data on the number of producers who participated in multiple programs for crop year 1984 and grew either wheat, corn, oats, barley, grain sorghum, rice, and/or cotton. We selected these crops for our review because (1) the states we selected are major producers of these crops, (2) large amounts of USDA loans and payments go to producers of these crops, and (3) programs administered by each of the three USDA agencies in our review cover these crops. We later limited our review to wheat and corn because USDA data did not reveal any counties with a large number of producers who enrolled in multiple programs and grew the other crops. We used 1984 because that was the last year for which complete data were available at the time we initiated our review.

We used this cropland information to judgmentally select 5 counties where there were large numbers of wheat producers and 5 counties where there were large numbers of corn producers enrolled in both ASCS and FCIC programs, for a total of 10 counties with ASCS/FCIC producers. We also selected 5 counties where there were large numbers of wheat

producers and 5 counties where there were large numbers of corn producers enrolled in both ASCS and FmHA programs, for a total of 10 counties with ASCS/FmHA producers. USDA's data did not show any counties with large numbers of producers enrolled in (1) both FCIC and FmHA programs or (2) all three agencies' programs. Of the counties we selected because they contained large numbers of ASCS/FCIC producers, five also contained large numbers of ASCS/FmHA producers. We counted these 5 counties twice in selecting the two 10-county groups; therefore, our sample actually consisted of 15 separate counties. These counties were all located in Iowa, Minnesota, Kansas, and Texas because the counties in Arkansas and Nebraska had smaller numbers of producers participating in more than one agency's programs.

In the sample of 10 counties with ASCS/FCIC producers, we randomly selected producers and reviewed their cropland records to determine that the same parcels of cropland were enrolled in both agency's programs and recorded the yield estimates developed by each agency for the cropland. We performed the same analysis in the 10 sample counties with ASCS/FmHA producers. On the basis of the number of producers' records we reviewed, we estimate that the differences we observed in the yields estimated by the agencies are representative of 634, or 75 percent, of the 849 ASCS/FCIC producers, and 353, or 57 percent, of the 620 ASCS/FmHA producers in the selected counties. Appendix II further details our methodology.

In each selected county, we also attempted to identify producers with parcels of cropland enrolled in all three agencies' programs for 1984. If we were unable to identify such parcels in the selected counties, we visited adjacent counties until we identified at least three producers with such parcels in each state. We identified a total of 70 such producers and reviewed their cropland files. We gathered information about these parcels to illustrate that cropland enrolled in all three agencies' programs can receive three different yield estimates. These illustrations are not generalizable to the cropland of producers (enrolled in all three agencies' programs) whose records we did not review.

Dollar Impact

To show the dollar impact of the differences in agencies' yield estimates, we determined how payment or loan calculations under one program would have differed for specific parcels of land if a yield estimate from another agency had been used in the calculations.

First, we identified a dollar measure used by each agency that is affected by yield estimates. For ASCS, we used the amount of deficiency and diversion payments—both cash and payment-in-kind (PIK).[2] For FCIC, we used the amount of insurance coverage provided—that is, the maximum potential indemnity payments.[3] For FmHA, we used the estimated proceeds of the wheat and corn that borrowers were expected to produce and sell.

Next, we substituted the yield estimates of one agency for the yield estimates of the other agency or agencies in whose programs the cropland was enrolled. For example, for each producer with parcels of cropland enrolled in both ASCS and FCIC programs, we estimated how the producer's ASCS deficiency and diversion payments would have differed if FCIC's estimated yield had been used instead of ASCS' estimated yield, and how the potential indemnity payments from FCIC would differ if the ASCS estimate were used instead of FCIC's estimate. We made these calculations for each producer whose cropland we identified as being enrolled in more than one agency's programs.

Duplication

Although each agency developed an estimated crop yield for land enrolled in its programs for the 1984 crop year, not all of the effort was duplicative because some cropland was enrolled in only one agency's programs. Available records did not permit us to determine on a national basis the total quantity of cropland enrolled in more than one agency's programs; therefore, we could not quantify the cost savings from eliminating duplication on a nationwide basis. However, we did obtain this information and estimated possible cost savings in the 15 sample counties.

To estimate the cost of developing yield estimates for the land enrolled in ASCS programs, we multiplied the number of staff days ASCS used, as documented in ASCS' work measurement system, by ASCS' estimated cost of one staff day for fiscal year 1984. For the 1984 and subsequent crop years, ASCS developed yield estimates for some land enrolled in FCIC programs (using FCIC's procedures). We estimated this cost by multiplying

[2]In estimating the dollar value of PIK payments, we used the producer's local county loan rate, which was established to reflect the relative value of the commodity at its location

[3]When purchasing federal crop insurance, producers elect to insure either 50 percent, 65 percent, or 75 percent of their expected crop They also elect a specific unit price (the price per bushel or pound) at which to insure the crop Because we wanted to estimate potential indemnity payments, we assumed that 75 percent of the crop was insured for the maximum unit prices for 1984—$2 90 per bushel for corn and $4 00 per bushel for wheat

the number of staff days ASCS used for this purpose by the estimated staff day cost. We were unable to calculate the costs incurred by FCIC for developing yield estimates because FCIC did not keep records showing how many staff days were used for this purpose. We calculated the cost FmHA incurred developing yield estimates by multiplying the staff days FmHA expended for this purpose, as estimated by the local FmHA office supervisors in the sample counties, by FmHA's estimated cost for one staff day for fiscal year 1984.

Using this cost data, we calculated the average cost for developing each agency's yield estimate for one producer. To measure the duplicative cost, we multiplied each agency's average cost by the estimated number of corn producers in the 10 selected counties with corn producers enrolled in multiple programs. Similarly, we multiplied each agency's average cost by the estimated number of wheat producers in the 10 selected counties with wheat producers enrolled in multiple programs. For example, we multiplied the estimated number of corn and wheat producers enrolled in both ASCS and FCIC programs by the estimated average cost of developing each agency's yield estimate. In this manner, we determined the estimated cost savings that would result if only one of the yield estimates had been developed.

Advantages, Disadvantages, and Possible Improvements

To identify advantages and/or disadvantages of using multiple crop yield estimates and possible improvements to the process of estimating crop yields, we reviewed and compared the sources of data and the estimation methods each agency used. We reviewed each agency's written procedures for obtaining crop yield estimates and interviewed cognizant officials of each agency in their Washington, D.C., headquarters. Because ASCS and FCIC use crop yield information prepared by USDA's Statistical Reporting Service (SRS),[4] we also interviewed SRS officials in charge of preparing crop yield estimates to determine SRS procedures used in obtaining crop yield information. We did not review the accuracy or statistical validity of any particular yield estimation method.

In addition, we devised a set of standardized interview questions and interviewed the local ASCS officials, called County Executive Directors (CEDs), and local FmHA county supervisors who were responsible for each of the counties we selected to identify duplicate yield estimates. We also

[4]SRS is the USDA agency responsible for performing various surveys of farms and farmers The information obtained in SRS surveys is used to prepare USDA publications about agricultural conditions in the United States and around the world

administered the questions to CEDs and supervisors responsible for another four counties in each state. In addition, we used a questionnaire to interview (1) officials in the state ASCS and FmHA offices in the four states we visited and (2) at least three producers who participated in more than one agency's programs in each of our sample counties. We interviewed a total of 31 CEDs, 31 FmHA county supervisors, and 100 producers. We also discussed these issues with FCIC officials in their St. Paul field office and Kansas City administrative office, and cognizant officials in each agency's Washington, D.C., headquarters.

Our field work was done between March and December 1985 in accordance with generally accepted government auditing standards.

Multiple USDA Crop Yield Estimates Result in Inconsistent Program Benefits and Duplicative Administrative Costs

Because ASCS, FCIC, and FmHA independently develop crop yield estimates for cropland enrolled in their programs, up to three different yields can be estimated for the same parcel of cropland. As a result, producers can receive financial benefits for the cropland that are inconsistent among the three agencies. For the producers' cropland included in our sample, we found that an individual's ASCS payments could have varied by as much as $7,559, or 18 percent, depending on the yield estimate used in their calculation. Similarly, we found that an individual's potential FCIC indemnity payments could have varied by $16,404, or 22 percent, and FmHA's estimate of an individual's crop sales proceeds could have varied by $14,150, or 28 percent. This suggests that some producers' benefits were understated or overstated when compared with the benefits calculated using different yield estimates.

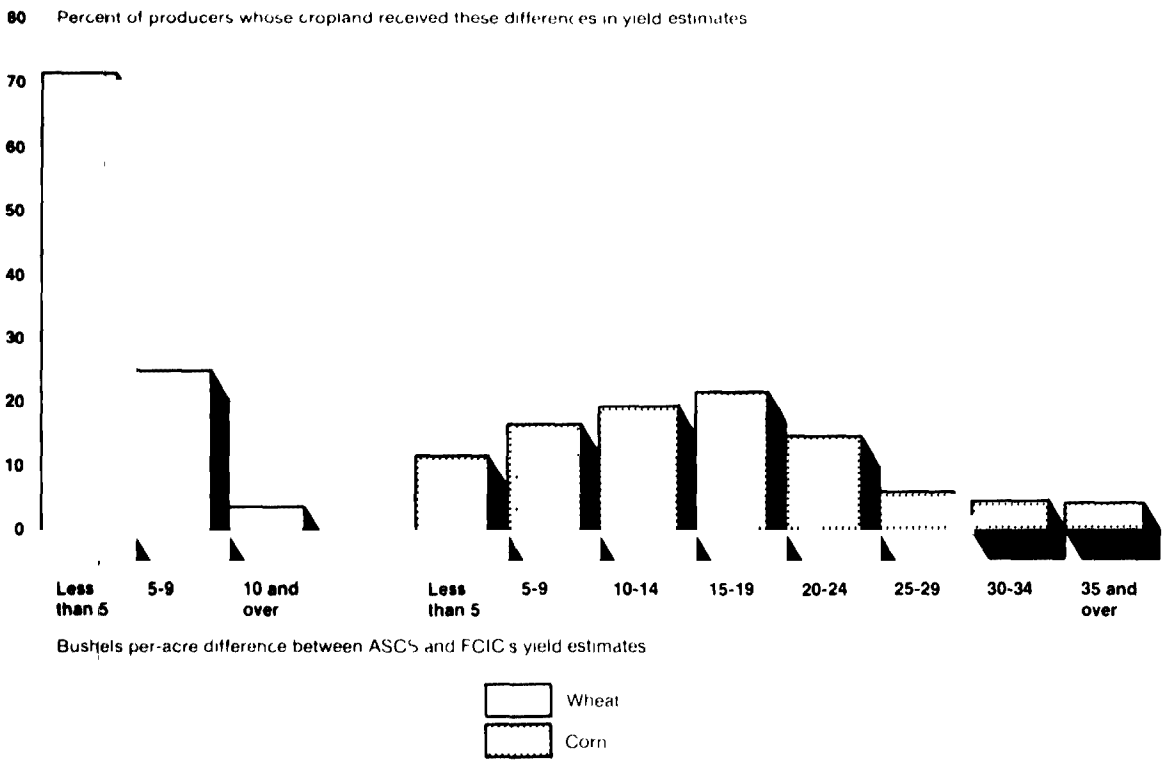
Also, we found that duplicate administrative costs result when ASCS, FCIC, and/or FmHA develop an estimated yield for the same cropland. We estimate that the administrative costs associated with calculating the yield estimates for selected wheat and corn cropland enrolled in multiple programs in the sample counties could have been from $1,236 to $5,137 less if only one yield estimate had been developed for the cropland.[1]

USDA Agencies Estimate Different Yields for the Same Cropland

Yield estimates calculated by USDA agencies varied widely for identical parcels of corn and wheat cropland included in our sample. For cropland enrolled in both ASCS and FCIC programs for the 1984 crop year, the 2 agencies' estimates differed by as much as 19 bushels per acre for wheat, or 49 percent of the 1984 national average wheat cropland yield, which was 38.8 bushels per acre; and up to 53 bushels per acre for corn, or 50 percent of the 1984 national average corn cropland yield, which was 106.7 bushels per acre. Figure 2.1 shows the extent of differences between ASCS and FCIC yield estimates for the corn and wheat cropland in our sample counties.

[1]This estimate does not include corn acreage in the 10 counties selected with wheat producers, nor wheat acreage in the 10 counties selected with corn producers

Figure 2.1: Differences Between ASCS and FCIC Yield Estimates

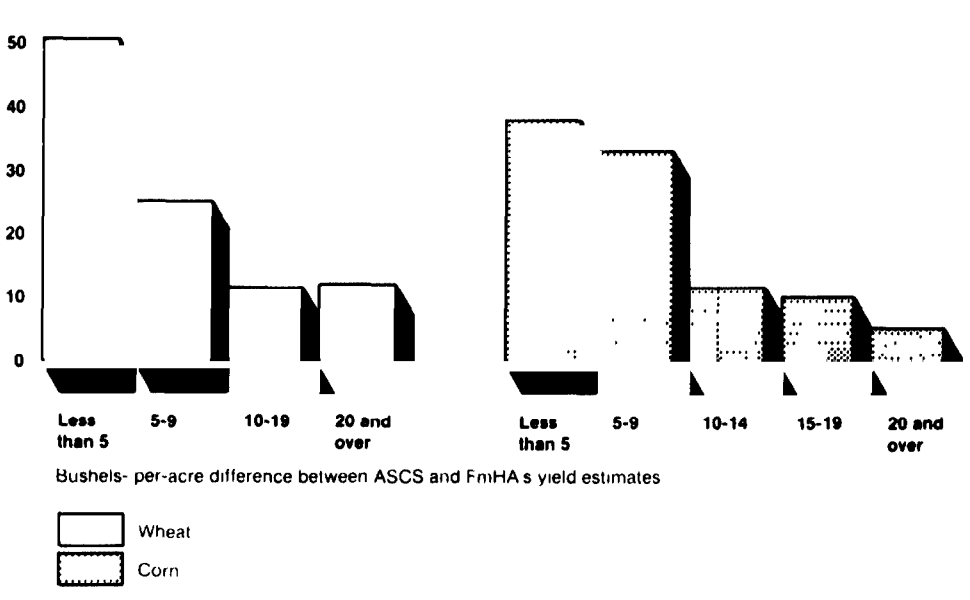


Source Our analysis of USDA data

Figure 2.1 shows estimated yield differences of 15 or more bushels per acre for half of the corn producers' cropland and differences of 5 or more bushels per acre for about one quarter of the wheat producers' cropland. We estimate that these differences in estimated yields are representative of about 75 percent of all producers in our sample counties with cropland enrolled in both agencies' programs.

Similar differences were found between ASCS and FmHA yield estimates for sampled cropland enrolled in both agencies' programs. These agencies' estimates differed by as much as 73 bushels per acre for wheat, or 188 percent of the 1984 national average wheat cropland yield; and up to 31 bushels per acre for corn, or 29 percent of the 1984 national average corn cropland yield. Figure 2.2 shows the extent of differences in ASCS and FmHA yield estimates for corn and wheat cropland in our sample counties

Figure 2.2: Differences Between ASCS and FmHA Yield Estimates



Source Our analysis of USDA data

Figure 2.2 shows estimated yield differences of 5 or more bushels per acre for more than half of both the corn and wheat producers' cropland. We estimate that these differences in estimated yields are representative of about 57 percent of all producers in our sample counties with cropland enrolled in both agencies' programs.

Differences in cropland yields were also found in our limited sample of 70 producers who enrolled cropland in all three agency programs. Table 2.1 shows differences in estimated yields of up to 62 bushels per acre for corn and 14 bushels per acre for wheat for selected producers' cropland.

Table 2.1: Differences in Yield Estimates for Cropland Enrolled in ASCS, FCIC, and FmHA Programs

Crop	Producer	Yield estimated by: (bushels/acre) ASCS	FCIC	FmHA
Corn	A	128	112	125
	B	124	78	140
	C	105	82	120
Wheat	D	30	31	35
	E	35	26	40
	F	27	24	35

Source: USDA

It is important to note that not only were the yield estimates developed by each agency different, but also the yield estimates did not exhibit a consistent pattern among agencies. For example, although FCIC yield estimates tended to be lower than the other agencies, one agency did not consistently estimate the highest or lowest yields.

Inconsistent Program Benefits Result From Different Yield Estimates

Each USDA agency bases its amount of financial benefits to participating producers, in part, on its estimated crop yield for the producer's enrolled cropland. When the agencies estimate different yields for the same parcel of cropland, however, they do not use a consistent basis for calculating the program benefits. Thus, the benefits are not consistent among the agencies, and some producers' benefits are overstated or understated when compared with the benefits that would have been calculated using the other agencies' yield estimates.

Inconsistencies Between ASCS and FCIC Benefits

ASCS calculates a producer's deficiency payments by multiplying the producer's total estimated crop production (the number of acres the producer enrolled times the estimated yield per acre) times the price deficiency for the crop (the dollar amount per bushel or pound as determined by USDA). ASCS calculates a producer's diversion payments by multiplying the estimated yield per acre, for each acre diverted from production under the program, times the established diversion payment rate. For the 1984 PIK program, ASCS calculated a producer's PIK payment by multiplying the number of acres diverted from production for the PIK program times a specified percentage of the producer's estimated crop yield.

FCIC uses an estimated crop yield for each parcel of cropland insured to estimate payments if a natural disaster occurs. FCIC calculates a producer's actual losses by determining the percentage of the producer's estimated yield that was actually damaged or destroyed. FCIC then uses this percentage to calculate the amount of indemnity payments the producer is entitled to receive.

When ASCS and FCIC develop different yield estimates for the same parcel of cropland, program payments from the two agencies are not consistent with each other. For our sampled corn and wheat producers who enrolled in both ASCS and FCIC programs for the 1984 crop year, we calculated (1) what total ASCS payments (deficiency and diversion payments) would have been if the FCIC-developed yield estimate for the cropland had been used to calculate the payments and (2) what FCIC's maximum indemnity payments could have been if the ASCS-developed yield estimate for the cropland had been used.

The potential impact of different yield estimates was significant for many of the sample producers. For example, one Iowa corn producer would have received $1,753 less—or about 37 percent—in ASCS payments on his 83 acres of corn cropland if the FCIC-developed yield estimate had been used to calculate the payments. This same producer would have been eligible for about $10,658 more—or about 60 percent—in FCIC indemnity payments if the ASCS-developed yield had been used to calculate the payments. Table 2.2 illustrates how this and other selected individual producers' 1984 crop year benefits would have differed using the other agency's yield estimate to calculate them.

Table 2.2: Differences in Selected Producers' ASCS and FCIC Payments

Crop/ producer		Yield estimated by: (bushels/acre)		ASCS payments using:		Difference		Maximum FCIC indemnity using:		Difference	
		ASCS yield	FCIC yield	ASCS yield	FCIC yield	Dollars	Percent	ASCS yield	FCIC yield	Dollars	Percent
Corn	G	91	66	$ 1,299	$ 942	$ 357	27	$ 6,571	$ 4,765	$ 1,807	38
	H	127	82	2,228	1,438	789	35	11,140	7,193	3,947	55
	I	131	82	4,687	2,933	1,753	37	28,493	17,835	10,658	60
Wheat	J	45	35	4,873	3,789	1,083	22	10,556	8,210	2,346	29
	K	50	41	41,996	34,436	7,559	18	91,140	74,736	16,404	22
	L	50	31	3,921	2,431	1,490	38	8,400	5,208	3,192	61

Source: Our analysis of USDA data

On a cumulative basis, the differences in yields show larger inconsistencies in program benefits. Table 2.3 shows that producers' total ASCS payments for corn and wheat cropland in our sample counties would have been an estimated $351,582 less, and FCIC's maximum potential indemnity payments would have been an estimated $827,150 more, if each agency's benefits had been calculated using the other agency's yield estimates.

Table 2.3: Aggregate Differences in Producers' ASCS Payments and FCIC Potential Indemnity Payments

Program benefit	Using ASCS yield	Using FCIC yield	Difference
ASCS payment			
corn producers	$ 533,265	$ 444,751	$ 88,514
wheat producers	3,129,581	2,866,513	263,068
Total	**$3,662,846**	**$3,311,264**	**$351,582**
Maximum potential FCIC indemnities			
corn producers	$2,593,158	2,160,249	$432,909
wheat producers	5,028,810	4,634,569	394,241
Total	**$7,621,968**	**$6,794,818**	**$827,150**

Source: Our analysis of USDA data

While these numbers are large, they tend to mask the effects of yield differences on individual producers because they include instances in which (1) the ASCS yield estimate is higher than the FCIC yield estimate, leading to relatively higher ASCS payments and (2) the ASCS yield estimate is lower than the FCIC yield estimate, leading to relatively lower ASCS payments. The higher or lower payments accruing to individual producers thus tend to offset each other.

Inconsistencies Between ASCS and FmHA Benefits

When producers apply for FmHA farm operating, farm ownership, and disaster emergency loans, FmHA estimates loan applicants' potential cash income and ability to repay the loans. The applicants' net incomes are derived, in part, from the estimated crop sales proceeds, and the estimated yield of the applicants' cropland is an important factor when estimating crop sales proceeds. FmHA uses estimates of net cash income and loan repayment ability to help determine whether the applicant will receive a loan and in what amount.

Because ASCS and FmHA develop yield estimates differently, they frequently estimate different yields for the same parcel of cropland enrolled in their programs. For the corn and wheat producers in our

ASCS/FmHA comparison sample, we calculated (1) what total ASCS payments would have been if the FmHA-developed yield estimate for the cropland had been used to calculate the payments and (2) what FmHA's estimated crop sales proceeds for the producers would have been if the ASCS-developed yield estimate for the cropland had been used.

The potential impact of different yield estimates was significant for many of the sample producers. For example, one Texas wheat producer would have received $6,250 more—or about 38 percent—in ASCS payments on his 122 acres of wheat cropland if the FmHA-developed yield estimate had been used to calculate the payments. This same producer's estimated FmHA crop sales proceeds would have decreased by $14,150—or about 28 percent—if the ASCS-developed yield estimate had been used. Table 2.4 illustrates the impact on this and other selected individual producers' ASCS payments and FmHA estimated crop sales proceeds for the 1984 crop year using each agency's yield estimate.

Table 2.4: Differences in Selected Producers' ASCS Payments and FmHA Crop Sales Proceeds

Crop/ producer		Yield estimated by: (bushels/acre)		ASCS payments using:		Difference		FmHA crop sales proceeds using:		Difference	
		ASCS yield	FmHA yield	ASCS yield	FmHA yield	Dollars	Percent	ASCS yield	FmHA yield	Dollars	Percent
Corn	M	129	100	$ 4,380	$ 3,395	$ 985	22	$21,285	$16,500	$ 4,785	29
	N	75	100	2,577	3,436	859	33	19,238	25,650	6,413	25
	O	94	125	1,661	2,209	548	33	9,744	13,500	3,756	28
Wheat	P	27	40	1,236	1,831	595	48	2,430	3,600	1,170	33
	Q	58	80	16,480	22,730	6,250	38	37,306	51,456	14,150	28
	R	31	60	1,149	2,224	1,075	94	2,700	5,226	2,526	48

Source Our analysis of USDA data

Table 2.5 shows that, on a cumulative basis, producers' total ASCS payments for wheat and corn cropland in our sample counties would have been an estimated $132,192 more, and FmHA's estimated crop sales proceeds would have been an estimated $298,250 less, if each agency's benefits had been calculated using the other agency's yield estimates.

Table 2.5: Aggregate Differences in Producers' ASCS Payments and FmHA Crop Sales Proceeds

Program	Using ASCS yield	Using FmHA yield	Difference
ASCS payments			
corn producers	$ 683,242	$ 684,333	$ 1,091
wheat producers	1,415,704	1,546,805	131,099
Total	**$2,098,946**	**$2,231,138**	**$132,192**
FmHA's estimated crop sales proceeds			
corn producers	$2,753,282	$2,775,878	$ 22,595
wheat producers	2,125,814	2,401,468	275,655
Total	**$4,879,096**	**$5,177,346**	**$298,250**

Source Our analysis of USDA data

As in table 2.3, while these numbers are significant, they tend to mask the effects of yield differences on individual producers. Because in some cases the ASCS yield estimate is higher than the FmHA yield estimate while in the other cases it is lower, the resulting higher or lower benefits accruing to individual producers tend to offset each other.

Inconsistencies Among ASCS FCIC, and FmHA Benefits

To further demonstrate the inconsistencies in program benefits arising from varying yield estimates, we reviewed the records of 70 producers who participated in ASCS, FCIC, and FmHA programs for the 1984 crop year. Each agency developed a yield estimate for the producers' cropland and used its estimate to calculate the producers' program payments or estimate crop sales proceeds. We computed each of these producers' benefits under each agency's programs using the other agencies' estimated yields. Table 2.6 illustrates how selected individual producers' benefits from each agency for the 1984 crop year would have differed if the other agencies' yield estimates had been used in their calculation.

Table 2.6: Differences in Selected Producers' ASCS and FCIC Payments and FmHA Crop Sales Proceeds

		ASCS payments using:			Maximum FCIC indemnity using:			FmHA crop sales proceeds using:		
Producer		ASCS yield	FCIC yield	FmHA yield	ASCS yield	FCIC yield	FmHA yield	ASCS yield	FCIC yield	FmHA yield
Corn	S	$ 6,330	$ 5,538	$ 6,181	$32,016	$28,014	$31,265	$24,543	$18,849	$23,475
	T	3,839	2,415	4,334	19,500	12,267	22,017	23,213	14,602	26,208
	U	903	705	1,032	4,568	3,567	5,220	4,950	2,880	6,300
Wheat	V	5,117	3,767	4,827	5,724	4,212	5,400	6,296	4,633	5,940
	W	28,688	21,311	32,788	32,120	23,860	36,708	35,343	26,255	40,392
	X	1,552	1,377	2,011	1,784	1,584	2,312	2,376	3,080	2,112

Source Our analysis of USDA data

Table 2.7 shows the inconsistencies, on a cumulative basis, in producer benefits; that is, how the aggregate calculations would have differed if each agency's yield estimate had been used in the other agencies' calculations.

Table 2.7: Differences in Sample Producers' USDA Benefits Using ASCS, FC C, and FmHA Yield Estimates

	Calculated using:		
Program benefit	ASCS yield	FCIC yield	FmHA yield
Total ASCS payments	$ 326,909	$ 278,545	$ 332,540
Maximum FCIC indemnity payments	1,148,381	986,545	1,149,471
FmHA crop sales proceeds	1,289,366	1,093,439	1,271,888

Source Our analysis of USDA data

Duplicative Administrative Costs Result From Multiple Yield Estimates

Each of the three USDA agencies incurs administrative costs to estimate crop yields for the cropland that producers enroll in the agencies' programs To the extent that cropland is enrolled in only one of the agencies' programs, yield estimation for the cropland is a necessary cost. However, to the extent that cropland is enrolled in more than one of the agencies' programs, a duplicate cost is incurred for developing more than one yield estimate. Records were not available to permit us to determine on a national basis the total quantity of cropland enrolled in more than one agency's programs; therefore, we could not determine the number or costs of duplicative yield estimates. However, we estimate the cost of duplicate yield estimates for selected wheat and corn cropland enrolled in multiple programs in our sample counties to be from $1,236 to $5,137.

Cost of ASCS Yield Estimates

ASCS' work measurement system identifies the amounts of time spent by ASCS county office personnel performing many administrative functions, including developing yield estimates for cropland enrolled in ASCS programs and for cropland enrolled in FCIC programs. Data obtained from ASCS showed that for our sample producers enrolled in ASCS programs, the amount of time ASCS used to develop yield estimates was 12.9 staff days.

According to ASCS' Budget Division, the estimated cost per ASCS staff day in fiscal year 1984 was $72.48. On the basis of this figure, we estimate that the total administrative cost incurred to develop ASCS yield estimates was about $935 for our sample producers' selected wheat and corn cropland, or $2.40 per producer.

Cost of FCIC Yield Estimates

For the 1984 crop year, FCIC yield estimates for an individual producer's wheat or corn cropland could be made on either of two bases. (1) the average yield of all cropland in the producer's area, calculated by FCIC, or at the producer's option (2) the documented historical yield for the individual producer's cropland. Because ASCS has local offices in most agricultural counties in the nation, FCIC arranged for ASCS to perform the yield calculations for those FCIC producers who opted for using the historical yield on their particular cropland. However, FCIC specified the procedures to be used in calculating the yield, which were not the same procedures used by ASCS in estimating the yield for ASCS program participants.

Nationwide, FCIC estimated that about 5 percent of its insurance agreements were based on a yield estimate that was calculated by ASCS for the 1984 crop year. (In our sample counties, the proportion was about 8 percent.) The remainder of the insurance agreements used an area yield calculated by FCIC. However, because FCIC did not keep records showing the time spent developing area yields, we could not estimate FCIC's administrative costs. FCIC's Deputy Director, Actuarial Division, estimated that since FCIC could develop area yield estimates for an entire county in a few days, the cost per cropland unit would be low.

Data obtained from ASCS showed that ASCS used 1.7 staff days to develop the yield estimates for our 16 sample producers who enrolled in ASCS and FCIC programs and opted for an insurance agreement using their cropland's historical yield data. On the basis of the average ASCS staff day cost of $72.48, we estimate that ASCS' administrative cost for these estimates was $122, or $7.63 per producer.

Cost of FmHA Yield Estimates

FmHA incurs administrative costs for obtaining information from borrowers, including the producers' estimated crop yield, needed to make loan program decisions. FmHA does not keep records showing the time spent developing crop yield estimates for borrowers. However, the supervisors of the local FmHA offices responsible for the 10 sample counties where we reviewed FmHA files estimated that the amount of time spent developing yield estimates for the sample producers' loans was 12.5 staff days. On the basis of FmHA's estimated staff day cost of $118.64, the total cost FmHA incurred for these producers was $1,487.

In addition, FmHA offices may request yield information from ASCS. In these cases, ASCS does not formally "develop" yield estimates for cropland enrolled in FmHA programs; therefore, ASCS' work measurement system does not identify staff time used for this purpose. However, the ASCS directors in the 10 sample counties where we reviewed FmHA files estimated that the amount of time spent developing yield data for these producers' FmHA loans was 6.2 staff days. On the basis of the average ASCS staff day cost of $72.48, we estimate that the administrative cost of developing these yield estimates was $448 Therefore, we estimate that the total cost of developing FmHA yield estimates was about $1,935 for the sample producers ($1,487 + $448 = $1,935), or $10.24 per producer.

Cost of Duplicate Yie d Estimates

We estimate that the total costs of yield estimates for the selected corn and wheat cropland in our sample counties was $6,373. This estimate represents the sum of each agency's cost of developing one producer's yield estimate multiplied by the estimated number of producers in our sample counties participating in two agencies' programs. For example, the estimated total cost of developing crop yields for the ASCS/FmHA producers' wheat and corn cropland in our sample counties is $4,462—$847 incurred for the ASCS yield estimates and $3,615 incurred for the FmHA yield estimates for the same cropland. Table 2.8 shows these total costs.

Table 2.8: Estimated Cost of Crop Yield Estimates for Selected Corn and Wheat Cropland in Sample Counties

Cost of developing:	For producers' enrolled in: ASCS/FCIC programs	ASCS/FmHA programs
ASCS yield estimates	$1,522[a]	$ 847[b]
FCIC yield estimates		
Calculated by ASCS	389[c]	N/A
Calculated by FCIC	([d])	
FmHA yield estimates	N/A	3,615[e]
Total	**$1,911**	**$4,462**

[a]Estimated number of producers enrolled in both ASCS and FCIC programs times the average cost of developing one producer's yield estimate (634 x $2 40)

[b]Estimated number of producers enrolled in both ASCS and FmHA programs times the average cost of developing one producer's yield estimate (353 x $2 40)

[c]Estimated number of producers enrolled in both ASCS and FCIC programs who opted for insurance based on actual production data times the average cost of developing one producer's yield estimate (51 x $7 63)

[d]Cost data unavailable

[e]Estimated number of producers enrolled in both ASCS and FmHA programs times the average cost of developing one producer's yield estimate (353 x $10 24)

Source Our analysis of USDA data

Because more than one yield estimate was developed for each producer's cropland, a duplicate cost was incurred. The exact amount of duplicate costs depends on which yield estimate is viewed as the one estimate that would have been developed had the duplication not occurred. Therefore, as table 2.9 shows, the duplicate cost ranges from $1,236 (using the lower costs of each sample estimate) to $5,137 (using the higher costs of each sample estimate) for the sampled producers.

Table 2.9: Duplicate Costs of Crop Yield Estimates for Sample Counties

Sample counties with:	Cost of developing yield estimates: Lower	Higher
ASCS/FCIC producers	$ 389	$1,522
ASCS/FmHA producers	847	3,615
Total	**$1,236**	**$5,137**

Source Our analysis of USDA data

Despite Differing Agency Objectives, Agency Officials and Producers Favor a Single Yield

ASCS, FCIC, and FmHA have estimated yields differently primarily because their program objectives differ, and program objectives have suggested or required that cropland yields be estimated in a specific way. For example, FCIC must estimate yields in a way that is consistent with an actuarially sound program of national crop insurance. FmHA requires yield estimates that reasonably reflect a borrower's ability to repay loans. ASCS yield estimation procedures have often been directed by legislation.

However, we found that each agency's stated program objectives do not preclude use of a single yield estimate. Indeed, although agency officials identified some factors that could inhibit adopting a single yield for use in their programs, officials from each agency agreed that a single yield is both desirable and feasible. In addition, most sampled producers also agreed that a single yield is both feasible and desirable from the standpoint of logic and fairness.

Agency Objectives Have Helped Determine Yield Estimation Methods

Although a common objective is to provide economic stability to the agricultural sector, ASCS, FCIC, and FmHA have specific program objectives. Each agency has developed different methods of estimating yields that are consistent with its objectives. The following sections focus on the methods each agency used for the 1984 crops of wheat and corn, the same year and commodities used for our analysis of yield differences. The agencies' changed their methods for the 1985 and 1986 crop years but, nevertheless, have continued to use different methods to estimate yields.

ASCS Objectives and Yield Estimation Methods

ASCS administers commodity price support programs to stabilize agricultural commodity markets and to control agricultural surpluses. Under the price support and production adjustment programs, the yield that ASCS determines for a farm is intended to represent the farm's estimated production during the current year assuming normal weather and a continuation of past production practices

ASCS' yield estimation methods are based partly on legislative requirements. The method for developing program crop yield estimates for the period 1982-85 was stipulated in the Agriculture and Food Act of 1981 (Public Law 97-98, 95 Stat. 1213). To establish yields for individual farms for the 1984 crop year, ASCS used two basic methods· established yields based on SRS data, and "proven" yields based on a cropland unit's

documented historical production. These methods are summarized briefly here and detailed in appendix I

To develop established yields for wheat and corn, ASCS first calculated from historical SRS data a state "check yield," which was used when determining yields for the state's individual counties. The county yields were determined such that the sum of the counties' estimated production of each particular crop would be equal to the state's total estimated production of the crop. Using the same process, ASCS county offices then established an estimated yield for each farm within the county, such that the sum of the producers' estimated production of each particular crop would be equal to the county's total estimated production of the crop.

Under the proven yield method, the Secretary was authorized to establish crop yields for particular cropland units on the basis of the specific unit's documented historical production. Under this procedure, producers were given the option to "prove" their crop yields by providing the cropland's production evidence (sales receipts or other documents) for a 5-year base period. ASCS calculated the proven yield as a 5-year average.

For the 1985 crop year, ASCS generally used the same two methods for estimating yields that were used in 1984. For the 1986 through 1990 crop years, the Food Security Act of 1985 (Public Law 99-198) directs the Secretary to establish an estimated yield for each farm by averaging the yields (established or proven) used by ASCS for the previous 5 years, excluding the year with the highest yield and the year with the lowest yield. In addition, in certain instances compensation is to be provided when a producer's yield estimate is reduced from one year to the next. Beginning with the 1988 crop year, the Secretary is authorized to use the documented historical yield from each particular cropland unit when computing the 5-year averages.

FCIC Objectives and Yield Estimation Methods

FCIC provides subsidized crop insurance to producers to reduce the financial risks associated with abnormal production With crop insurance, producers have the advantage of paying an annual premium for insurance coverage that will protect their income against unpredictable losses, rather than experiencing losses when crops are destroyed by natural disasters or other perils.

The Federal Crop Insurance Act of 1980 (Public Law 96-365) directed FCIC to administer an actuarially sound insurance program. The act required FCIC to set premiums at a level adequate to cover claims for losses and provide a reasonable reserve against unforeseen catastrophes. Because FCIC uses yield estimates as one of the factors in determining indemnities for wheat, corn, and other crops that it insures, the accuracy of yield estimates affects the actuarial soundness of the crop insurance program.

For the 1984 crop year, FCIC used two basic yield estimation methods applicable to wheat and corn: area average yields, based on SRS data, and Individual Yield Coverage (IYC), based on actual production evidence. These methods are described briefly below and detailed in appendix I.

Under the area yield plan, FCIC used SRS yield survey data for the most recent 10-year period to calculate a county average yield for each crop. Producers whose cropland lay within each specified geographic area were generally assigned the (same) area yield. Although using the same SRS data, FCIC's area yield calculations were developed differently from ASCS' county check yields.

Under the IYC plan, FCIC established insurance guarantees based on each producer's production. In 1984, FCIC offered the IYC plan as an option to the producer for certain crops covered under the area plan, including corn and wheat. The IYC plan allowed producers who could document yields higher than the area average to improve their insurance coverage. The producers provided their production evidence to ASCS county offices that verified the evidence and calculated the yield for FCIC insurance coverage. The IYC plan was similar in concept to ASCS' "proven yield" method in that it allowed producers who could do so to document their cropland's actual historical production.

Since the 1984 crop year, FCIC has revised its yield coverage plans to place increased emphasis on the actual historical production of individual producers' cropland. For the 1985 crop year, FCIC offered a variant of the IYC called the Actual Production History (APH) plan, which estimated producers' cropland yields on the basis of actual historical production. The APH plan differed from the IYC plan in the number of years of actual production data required and the calculations performed. FCIC concluded that the APH concept is more equitable than the area coverage plan, which provided the same insurance offer to both the

most and least productive producers. For the 1986 crop year, FCIC provides APH coverage for most crops it insures and does not use the area yield program. Under the 1986 APH program, FCIC uses a 10-year data base for each enrolled producer, containing the producer's certified actual production history, to estimate the producer's cropland yield.

Simultaneously, FCIC has increased the proportion of producers insured through reinsurance companies and decreased the proportion of producers it insures directly. For 1986, FCIC plans to transfer work load activity performed by ASCS to private insurance companies, including APH yield verification for wheat and corn.

FmHA Objectives and Yield Estimation Methods

FmHA provides farm ownership and farm operating loans to farmers who lack other sources of credit. It also provides disaster emergency loans to farmers in authorized disaster areas to restore property and operations destroyed or damaged by natural disasters. FmHA estimates a producer's cropland yield to use as one factor in assessing the producer's ability to repay farm operating, ownership, and disaster emergency loans prior to loan approval. FmHA uses another method of estimating cropland yields to determine whether a producer qualifies for a disaster emergency loan.

For the 1984 and prior crop years, producers applying for FmHA farm operating, farm ownership, and disaster emergency loans were required to submit a farm and home plan to FmHA. The farm and home plan acted as a balance sheet, a statement of financial condition, a debt repayment plan, a projection of farm and family expenses and income, and as a year-end check on the accuracy of these projections. For each crop grown, the producer and FmHA estimated (1) the number of acres devoted to the crop, (2) the cropland's yield, and (3) the expected crop sales proceeds based on the quantity of the crop that would be sold and the anticipated market price for the crop.

FmHA instructions for the farm and home plan stipulated that planned crop yields should be determined on the basis of the production history of the farm, soil fertility, the borrower's farming ability, and the improved practices to be followed. FmHA calculated the producer's repayment ability on the farm and home plan by comparing the amount of income available for debt repayment to the principal and interest payments required under the loan agreement.

Since 1984, FmHA has continued to use the farm and home plan for producers seeking farm ownership, farm operating, and disaster emergency loans. According to local FmHA officials, the agency does not use a standard yield estimation method applicable to all potential borrowers. Instead, yield estimates for producers' cropland are determined on a case-by-case basis, using a variety of factors, including agreement or negotiation between the producer and FmHA. If the producer is enrolled in ASCS programs, FmHA may request yield information from ASCS. Also, FmHA considers the producer's production records, if available.

FmHA uses a different method to estimate yields in determining whether producers who have suffered crop losses due to disaster qualify for a disaster emergency loan To qualify, producers must have experienced at least a 30-percent loss of production due to the disaster. To determine the extent of loss, the producer's actual yield during the disaster year is compared to the producer's "normal yield." A normal yield is calculated by averaging the producer's documented yield for the 5-year period immediately preceding the disaster year, excluding the year in which the yield was the lowest If the producer does not have actual production records for certain years, FmHA uses ASCS and/or SRS data to estimate the producer's yield and production losses.

Agency Officials and Sampled Producers Agree That a Single Yield Estimate Is Feasible and Desirable

The large majority of local, state, and headquarters officials from each of the three agencies, as well as producers we interviewed, said that they favor a single yield for all USDA programs. While citing some factors that would inhibit using a single yield, most officials agreed that a single yield is feasible. Further, most local ASCS and FmHA officials we interviewed said that the most accurate measure of a farm's yield is based on the production history for that farm and that this type of yield is feasible to generate and use. Most also said that, if USDA decided to develop a single yield for all agency programs, ASCS should be responsible for determining that yield because ASCS currently has a close working relationship with most producers.

Producers and Agency Officials Favor a Single Yield

To obtain opinions about USDA's current yield estimation practices and the possibility of using a single yield, we interviewed a sample of 100 producers enrolled in USDA programs, as well as local ASCS county directors (CEDs), local FmHA county supervisors, and the directors of the state ASCS and FmHA offices in the four states included in our review. Table 3.1 shows that a large majority of the program participants and agency

officials we interviewed favored a single yield estimate per crop for each cropland parcel for use in all USDA programs.

Table 3.1: Producers' and USDA Officials' Views on Use of a Single Yield

	View of single yield:			
Producers/officials	Favor	Oppose	No response or uncertain	Total interviewed
Producers	92	4	4	**100**
ASCS county executive directors	31	0	0	**31**
FmHA county supervisors	28	3	0	**31**
ASCS state executive directors	4	0	0	**4**
FmHA state directors	2	2	0	**4**
Total	**157**	**9**	**4**	**170**

In addition, headquarters officials of each agency, including the Acting Administrator, ASCS, the Manager, FCIC, and the Associate Administrator, FmHA, told us that they agreed with the concept of a single yield for a given acre of cropland regardless of the programs in which the cropland is enrolled.

Some county officials said that a single yield estimate for use by all USDA agencies would reduce confusion, be easier for agencies and producers, and be more consistent. While producers' reasons for favoring a single yield varied, the most frequent reasons given were that it would be "simpler" and it "makes more sense." Table 3.2 shows the range of reasons producers gave for favoring a single yield for all USDA programs

Table 3.2: Reasons Why Producers Favor a Single Yield

Reasons	Number
Simpler, less confusion, easier for farmers	36
Makes more sense, land produces only one yield, more reasonable	19
More fair, more equitable	7
Should be uniform, no reason to have more than one yield	5
Other reasons (one response each)	6
No reason given	19
Total	**92**

Four of the five FmHA officials who were not in favor of a single yield (see table 3.1) said that they would rather be able to adjust a borrower's yield estimate on the basis of their specific knowledge of the producer's cropland and farming practices. The producers who did not favor a

single yield said that they favor the current practice, under which each agency calculates a separate yield estimate.

Agency Officials and Producers Favor a Yield Based on Actual Production Data

Of the producers and agency county and state officials we interviewed, 86 percent said that the most accurate measure of a farm's crop yield is a yield estimate based on actual production data over a period of time, sometimes referred to as a proven yield. The methods suggested for computing yield estimates included (1) the proven yield method used by ASCS, (2) the method FCIC uses under the IYC program, and (3) other methods using documented historical production with varying periods of time and averaging procedures. Table 3.3 summarizes the producers' and officials' views on the most accurate measure of cropland yields.

Tab e 3.3: Producers' and USDA Officials' Views on Most Accurate Crop Yield Measure

	Most accurate measure of crop yield in view of:					
	FmHa officials		ASCS officials		Total	
Crop yield measure	**State**	**County**	**State**	**County**	**officials**	**Producers**
Proven yield as calculated by ASCS	3	13	4	27	**47**	60
Proven yield as calculated by FCIC	0	1	0	0	**1**	4
Other types of proven yield	1	11	0	2	**14**	21
subtotal	**4**	**25**	**4**	**29**	**62**	**85**
Yield estimated by ASCS using SRS data	0	1	0	1	**2**	6
Other yield measure or no answer	0	5	0	1	**6**	9
Total	**4**	**31**	**4**	**31**	**70**	**100**

Table 3.3 shows that 62 of 70 county and state officials (89 percent) said some type of proven yield was the most accurate measure. Of the 62 officials, 49 said that it was feasible to develop and use this type of yield and 1 was uncertain. The 12 individuals who did not believe it was feasible to develop and use this type of yield gave the following reasons: (1) it would be too costly and take too much time to calculate, (2) USDA agencies would not be able to agree on a specific method, (3) not all producers keep good crop production records, and (4) USDA agencies' needs differ.

In addition, 85 of the 100 producers we talked to said that some type of proven yield is the most accurate measure of crop yield. The producers generally favored the use of historical production data from specific cropland parcels when calculating proven yields.

Officials Said That ASCS Should Be Responsible for Estimating Single Yield

Ninety percent of the county and state officials said that if USDA decided to use a single yield, ASCS should develop the yield. The reasons given included: (1) ASCS is closest to the producers and deals with them regularly, (2) ASCS has access to producers' records or already has the needed data, and (3) ASCS is equipped for collecting and calculating yield information.

Factors That Could Inhibit USDA's Use of Single Yield

We asked 70 state and county officials what factors inhibit the use of a single yield by all USDA agencies. Over half of the respondents (56 percent) cited some inhibiting factor, while the balance of the respondents said that they knew of no factors that would inhibit its use. The most frequently cited factors were agency program objective differences and/or doubt as to whether USDA agencies could agree on one method (35 percent of respondents). Another factor cited by these and headquarters officials was the difference in agency farm unit definitions.

In addition, officials at each agency's headquarters agreed with the concept of using a single yield estimate for a given acre of cropland, regardless of which program(s) the cropland becomes enrolled in. They also agreed that while differing objectives have led to different yield estimates for the same cropland, the agencies' objectives do not preclude use of a single yield. The Acting Administrator, ASCS, and the Manager, FCIC, stated that they have increased their attempts to standardize yield estimates, essentially by moving toward yield estimates based on documented historical production from each producer's specific cropland units. Accordingly, it is possible for the agencies to agree on a single yield as long as it meets each agency's requirements.

Currently, producers may define their farm units differently for each agency's programs; for example, a producer who owns 100 acres may report one 100-acre farm unit to ASCS and two 50-acre farm units to FCIC. ASCS estimates one yield for the entire 100-acre parcel, while FCIC estimates a yield for each of the two 50-acre parcels. Generally, in those cases in which there is a difference, producers divide their ASCS-defined farm unit into more than one FCIC unit. FmHA generally accepts the producer's unit definition, which may be the same definition used by ASCS or FCIC.

For the producers in our sample, 75 percent of the farm units were defined the same for both FCIC and ASCS. Further, when we calculated an average yield for each producer, weighted by the number of acres in each unit, the remaining 25 percent showed differences in the agencies'

yield estimates. This means that the yield differences were not attributable only to differences in the agencies' farm unit definitions.

FCIC and ASCS have acted to standardize farm units. The Manager, FCIC, stated that FCIC is pursuing policies designed to minimize the number of units, as defined for insurance purposes, to avoid recordkeeping requirements for insureds. This reduction should make FCIC-defined units more consistent with ASCS-defined units.

In those instances in which farm units are not defined the same by each agency, a single yield method could still be used to assure a consistent basis for calculating benefits. If the same method was used by each agency, then any resulting differences in yield estimates for a given cropland parcel would be attributable only to the difference in unit definition.

Conclusions and Recommendations

Conclusions

Three USDA agencies—ASCS, FCIC, and FmHA—use crop yields as a factor in determining the amount of benefits that producers participating in their programs receive. Each agency uses a different approach and independently develops a yield estimate for use in benefit calculations. As a result, the agencies often arrive at different yield estimates for the same producer's cropland.

Given that a parcel of cropland produces a single yield at harvest, when a producer's program benefits are calculated using different yield estimates for the same cropland, the producer's benefits under one agency's programs are either under- or overstated when compared with the benefits that would be calculated using other agencies' yield estimates. This suggests an inequitable distribution of program benefits to participants in ASCS, FCIC, and FmHA programs. Further, the administrative cost of developing yield estimates could be reduced by eliminating multiple yield estimates for the same cropland.

USDA agencies have used different methods of estimating yields partly because each has specific objectives, which have suggested that yields be estimated a certain way. The yield estimate that each agency uses is therefore subject to certain criteria. For example, the yield estimate that FCIC uses must be accurate enough to achieve an actuarially sound program of crop insurance; the yield estimate that FmHA uses must reasonably reflect a potential borrower's expected crop sales proceeds in order to make sound loan decisions. ASCS' procedures for developing yield estimates have been directed, in part, by legislation.

Nonetheless, the agencies' headquarters officials with whom we discussed the issue were unable to identify any agency objective that specifically precluded use of a single yield estimate by all agencies. In fact, ASCS and FCIC officials said they recognize that the current practice of estimating different yields for the same cropland is not logical and that the two agencies have tried to work toward standardizing their yield estimates. Further, a large majority of the producers and local-level agency officials that we interviewed told us that they believe one yield should be used for all USDA programs.

USDA has used several methods to develop yield estimates, including adjusting national or regional yield data measured by SRS for application to counties and farm units. However, most of the producers and agency officials we interviewed said that the most accurate and fair cropland yield estimate is one that is calculated using actual, historical yields from each specific farm unit. This is consistent with ASCS' proven yield

concept and FCIC's actual production history program, although both agencies allow for certain adjustments to the data.

We did not review a specific method or calculation for estimating a single cropland yield for use by all agencies. We believe one should be developed whether or not it is based on documented historical crop production data for specific cropland. However, conceptually we agree that using actual crop production data from each specific cropland unit provides a more accurate and equitable basis for calculating crop yield estimates.

As we identified during our review, some of the principal considerations in calculating a yield estimate for a specific parcel of cropland, on the basis of the cropland's actual documented production, are (1) the number of years included in the base period, (2) the kind and extent of adjustments to actual yield data that would be permitted, and (3) the cost of the estimates.

USDA agencies have used base periods of up to 10 years when estimating cropland yields. It is generally more difficult to obtain production data for a larger number of past years because (1) farm unit boundaries change through sales and/or inheritances and (2) historical crop production records may not be available. However, we believe that to the extent feasible a generally longer base period is more desirable because it will over time be more reflective of a cropland unit's historical productive capacity.

USDA yield estimation methods that currently use actual documented production data from specific cropland units provide for some adjustments to the data. These adjustments include modifying or eliminating the lowest and/or highest yields from the base period. As discussed in chapter 3, most producers that we interviewed favored a yield based on historical data. We recognize that in certain instances—for example, planned improvements to cultivation practices—discretionary adjustments can reasonably make the resulting yield estimates more reflective of the cropland unit's expected productive capacity. However, we believe that if a yield estimate is adjusted, the adjusted single yield estimate should be used in each agency's benefit calculations.

We recognize that the yield estimate used by any agency must be administratively feasible; that is, the requisite data and documentation must

be available without unreasonable effort or cost on the part of producers or USDA. Depending primarily on the type, quantity, and verification of production evidence required, it is possible that developing yield estimates on the basis of actual historical production from each cropland unit may be more costly to USDA on a per-unit basis than developing yield estimates from national or regional survey data.

The cost of developing a single yield estimate based on each cropland unit's documented historical production cannot be estimated until a specific method and specific procedures are selected. It is especially important to note that regardless of the method selected, if the resulting yield estimates are used by each USDA agency, then any increased costs would be reduced by savings from eliminating the administrative duplication of multiple crop yields.

Recommendations

To ensure an equitable distribution of benefits to the producers participating in ASCS, FCIC, and FmHA programs and to eliminate the duplicate costs incurred in estimating multiple crop yields for the same cropland, we recommend that the Secretary of Agriculture

- direct the Administrator of ASCS, the Administrator of FmHA, and the Manager of FCIC to jointly develop one method for estimating a single crop yield that is consistent with each agency's objectives, and to use the crop yield resulting from this method when determining the level of loans and/or payments to producers participating in ASCS, FCIC, and/or FmHA programs;
- seek any required legislative change to permit using the yield estimate resulting from the method jointly developed when calculating the amount of loans and/or payments for producers enrolled in ASCS programs; and
- direct these officials to give primary consideration to basing the yield estimation method on the actual historical production from each specific cropland unit.

Further, once a method is developed for estimating yields, we recommend that the Secretary ensure that a single yield is used for the same cropland either by designating one agency to compute the yield for all crops covered by any agency's programs or by designating an agency to compute the yield for each crop on a crop-by-crop basis. The latter approach may be more efficient because not all crops are covered by each agency's programs.

Although requested, USDA did not provide official written comments in time to be included in this report. However, we discussed the report issues with senior USDA officials including the Associate Administrator, ASCS; the Executive Assistant to the Administrator, ASCS; the Manager, FCIC; and the Associate Administrator, FmHA. The views of these officials have been incorporated into the report where appropriate.

USDA Wheat and Corn Cropland Yield Estimation Methodologies

For the 1984 crop year, both FCIC and ASCS used two methods for estimating the wheat and corn yields for cropland enrolled in their programs. Each agency used, in some of its methods, aggregate yield estimates prepared by SRS. SRS estimates crop yields from two measures: (1) the objective yield measurement system, which involves a random selection of fields nationwide that are visited for purposes of verifying the yield and (2) a subjective mail survey of producers. SRS developed crop yield estimates at the national, regional, state, and some county levels.

ASCS Yield Estimation Methods

For the 1984 wheat and feed grain program, ASCS developed yield estimates using two approaches: (1) "established yields" based on SRS yield information and (2) "proven yields" based on a farm's production evidence.

Established yields were developed by adjusting state yield information from SRS. ASCS calculated state "check yields" by using the highest average, excluding the immediately preceding year, of three periods—the preceding 10 years (1973-82), 5 years (1978-1982), and adjusted 5 years (1978-82) of SRS' state crop yield estimates. The adjusted 5-year average was a modification of the 5-year yields adjusted by increasing low yields to 80 percent of the simple 5-year average and decreasing high yields to 125 percent of the simple 5-year average. The highest of the three averages was the state check yield.

ASCS state offices used state check yields as a control in establishing county check yields. The ASCS county office committee (COC) then allocated the county check yield among the producers within the county to determine their established yields.

To derive a producer's established yield, ASCS first used the producer's ASCS program yield from the previous year, whether proven or unproven, as a preliminary yield. If the previous year's yield was not "proven," the county committee could adjust the yield to place the farm in proper relationship with other farms or to better reflect the farm's yield capability. The preliminary yields were weighted by the applicable farm acreage bases in the county and were adjusted to balance with the county check yield. Although unproven yields were factored up or down, proven yields were factored only down or remained the same. The resulting yield figure was the producer's program payment yield, unless appealed by providing production evidence to obtain a proven

yield. Producers could appeal an established yield to the county committee if they believed the yield was not equitable in relation to other farms' established yields. The Committee could adjust the yield based on the yields from similar farms or knowledge of the producers' farming practices.

Producers who believed their actual historical production was greater than the yield established for the farm by ASCS could opt to prove their cropland yield. To do this, ASCS required the producer to provide acceptable production evidence for at least the last 3 of the most recent 5 years. The evidence could consist of sales documents showing the quantity of the crop sold, measurements or commercial receipts of the stored crop, or field appraisals (estimates made by ASCS based on an inspection of the unharvested crop). ASCS could assign a yield for the first 2 years if producers did not have available evidence.

For corn and wheat, proven yields were based on the average of the yields adjusted for the 5-year period. ASCS calculated a simple average yield for the 5 years of the base period, 1979 through 1983. Annual yields during the 5-year period that were below 80 percent of the 5-year simple average could be raised to 80 percent if they were disaster-affected. A simple average was again calculated, which became the producer's program payment yield unless the proven yield was less than a calculated established yield. In this case, the producer could request that ASCS use the higher established yield.

FCIC Yield Estimation Methods

For the 1984 crop year, FCIC developed wheat and corn yield estimates for its insurance program using two methods: (1) area average yields based on SRS yield survey data or (2) IYC yields based on a farm's documented historical production

Under area yield plans, producers within a given geographic area were each assigned the same yield, except for those producers that FCIC identified as better or worse than average. Generally, FCIC calculated a county average for each crop using SRS data for the most recent 10-year period. FCIC then used the county average yield to establish area yields within each county such that the weighted average of all the county's participating producers' estimated yields did not exceed the county average yield by more than 5 percent.

FCIC's underwriters used the county average yield as a control mechanism when establishing area classifications within counties. FCIC developed the classifications for corn and wheat on the basis of either soil productivity estimates for the various land types within the county or some other general indication of productivity, which was used to segment the county. Producers were grouped into geographical areas, each with a different yield coverage. The weighted average of all assigned yields in the county could not exceed the county limit established by FCIC.

As a result of criticism that the area yield coverages did not equitably reflect actual production levels of some producers, FCIC offered optional IYC insurance guarantees based on each producer's cropland production history. In 1984, FCIC offered the IYC plan as optional coverage for certain crops covered under the area plan. The IYC plan allowed producers who could document higher yields than the area average to improve their insurance coverage.

Under IYC, farmers were required to provide verifiable production records for at least the most recent 3 years of a 10-year base period. For the years for which farmers had no records, the yields were determined by making certain adjustments to the SRS county base yield. ASCS generally verified the adequacy of the farmers' production evidence and calculated the IYC yields that FCIC used.

Table I.1 summarizes the yield estimation methods used by ASCS, FCIC, and FmHA.

Table I.1: Basic Features of ASCS, FCIC, and FmHA Yield Estimation Methods Used for 1984 and 1986 for Wheat and Corn

Agency, program year, and type of yield	Data source	Type and modification of evidence	Number of years used for calculating yield
ASCS			
1984- Established	ASCS file and ASCS-generated check yield Producer evidence if appealed	Producer's ASCS yield from prior year is adjusted by COC using the county check yield, adjusted for equity, or adjusted by COC due to producer's appeal	Not applicable If previous year was a proven yield, 5 had been used.
1984-Proven	Producer evidence	At least 3 years actual production used for the 5-year period Established yield or comparable 3 farms' yields used for years without evidence Raise low to 80 percent and lower high to 125 percent of 5-year average Simple average of adjusted 5 years	5
1986- Established	ASCS file	Producer's ASCS yields from prior 5 years, whether established or proven Drop high and low year yields Simple average of 3 years, subject to certain limits	3
FCIC			
1984 Area	FCIC- generated yield	FCIC computed area yields using various inputs including soil productivity and SRS county averages All producers in an area have the same yield except for a supplemental listing of better or worse producers	Not applicable
1984-IYC	Producer evidence	At least 3 years actual production or appraisal data for a 10-year period For years without evidence, use modified SRS county average	10
1986-APH	Producer evidence FCIC-generated yield	Production evidence for 10-year period For years without evidence, FCIC establishes transitional yield by indexing ASCS established yield If producer has only 1 or 2 years actual evidence—average 10 years If producer has 3-9 years actual evidence, drop high and low yields—average 8 years	10 8
FmHA			
1984/1986- Repayment ability yield	Producer evidence or other source	Production evidence, ASCS established or proven yield, county average yield and agreement or negotiation between producer and FmHA	Variable
1984/1986- Normal yield	Producer evidence or other source	Production evidence, ASCS established or proven yield or county average used in this order of priority for 5-year period Producer can drop 1-year—average 4 years	4

Sample Design and Data Analysis

We reviewed a statistical sample of both wheat and corn producers with cropland enrolled in two of three USDA programs. USDA's data showed that the counties selected for the ASCS/FCIC comparison contained 238 corn and 611 wheat producers enrolled in both ASCS and FCIC programs, and the counties selected for the ASCS/FmHA comparison showed 300 corn and 320 wheat producers enrolled in both ASCS and FmHA programs.

To ensure that we identified specific acres of cropland enrolled in more than one agency's programs, we reviewed producers' cropland acreage descriptions in ASCS, FCIC, and FmHA files. We did this because producers who own more than one farm may grow different crops on the farms and may enroll each farm separately in USDA programs. For example, a producer may enroll a wheat farm in ASCS programs only and a corn farm in FCIC programs only; thus, although the producer is enrolled in more than one agency's programs, his or her cropland may not be. In those instances where we were unable to determine that a producer's same acreage was enrolled in more than one agency's programs, we deleted the producer from our sample and selected another. Our sample for the ASCS/FCIC comparison consisted of 100 wheat producers—20 randomly selected from each of the 5 counties—and 100 corn producers, similarly selected. Our sample for the ASCS/FmHA comparison was selected in the same manner; however, it consisted of 94 wheat producers and 95 corn producers because some of the 10 selected counties had less than 20 producers with the same cropland enrolled in both agencies' programs.

We developed a weighted yield for each producer who had more than one parcel of cropland enrolled in each agency's programs. We had to calculate a weighted yield because some producers (1) have more than one farm recorded with ASCS, each with an estimated yield, and/or (2) divide their farms into multiple units for FCIC insurance purposes, each unit having a yield estimate. We weighted the yield of each parcel by the number of acres in the parcel. We used the weighted yield estimates in our analysis of yield differences.

Because the sample is statistical, each estimate developed from the sample has a measurable precision, or sampling error. The sampling error is the maximum amount by which the estimate obtained from a statistical sample can be expected to differ from the true universe value we are estimating. Sampling errors are usually stated at a certain confidence level—in this case 95 percent. This means that the chances are 19 out of 20 that, if we reviewed all the producers with cropland enrolled in 2 USDA programs in 5 sample counties, the results of such a review

would differ from the estimates obtained from our sample by less than the sampling errors of such estimates.

In generalizing the results of our sample differences in program payments and crop sales proceeds to the "universe" of producers in the sample counties, our maximum sampling errors do not exceed plus or minus $1.17 million for the five counties combined at the 95 percent confidence level. (In other words, the chances are 19 out of 20 that key estimates describing the corn and wheat producers' benefits under USDA's programs for all 5 counties combined will be within $1.17 million of the corresponding universe value.)

In statistical surveys, the implementation of a sampling design does not always proceed exactly as planned because one does not have complete control over the sample. In this review, some wheat and corn producers participating in more than one USDA program did not enroll the same cropland in each program; therefore, we adjusted our universe to include only the producers who enrolled the same parcels of cropland in more than one USDA program. (See table II.1.) Under this procedure, we generalize our estimates to an adjusted universe without knowing anything about the producers who have different cropland parcels enrolled in multiple USDA programs. This is a common statistical procedure. It provides conservative estimates because no statement is made about the value of the unknown segment of the universe.

Since we had data for both wheat and corn producers enrolled in two USDA programs in four groups of five counties, we used a stratified random sample design for our analysis. Consequently, the dollar estimates in this report are combined for the five counties in our sample and are shown at the 95-percent confidence level. For a number of statistical generalizations, the estimated lower limit is less than the value actually found in the sample. Whenever this occurred, we used the value actually found in the sample.

Tables II.2 through II.9 show our statistical generalizations, the actual sampling errors, and the 95-percent confidence limits of the estimates.

Table II.1: Adjusted Sample Design

USDA programs	Crop	County	Initial universe	Initial sample	Cases not in sample category	Adjusted sample size	Adjusted universe
ASCS/FCIC	Wheat	Ellsworth	146	26	6	20	112
		Kingman	67	27	7	20	50
		Marion	161	23	3	20	140
		Kittsen	169	41	21	20	82
		Deaf Smith	68	24	4	20	57
Total			**611**	**141**	**41**	**100**	**441**
	Corn	Clarke	56	26	6	20	43
		Iowa	44	25	5	20	35
		Sioux	41	26	6	20	32
		Wapella	44	27	7	20	33
		Chippewa	53	21	1	20	50
Total			**238**	**125**	**25**	**100**	**193**
ASCS/FmHA	Wheat	Pennington	78	30	10	20	52
		Bailey	49	49	35	14	14
		Deaf Smith	65	24	4	20	54
		Hale	54	41	21	20	26
		Lamb	74	44	24	20	34
Total			**320**	**188**	**94**	**94**	**180**
	Corn	Clarke	60	27	7	20	44
		Iowa	85	35	15	20	49
		Marion	42	42	26	16	16
		Wapella	67	30	10	20	45
		Chippewa	46	46	27	19	19
Total			**300**	**180**	**85**	**95**	**173**

Table II.2: Estimated ASCS Payments to Wheat and Corn Producers Using ASCS and FCIC Crop Yield Estimates

Yield estimate	Crop	Estimated ASCS payments	Sampling error (+/-)	95-percent confidence limits	
				Lower	Upper
ASCS	Wheat	$3,129,581	$563,202	$2,566,379	$3,692,782
	Corn	533,265	56,908	476,357	590,173
	Weighted total	**$3,662,848**	**$566,069**	**$3,096,774**	**$4,228,911**
FCIC	Wheat	$2,866,513	$516,889	$2,349,623	$3,383,402
	Corn	444,751	46,618	398,133	$491,370
	Weighted total	**$3,311,261**	**$518,986**	**$2,792,274**	**$3,830,247**

Table II.3: Estimated Differences in ASCS Payments to Wheat and Corn Producers Using ASCS and FCIC Crop Yield Estimates

Crop	Estimated difference	Sampling error (+/-)	95-percent confidence limits	
			Lower	Upper
Wheat	$263,067	$81,318	$181,749	$344,385
Corn	88,514	13,978	74,536	102,491
Weighted total	**$351,581**	**$82,510**	**$269,070**	**$434,091**

Table II.4: Estimated Maximum Potential FCIC Indemnity Payments to Wheat and Corn Producers Using ASCS and FCIC Crop Yield Estimates

Yield estimate	Crop	Estimated maximum FCIC indemnities	Sampling error (+/-)	95-percent confidence limits	
				Lower	Upper
ASCS	Wheat	$5,028,810	$1,168,039	$3,860,771	$6,196,849
	Corn	$2,593,158	$ 272,742	$2,320,416	$2,865,899
	Weighted total	**$7,621,967**	**$1,199,459**	**$6,422,508**	**$8,821,426**
FCIC	Wheat	$4,634,569	$1,101,318	$3,533,251	$5,735,887
	Corn	$2,160,249	$ 224,872	$1,935,377	$2,385,120
	Weighted total	**$6,794,818**	**$1,124,041**	**$5,670,777**	**$7,918,859**

Note For tables II 2 through II 9, the lower and upper confidence limits may not equal the estimate and the sampling error because of rounding

Table II.5: Estimated Differences in Maximum FCIC Indemnity Payments to Wheat and Corn Producers Using ASCS and FCIC Crop Yield Estimates

Crop	Estimated difference	Sampling error (+/-)	95-percent confidence limits	
			Lower	Upper
Wheat	$394,241	$151,581	$242,659	$545,822
Corn	432,908	63,087	369,820	495,995
Weighted total	**$827,148**	**$164,186**	**$662,963**	**$991,334**

Table II.6: Estimated ASCS Payments to Wheat and Corn Producers Using ASCS and FmHA Crop Yield Estimates

Yield estimate	Crop	Estimated ASCS benefit payments	Sampling error (+/-)	95-percent confidence limits	
				Lower	Upper
ASCS	Wheat	$1,415,704	$283,766	$1,131,938	$1,699,469
	Corn	$ 683,242	$ 87,955	$ 595,287	$ 771,198
	Weighted total	**$2,098,943**	**$297,084**	**$1,801,858**	**$2,396,027**
FmHA	Wheat	$1,546,805	$283,241	$1,263,563	$1,830,046
	Corn	$ 684,333	$ 85,932	$ 598,401	$ 770,264
	Weighted total	**$2,231,135**	**$295,990**	**$1,935,145**	**$2,527,124**

Table II.7: Estimated Differences in ASCS Payments to Wheat and Corn Producers Using ASCS and FmHA Crop Yield Estimates

Crop	Estimated difference	Sampling error (+/-)	95-percent confidence limits	
			Lower	Upper
Wheat	$131,099	$39,998	$91,102	$171,097
Corn	1,091	10,242	4,332[a]	11,333
Weighted total	**$132,190**	**$41,288**	**$90,902**	**$173,478**

[a]The lower limit is the difference found in the sample cases

Table II.8: Estimated FmHA Crop Sales Proceeds of Wheat and Corn Producers Using ASCS and FmHA Crop Yield Estimates

Yield estimate	Crop	Estimated crop sales proceeds	Sampling error (+/-)	95-percent confidence limits	
				Lower	Upper
ASCS	Wheat	$2,125,814	$448,257	$1,677,556	$2,574,071
	Corn	$2,753,282	$311,589	$2,441,692	$3,064,871
	Weighted total	**$4,879,096**	**$545,914**	**$4,333,181**	**$5,425,010**
FmHA	Wheat	$2,401,468	$457,624	$1,943,844	$2,859,091
	Corn	$2,775,878	$321,482	$2,454,395	$3,097,360
	Weighted total	**$5,177,346**	**$559,258**	**$4,618,087**	**$5,736,604**

Table II.9: Estimated Differences in FmHA Crop Sales Proceeds of Wheat and Corn Producers Using ASCS and FmHA Crop Yield Estimates

Crop	Estimated difference	Sampling error (+/-)	95-percent confidence limits	
			Lower	Upper
Wheat	$275,655	$72,518	$203,137	$348,173
Corn	22,595	61,508	22,368[a]	84,103
Weighted total	**$298,250**	**$95,090**	**$203,160**	**$393,339**

[a]The lower limit is the difference found in the sample cases

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