800001

BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Farmer-Owned Grain Reserve Program Needs Modification To Improve Effectiveness

Volume 1 Of Three Volumes

The Department of Agriculture's farmer-owned grain reserve program was authorized in 1977 to allow producers to store grains to provide for orderly marketing and stable prices. The program has not fully met its objectives because it has not

- materially increased grain inventories as intended,
- removed the Government from its role as a significant grain storer, or
- reduced price variability.

The reserve contains some grain of questionable quality, and storage payments have exceeded storage costs.

To improve its effectiveness, modifications should be made in program adjustment methodology. Also, GAO recommends actions to improve the quality of reserve grain and to limit storage payments.

CED-81-70
JUNE 26, 1981

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-203170

To the President of the Senate and the
Speaker of the House of Representatives

This report discusses the Department of Agriculture's administration of the farmer-owned grain reserve provisions of the 1977 Food and Agriculture Act. It identifies certain areas in which the Department could improve program administration and thereby improve overall program effectiveness. It discusses particularly the reserve program's impact on grain stock levels, grain prices, consumer prices, and the meat industry. It also recommends modifications that are needed to assure reserve grain quality and to assure that storage payments do not exceed storage costs.

We are sending copies of this report to the Director, Office of Management and Budget, and to the Secretary of Agriculture.

Milton J. Socolar

Acting Comptroller General
of the United States

PREFACE

GAO and two agricultural economists reviewed the farmer-owned grain reserve program. This volume includes an introductory section on the reserve program, synopsizes information in the two other volumes, describes reserve grain quality problems, discusses storage payments, and contains our conclusions and recommendations.

In addition to this volume, our report includes two other volumes, written by the two agricultural economists, which address the following:

Volume	Description
2	Consequences of USDA's Farmer-Owned Reserve Program for Grain Stocks and Prices--examines data on stocks and prices of corn and wheat during the program's first 3 years and estimates its effects.
3	Theoretical and Empirical Considerations in Agricultural Buffer Stock Policy Under the Food and Agriculture Act of 1977--analyzes the major theoretical developments of stabilization policy and then uses this information to develop a model to investigate the effects of the farmer-owned reserve program on prices, quantities, and real income for grain and livestock.

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

FARMER-OWNED GRAIN RESERVE PROGRAM NEEDS MODIFICATION TO IMPROVE EFFECTIVENESS

D I G E S T

The farmer-owned grain reserve, authorized by the Food and Agriculture Act of 1977 and administered by the Department of Agriculture's Agricultural Stabilization and Conservation Service, is to encourage producers to store wheat and feed grains when they are in abundant supply and extend the time for their orderly marketing.

GAO and its consultants found that during its first 2 to 3 years, the farmer-owned reserve only partially met its objectives of increasing grain inventories in times of abundant supply, removing the Government from the role of grain storer, and reducing price variability. Also, some reserve grain is of questionable quality and storage payments have exceeded storage costs. GAO recommends program modifications to improve effectiveness, assure grain quality, and limit storage payments to storage costs.

As of March 18, 1981, the reserve contained about 1.22 billion bushels of wheat, corn, and other grains. The value of outstanding loans on these reserve grains was about $2.9 billion. The reserve grain cannot be sold without penalty until predetermined market price levels--known as release and call levels--are reached. At release, producers may, but do not have to, remove the grain from the reserve. At call, producers must repay their loans or forfeit the grain. (See pp. i to 5.)

THE FARMER-OWNED RESERVE HAS NOT FULLY MET ITS OBJECTIVES AND NEEDS MODIFICATION

Analyses of grain market events before and after the reserve came into effect show the reserve had little effect on increasing inventories. Most reserve grain would have been held in private stocks without the reserve. (See pp. 10 and 11.)

Although the reserve initially succeeded in ensuring producer ownership of reserve stocks, the

Government now holds grain purchased in reaction to the Russian grain embargo. (See pp. 12 and 13.)

The degree of price stability attributable to the reserve is minor. One of GAO's consultants estimated that over its first 2 years, the reserve may have resulted in a net economic loss of $4.4 billion for the total U.S. economy, due in part to livestock industry maladjustments. However, he added that, in the long run, gains could conceivably exceed costs. (See pp. 13 to 16.)

The short period covered by the analyses may not provide an adequate test of the reserve's long-term influence or effectiveness. Program modifications are needed, however, to improve the program's effectiveness. (See pp. 17 to 22 and 24.)

Recommendations

To improve the reserve's effectiveness, the program should be modified to provide for methodical adjustments in program operations while still allowing for some necessary flexibility.

Other program modifications, such as removing quantity limits, emphasizing long-term stabilization, and allowing nonproducers to participate, are possible, but the Secretary of Agriculture should study their feasibility before implementation is considered. (See p. 24.)

SOME RESERVE GRAIN QUALITY IS QUESTIONABLE

Department studies have shown that although most farm-stored reserve grain is of acceptable quality, some is of questionable quality due to high moisture, insect infestation, high kernel damage, contamination, or other conditions.

Based on a random quality check, the Service projected that up to 17.9 percent of the total reserve grain as of September 30, 1979, contained some nonstorable (musty, sour, distinctly low-quality, heat damaged, and/or high moisture) or insect-infested grain. Also, in March 1980 the Department's Office of Inspector General projected, with 95-percent confidence, that at least 6.8 percent and as much as 13.9 percent of the reserve corn and wheat in the five States it reviewed--where about 79 percent of the reserve's

farm-stored grain was located--was U.S. Sample grade, the lowest quality designation under U.S. grain standards. (See pp. 27 to 30 and app. II.)

The questionable-quality grain results from low-quality grain entering the reserve and/or grain deteriorating in storage. GAO found that guidelines for determining the quality of grain entering the reserve are inadequate and that some producers have not followed proper grain storage procedures, such as fumigating and rotating grain, monitoring grain quality, and controlling moisture. (See pp. 30 to 33.)

The Service has not promptly followed up on cases involving questionable-quality grain. In 55 cases in three counties involving quality problems, the Service's county officials had asked the producers to correct the problems and report the action taken. County officials followed up with only 1 of 31 producers who did not report back. (See pp. 33 to 35.)

Paying storage and incurring other program costs for questionable-quality grain is not an effective or efficient use of Federal funds. Also, grain which has diminished in volume or nutritional quality results in a loss to consumers, brings less revenue to producers, and may jeopardize the adequacy of reserve loan collateral. (See pp. 35 and 36.)

Recommendations

The Secretary of Agriculture should require the Service to obtain official grade determinations, on a sample basis, as grain enters the reserve and on the same grain each subsequent year (where possible) to develop a profile of reserve grain and to determine what characteristics are predictors of storability. Also, the Service should improve its guidelines and procedures for identifying loans for which grain with quality problems serves as collateral and correcting or eliminating quality problems identified. (See p. 38.)

STORAGE PAYMENTS EXCEED STORAGE COST

GAO estimates that payments for onfarm reserve storage in 1979 exceeded the estimated average cost of storing the grain by at least $28 million. The fiscal year 1979 storage payment rate was 25 cents a bushel. Based on a representative random sample of storage facility loans made in

1979 and other information, GAO estimated that the average cost of onfarm storage was 21.7 cents a bushel, assuming a 10-year useful bin life. It was even lower assuming a 20-year useful bin life. (See pp. 40 to 42.)

Recommendation

The Secretary should determine the average cost of reserve grain storage and limit storage payments to this amount. Both onfarm and warehouse storage costs should be considered in determining the average cost. (See p. 46.)

STORAGE EARNINGS ALLOWED TO CONTINUE AFTER CALL STATUS WAS REACHED

Although the call status is intended to force grain from the reserve, Service procedures in effect until October 1980 allowed producers to earn an estimated $900,000 in storage payments after barley was in call status. Storage earnings also continued after oats and sorghum reached call status. The Service has changed its procedures to stop the earning of storage payments when a grain is placed in call status. However, it did not amend program regulations to make them consistent with these procedures. (See pp. 42 to 45.)

Recommendation

The Secretary should amend program regulations to make them consistent with Service procedures which provide that storage earnings stop in all cases when a grain reaches call status. (See p. 46.)

UNEARNED PAYMENTS NOT COLLECTED PROMPTLY

The Service allowed producers to retain unearned storage payments for an unreasonable period of time when the redemption period was extended. In some cases, the payments were retained up to 10 months beyond call. The Service has amended its regulations to provide that interest be charged immediately following the maturity date or the originally required settlement date. (See pp. 45 and 46.)

AGENCY COMMENTS

The Department agreed that the program should be modified to provide for methodical adjustments in program operations, while still allowing some

flexibility, and that procedures for correcting quality problems could be improved.

It agreed that the average storage cost should reflect both onfarm and commercial warehouse storage costs, but it said that ascertaining the average cost of storing reserve grain is difficult.

The Department said that obtaining official grade determinations on reserve grain to identify what characteristics are predictors of storability would require an effort of considerable magnitude with a promise of negligible payoff. It added that its experience had shown that essentially two elements--excess moisture and insects--increase the probability of grain quality deterioration. GAO believes that other factors, such as the uniformity of quality and the cleanliness of grain, can also contribute to deterioration and that information on these characteristics and their impact on grain quality would be useful for future reserve program decisions.

The Department said that it believed the procedure for identifying quality problems was adequate. However, the Service has acknowledged problems in controls over loan collateral, including sampling and inspection procedures. A proposed Service handbook, planned for release in late 1981, should help strengthen these procedures which, when properly followed, should help assure that quality problems are identified. (See app. III and pp. 24, 38, and 47.)

Contents

ABBREVIATIONS

AMS	Agricultural Marketing Service
ASCS	Agricultural Stabilization and Conservation Service
CCC	Commodity Credit Corporation
ESS	Economics and Statistics Service
FDA	Food and Drug Administration
FGIS	Federal Grain Inspection Service
FOR	farmer-owned reserve
GAO	General Accounting Office
MMT	million metric tons
OIG	Office of Inspector General
SEA	Science and Education Administration
USDA	U.S. Department of Agriculture

CHAPTER 1

INTRODUCTION

The Food and Agriculture Act of 1977 (Public Law 95-113, 91 Stat. 913 et seq.) authorizes a producer storage program, commonly called the farmer-owned grain reserve (FOR) program, for wheat and feed grains. The program's objective is to encourage producers to store these grains when they are in abundant supply and extend the time period for their orderly marketing. Its function is to stabilize grain prices, not to provide for emergency or disaster needs.

Under the program, the U.S. Department of Agriculture (USDA) provides loans and storage payments to producers who place their grain in the FOR. The loans mature in 3 years (or earlier if certain conditions are met) and can be extended to a maximum of 5 years. The loans bear interest, unless waived, at rates prescribed by the Secretary of Agriculture. The program is operated through USDA's Commodity Credit Corporation (CCC) and is administered for CCC by USDA's Agricultural Stabilization and Conservation Service (ASCS).

HISTORY OF RESERVE PROGRAMS

An objective of farm commodity programs from the early 1930's to the early 1970's was to support prices and income through supply management or limitation. During this period, the Government owned stocks of grain turned over to it under its price-support program, and at times it maintained large inventories in Government-owned storage facilities. These facilities, purchased from 1939 through 1956, had a peak occupancy of 748 million bushels in 1960. The Government-owned stocks declined from that time until the last stocks were removed and the storage structures were sold in 1974. The Government-owned grain was sold at various times at the Government's option.

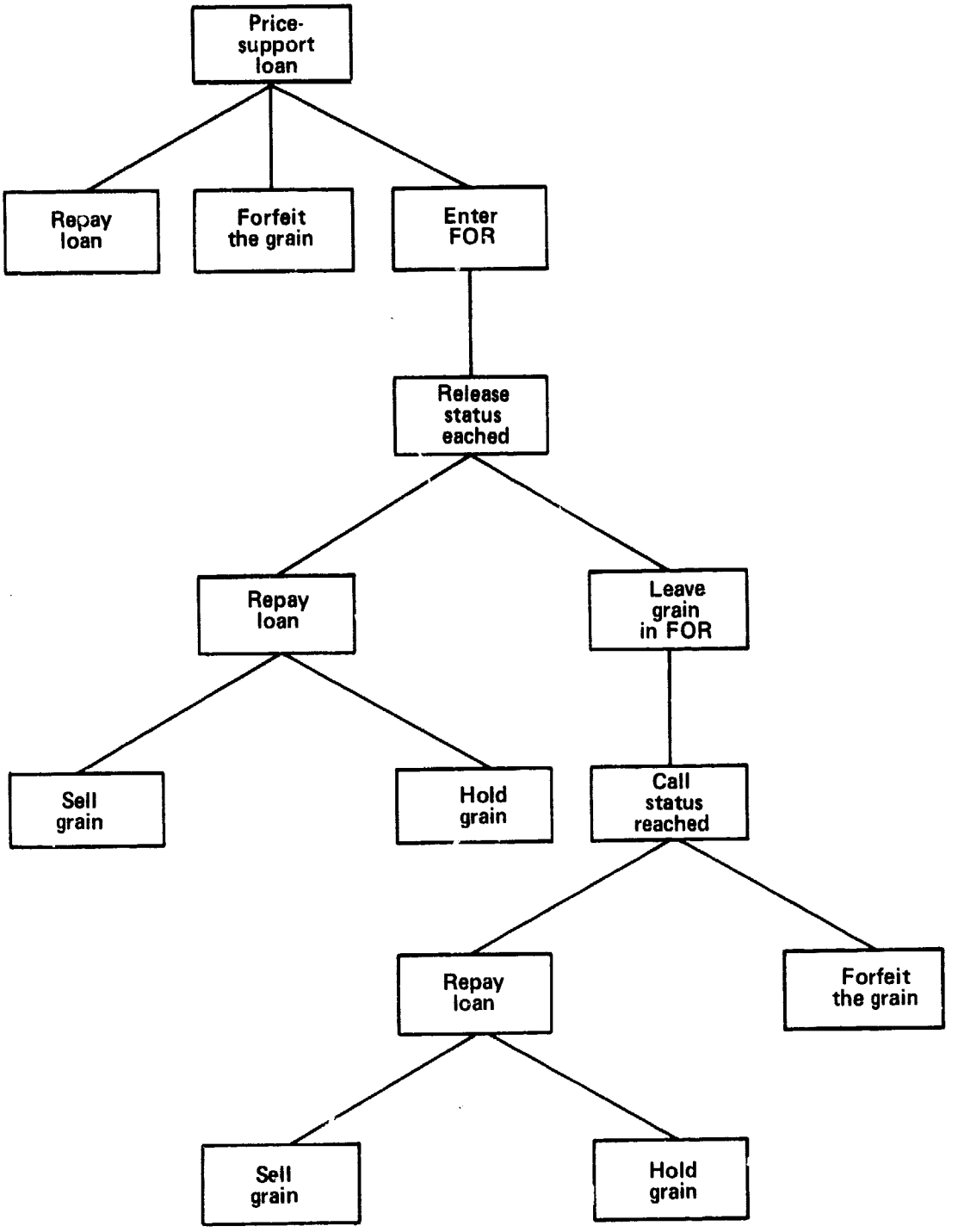
The FOR program, while also supporting prices and incomes, emphasizes the marketing mechanism rather than production control.

HOW THE RESERVE WORKS

Any producer owning designated FOR grains is eligible for a 3-year FOR loan. To qualify for an FOR loan, a producer generally must have had the grain under a price-support loan or have qualified to have such a loan. 1/ When the price-support loan expires, one of the producer's options is to extend the loan for 3 years under the FOR program, if the FOR is open for that commodity at that time. (See chart on p. 2.)

1/The Secretary of Agriculture can allow, and under some circumstances has allowed, producers to place grain in the FOR before maturity of their price-support loans (9 months).

Farmer - Owned Reserve
Producer Options



The CCC Board of Directors has declared wheat, corn, barley, oats, sorghum, and rice as eligible for the FOR. The Board has the authority to specify additional commodities.

Until April 1980 producers had to comply with other USDA program requirements such as set-aside programs (which take land out of production) or normal crop acreage limitations, when in effect, to qualify for FOR program participation. There were no set-aside requirements for 1980 wheat and feed grains. In April 1980 the President signed legislation (Public Law 96-234, 94 Stat. 333) which opened the corn FOR for a limited time to producers regardless of set-aside compliance to help offset the Russian grain embargo's effects.

A participating producer must provide storage space of permanent construction for the grain, either on the farm or in commercial storage space. In return, the producer receives a storage payment which is paid annually in advance. The producer is responsible for maintaining the grain quantity and quality. To fulfill this responsibility, the producer may, with ASCS approval, rotate FOR grain with grain of equal quality and quantity.

Grain stored under this program cannot be sold without penalty until predetermined market price levels--known as release and call levels--are reached. Those levels are set as percentages of the then-current loan rate. USDA has changed these percentages twice--in January and July 1980. To identify loans associated with the different release and call levels, USDA divides the FOR into segments as follows.

Reserve I - Contains those commodities entering the FOR before January 7, 1980, unless the producer signed a conversion agreement to reserves II or III.

Reserve II - Contains those commodities entering the FOR from January 7 through August 24, 1980, plus those which converted from reserve I, unless the producer signed a conversion agreement to reserve III.

Reserve III - Contains those commodities entering the FOR on or after August 25, 1980, plus those which converted from reserves I or II.

The release and call levels for the various reserve segments are as follows.

	Wheat		Feed grains	
	Release	Call	Release	Call
	(Percent of then-current loan rate)			
Reserve I	140	175	125	140
Reserve II	150	185	125	145
Reserve III	140	175	125	145

The release level is the level at which a producer can remove the grain from the FOR without penalty. At this level, however, the producer may also choose to leave it in the FOR. At the call level, the level at which the loan is due and payable, the producer has the choice of repaying the loan or forfeiting the grain to CCC. If the producer forfeits the grain, he is liable for payment of the difference, if any, between the loan amount and the value of the grain. (See app. I for a chronology of pertinent FOR events and changes.)

The time at which release and call levels are reached is determined by the national average market price, which is calculated by ASCS using input from USDA's Agricultural Marketing Service (AMS) and Economics and Statistics Service (ESS).

AMS provides daily cash prices from selected major commodity markets for each grain. For example, prices for corn are furnished from the Kansas City, Kansas; Omaha, Nebraska; Chicago, Illinois; St. Louis, Missouri; and Minneapolis, Minnesota, commodity markets. An average of these daily cash prices is derived for the day. This average is then considered with the averages for the previous 4 days, resulting in a 5-day average price. The 5-day average price is adjusted to reflect the daily prices that producers are receiving. The adjustment factor used is obtained by comparing the AMS major market price on or around the 15th of the month with the ESS midmonth price--the average price being received by producers. The ESS price is based on data furnished by mills and elevators throughout the country on or around the 15th of the month.

ASCS is responsible for assuring that grain placed in the FOR is inspected and measured before loan approval. The inspection is primarily visual, but if the loan inspector questions the eligibility of the grain, a sample is drawn for determining test weight, moisture content, or official grade when applicable. If the feed grain (or wheat entering the FOR before August 1980) was inspected and measured when placed under the price-support loan, no additional inspection or measurement is required unless there is reason to believe that some of the commodity has been removed or that the commodity is not in a storable condition. As of August 1980, when program regulations were rewritten so that only food-quality wheat was eligible for the FOR, all wheat must be visually inspected immediately before it enters the FOR. The amount of grain eligible for loan is 100 percent of the measured amount.

USDA charges interest on FOR loans at a rate determined by the Secretary. The interest rates in effect since the FOR program started have ranged from 6 percent to 13 percent. The rate in effect on 1980 crop loans was 11.5 percent. USDA announced in early 1978 that interest charges would be waived after the first year of the loan for all grains in the FOR. To help offset the effects of the Russian grain embargo, the first-year interest was waived on corn entering the FOR between October 22, 1979, and August 24, 1980. Further, the Agricultural Act of 1980 (Public Law 96-494) waived all interest on 1980 and 1981 crop FOR loans.

ASCS procedures require it to inspect all FOR grains at least annually for quantity and quality. In addition, ASCS has made nationwide random quality checks of FOR grains--as of November 1978, September 1979, May 1980, and August 1980. For these checks, ASCS drew samples from each selected bin under loan. The samples were graded by inspectors licensed under the U.S. Grain Standards Act (7 U.S.C. 71 et seq.) The results of ASCS's nationwide checks are discussed in chapter 3.

The 1977 act specifies an FOR level for wheat of not less than 300 million bushels nor more than 700 million bushels. For feed grains, the act specifies no limit, and according to an ASCS official, the Secretary has never established formal minimums or maximums. However, under his discretionary authority, he has established informal goals for feed grains from time to time.

Production of wheat and feed grains in the United States in the 1979 crop year was about 11.8 billion bushels. At its peak level the FOR contained about 1.28 billion bushels (as of Jan. 28, 1981).

Grain	Quantity in the FOR Jan. 28, 1981	1979 crop year production
	------(million bushels)--------	
Wheat	271.0	2,134.1
Corn	994.2	7,938.8
Barley	12.9	382.8
Oats	-	526.6
Sorghum	0.6	808.9
Total	1,278.7	11,791.2

As of February 28, 1981, about 86 percent of the FOR grain was stored on farms and the value of outstanding FOR loans was about $2.9 billion. As of March 18, 1981, the FOR contained about 1.22 billion bushels.

PROGRAM ADMINISTRATION

CCC is a wholly owned Government corporation created in 1933 to stabilize, support, and protect farm income and prices; to assist in maintaining balanced and adequate supplies of agricultural commodities; and to facilitate the orderly distribution of these commodities. CCC has no operating personnel; its programs are carried out primarily through ASCS personnel and facilities. ASCS has 50 State offices and an office in the Commonwealth of Puerto Rico. There are 2,745 county offices which administer programs in 3,052 counties. Each State and county has a committee which directs the activities of the respective office.

The county committees administer local operations and are composed of (1) three producers elected by the producers in the county and (2) the county agricultural extension agent who is an ex officio member. They make local program decisions and policies and appoint a county executive director who directs the county office staff in handling the day-to-day, detailed administrative work. The State committees supervise the county committees and are comprised of (1) from three to five members appointed by the Secretary of Agriculture and (2) the State's director of agricultural extension services.

COST OF THE RESERVE

FOR program costs, including storage payments, waived interest, and ASCS administrative costs, represent a significant Government cost. However, these could be partially offset by interest income and by reductions in deficiency payments resulting from any grain price increases due to the FOR.

ASCS makes advance storage payments to participating producers annually. The producers earn the storage payments during the ensuing year. Producer storage earnings, as recorded by ASCS, were $605.9 million from April 1977 through September 1980.

Period	Storage earnings	Advance storage payments
	(millions)	
Apr. 1977 - Sept. 1977	$ 0.4	$ 0.4
Oct. 1977 - Sept. 1978	86.3	215.9
Oct. 1978 - Sept. 1979	282.4	247.3
Oct. 1979 - Sept. 1980	236.8	254.4
Total	605.9	718.0
Outstanding advances, Sept. 1980	112.1	-
Total	$718.0	$718.0

Waived interest on FOR loans is another cost of the FOR. In early 1978 USDA announced that interest charges would be waived after the first year of all grain loans. To offset the impact of the Russian grain embargo, USDA waived the first year's interest on corn entering the FOR between October 22, 1979, and August 24, 1980. Also, the Agricultural Act of 1980 required the waiver of all interest on 1980 and 1981 crop FOR loans.

We were not able to compute the total amount of interest that has been waived because data on individual loans was not readily available. However, we estimate that the total amount might be high. For example, as of June 1979, USDA estimated that the total amount of interest waived on wheat placed in the FOR from October 1977 to the end of May 1978 (335.1 million bushels) at nearly $17 million. Also, we calculated that about $20.1 million in interest was waived on corn that entered the FOR on and after January 7, 1980, until it was released on August 29, 1980.

ASCS administrative costs relating to the FOR include the cost of such activities as processing loan documents and monitoring grain quality. ASCS estimated that from April 1977 through September 1979 these costs totaled about $13.2 million.

Offset against the FOR costs would be FOR loan interest income and any reduction in deficiency payments resulting from any grain price increases due to the FOR. The Government earns interest income when FOR loans are repaid. The amount of interest earned on FOR loans was not readily available from ASCS records.

Deficiency payments are made to eligible producers when the national weighted average market price received by producers is below the target price during the first 5 months of the marketing year. The payment is the difference between the established target price and the higher of the 5-month national average price received by producers or the national loan level. (The target price represents the Government price guarantee that eligible producers must receive for that proportion of their crops covered by the program.) Deficiency payments were made for barley, grain sorghum, and wheat in marketing year 1977; barley, grain sorghum, corn, and wheat in marketing year 1978; and barley and grain sorghum in marketing year 1979. The amount of the deficiency payment would be affected by any increases or decreases in grain prices caused by the FOR.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our primary objective in making this study was to determine the effectiveness of the FOR program since its inception in early 1977. The following issues were addressed:

--The impact on grain stock levels.

--The impact on grain prices, consumer prices, and the meat industry.

--Reserve program mechanisms.

--Reserve grain quality.

--Storage payments.

We reviewed the legislation, regulations, and procedures relating to the FOR program. We interviewed USDA officials from ASCS; ESS; AMS; the Federal Grain Inspection Service (FGIS); the Science and Education Administration (SEA); and the Office of Inspector General (OIG), as well as State and county office personnel.

We performed detailed fieldwork at the Minnesota State ASCS office and the following county ASCS offices:

Crawford and Poweshiek Counties, Iowa

Freeborn and Marshall Counties, Minnesota

Dodge County, Wisconsin

As of July 1980, about 40 percent of the FOR grain was located in Iowa, Minnesota, and Wisconsin.

We also discussed the FOR's impact and effectiveness, problems encountered with the FOR, and possible solutions with academic professionals knowledgeable of the various farm programs and representatives of the grain trade and farm organizations.

The primary work of evaluating the FOR's effectiveness and impact on grain prices, stocks, consumer prices, and the meat industry was done by two consultants with expertise in agricultural economics, grain stocks, and grain reserve policy:

Dr. Bruce L. Gardner
Professor of Agricultural Economics
Texas A&M University

Dr. Richard E. Just
Professor of Agricultural and Resource Economics
University of California, Berkeley

Gardner, through the use of regression analysis, analyzed the FOR's impact on grain prices and grain stocks. Just, through the use of an econometric model, analyzed the FOR's impact on grain prices, consumer prices, and the meat-producing sector of the economy. The consultants' report drafts were critically reviewed by a peer group consisting of three agricultural economists and an applied social scientist with a background in modeling techniques. The consultants considered the peer group reviewers' comments in finalizing their reports. (See vols. 2 and 3.) The reviewers cautioned that due to the short time the FOR has been in effect, any conclusions reached should be considered tentative.

We reviewed procedures used and results of ASCS' special quality checks of FOR grain stored on farm to determine if the quality of this grain was being maintained and to determine the effect of storage on quality. We also considered the results of a March 1980 OIG audit report which included a discussion of FOR grain quality in the Midwest.

We estimated average onfarm storage costs to determine their relation to storage payments made to producers. We obtained a random sample of 154 storage facility loans out of 53,669 loans made nationwide during fiscal year 1979 for use in our analysis to estimate the average onfarm storage cost. (See p. 42.)

CHAPTER 2

THE FARMER-OWNED RESERVE HAS PARTIALLY MET ITS OBJECTIVES

The Food and Agriculture Act of 1977's stated objective for the FOR is to provide a means whereby producers can store grains when they are in abundant supply to extend the time needed for their orderly marketing. More specific objectives, according to USDA officials and publications, are to

- --increase grain inventories in times of abundant supply, thereby assuring an adequate supply for domestic and export purposes;
- --remove the Government from the role of owning significant stocks of grain for price stabilization purposes; and
- --reduce the frequency and/or degree of grain price fluctuations, thus protecting consumers from high prices and producers from low prices.

Our consultants' analyses of the FOR's results in marketing years 1977-79 show that it has only partially met its objectives. Carryover grain inventories were only increased about 1 bushel for every 4 bushels added to the FOR because most of the FOR grain would have been held by private stocks without the FOR. The Government did not own significant grain inventories until the Russian grain embargo, but then the administration purchased grain in an effort to stabilize prices. The Government now has an inventory of corn and wheat which can affect the marketplace. The degree of price stability attributable to the FOR is minor, according to our consultants' analyses, and the net FOR effect in the first 3 years of operation may have been a net economic loss for the U.S. economy as a whole.

These results are based on 2 to 3 years of FOR history; the FOR may need a longer time to prove itself. However, to improve its effectiveness, modifications should be made to provide for methodical adjustments in program operations. (See pp. 17 to 22 and 24.)

LITTLE EFFECT ON INVENTORY LEVELS

One FOR objective is to increase nationwide grain inventories in times of abundant supply. The program should encourage producers to store grain in years of excess supply and thus add to carryover inventories. However, our consultants' analyses show that the amount of grain added to inventories was less than the amount of grain entering the FOR. This is because FOR stocks in large part replaced private stockholding.

Gardner's analysis of FOR program results through marketing year 1979, using annual data comparing ending inventories of

corn and wheat in marketing years 1977-79 with those in the pre-FOR years 1972-76, showed no apparent increase in ending inventories in the FOR years. However, regression estimates using annual data since 1950 suggested that the FOR may have added 1 bushel of wheat to total inventories for each 4 bushels in the FOR and 1 bushel of corn to total inventories for each 3 bushels in the FOR. An analysis using quarterly data estimated an even smaller effect. According to Gardner, the quarterly data indicated that for corn and wheat jointly, it takes 5 bushels in the FOR to add 1 bushel to total inventories. Gardner concluded that the most optimistic estimate that was plausibly consistent with the annual and quarterly data he analyzed was that 4 bushels of either wheat or corn need to be added to the FOR to add 1 bushel to total carryover inventories. Thus, when the FOR holds 1.2 billion bushels of grain, 300 million bushels have been added to total grain inventories.

According to Gardner, possible reasons for the limited impact include the following:

--Some producers may use the FOR as a within-year marketing tool. ASCS allows producers to replace grain in storage with newly harvested grain. Thus, some producers may take their grain out of storage to feed or sell just before harvest and replace it with newly harvested grain within 30 days. Therefore, the FOR would have little effect on yearend inventories.

--The incentive value to producers of FOR subsidy payments may be less than the size of the payments would indicate. The net expected gain from participation may not have been much greater than for storage outside the FOR because producers must agree to hold grain for 3 years, unless the release price is reached, and producers would benefit from the FOR's market price-support effects whether they participate or not.

--The FOR quantity ceiling may have discouraged additional storage. In the case of FOR wheat, the 1977 act set the limit below the quantity that likely would have been held if the FOR did not exist. This ceiling could have discouraged storage by lowering profit expectations. Thus, storage payments were not likely to induce large net additions to stocks.

Just's analysis showed a similar FOR impact on grain inventories. He found that over 80 percent of FOR wheat and over 50 percent of FOR corn would be held in absence of Government payments for storage. Because most of the grain entering the FOR would have been held privately without the FOR, costs such as storage payments and waived interest on the loans have been incurred for a minimal increase in carryover inventory.

GRAIN OWNERSHIP HAS REMAINED WITH THE PRODUCER, EXCEPT FOR GRAIN PURCHASED AS A RESULT OF THE RUSSIAN GRAIN EMBARGO

During the initial years of FOR operation, producers retained ownership of the reserve grain with the Government playing a minimal role in grain ownership. However, as a result of actions taken to counter the Russian grain embargo, the Government purchased a significant quantity of grain which could influence future market actions. In the 1960's and early 1970's, the Government owned large quantities of grain. However, in the mid-1970's, these inventories decreased. The average ending Government inventory of corn, wheat, barley, oats, and sorghum for 1974-79 was about 73 million bushels. At the end of fiscal year 1979, the Government owned 199 million bushels of the five grains.

When the FOR was implemented, the proposed method of FOR operation seemed to assure that the Government would not be a significant storer of reserve grain. It would procure grain sufficient to carry on its normal activities of domestic and foreign donations and sales. Some of this grain would be obtained through forfeitures of collateral pledged for commodity loans.

Under the FOR program, producers were to retain ownership and control of the grain and, within program constraints, decide how much to sell and at what price. They could thereby gain from any price increase resulting from the program.

Grain producer association officials told us that producers generally favor a farmer-owned reserve in contrast to Government ownership of stocks and also favor participating in marketing decisions. One agricultural economist told us that previous programs suffered because CCC was not always a knowledgeable trader. Another agricultural economist said that previous programs accumulated quantities of Government-owned grain which hung over the market and depressed prices.

A number of grain buyers and sellers also told us that farmer ownership is preferable to Government ownership of grain stocks. Officials of two major market boards of trade said that, although they opposed any Government disruption of the free market, an advantage of the FOR is that farmers retain ownership and make their own marketing decisions. A grain firm official said that the idea of the farmer-owned, Government-financed reserve was far superior to past reserve programs.

As a result of the January 1980 Russian grain embargo, about 4 million metric tons (about 156 million bushels) of wheat and about 9 million metric tons (about 352 million bushels) of corn were diverted from export. The administration chose to take whatever action was necessary to protect producers from negative embargo price effects. Part of this effort was to encourage increased FOR participation by such actions as waiving first-year interest on FOR corn loans and allowing corn producers, who had

not complied with 1979 crop set-aside requirements, to enter the FOR. When this plan did not prove successful, CCC purchased about 154.8 million bushels of wheat and about 159.8 million bushels of corn which had been destined for delivery to Russia.

USDA announced in January 1980 that some of the wheat CCC purchased would be held for the proposed Food Security Reserve for which authorizing legislation was pending in the Congress. 1/ In contrast, CCC will hold the corn for disposal through commercial grain channels. It will not be sold, however, until the price of corn reaches 105 percent of the most recent FOR call price for corn. This corn adds significantly to the Government inventory and will affect the commercial grain market.

LITTLE REDUCTION IN PRICE VARIABILITY

Our consultants found that the FOR's effect on price variability was minimal.

Gardner's analysis

Gardner states that the FOR program should stabilize prices in two ways: (1) year-to-year price variation should be less over the long term because the program increases average carryover stocks and (2) prices within individual marketing years should not fluctuate as much because FOR stocks can be manipulated to supply or withdraw grain from the marketplace. He estimated that the FOR's effect in promoting long-term price stability may be significant but is costly and that the effect on short-term price stability has, in marketing years 1977-79, been minimal.

Gardner said that long-term price stability effects are limited by the quantity of carryover grain inventories generated by the FOR. Assuming an average inventory increase due to the FOR of about 200 million bushels over a period of years, Gardner estimated potential long-term stabilization benefits to consumers and producers jointly to be roughly $75 million annually. The corresponding governmental subsidy costs, including storage payments, low interest rates, and waived interest on loans, were estimated by Gardner to be $300 million or more annually.

To test the FOR's effect on short-term price variability, Gardner analyzed price behavior using quarterly and daily data for the pre-FOR period and the FOR's first 3 years. On the basis of this analysis, he concluded that the FOR's effect on short-term price stability has been negligible. He further stated that the

---

1/Public Law 96-494, dated Dec. 3, 1980, provides for establishing a U.S. food security wheat reserve of up to 4 million metric tons. This is to be used solely for emergency food needs in developing countries during periods of tight supplies and high prices in the United States or in case of a major disaster.

program thus far may have destabilized prices. This conclusion is based on the finding that grain markets were not more stable in the FOR period than in the years immediately preceding the FOR. In particular, prices rose as sharply following the Soviet grain shortage of 1979 as they had in 1975, even though inventories were significantly greater in 1979 than in 1975. Theoretically, the existence of larger inventories in 1979 should have moderated price movements in 1979 compared with 1975, even without an FOR program.

Gardner's analyses of ending inventory and price data for the 1977 and 1978 marketing years estimated that the FOR had at most a small effect on wheat or corn prices during the period. His statistical analysis of quarterly and annual prices revealed no significant effects, but the possibility of a small effect is implied by the finding that the FOR program may have had an effect on carryover inventories. In its first 2 years, the FOR accumulated grain at a rate of about one-half billion bushels a year. Thus, using earlier inventory estimates (that is, only 1 of every 4 bushels in the FOR represented an addition to total inventories), total inventory accumulation would have increased by 125 million bushels each year. The price effect of removing this quantity from the market depends on the elasticity of demand for U.S. grains. Gardner estimated that for each 1-percent reduction in marketable grain, price increases no more than 4 percent. Because 125 million bushels is about 1 percent of use in domestic consumption and exports, the price effect is unlikely to have been more than 4 percent. A 4-percent increase in corn and wheat prices amounts to about $1 billion annually in increased market receipts to grain producers during the 1977 and 1978 crop years, but this is in part offset by reduced deficiency payments. The gains to producers are offset by increased costs to consumers.

Just's analysis

Just concluded that price stabilization in both the grain and livestock markets due to the FOR was minor. The benefits from short-term stabilization were not sufficient to outweigh the related economic costs. As a result, the program led to a net economic loss over the 2-year period of the study considering all affected market groups. Just concluded that while long-term stability would have greater benefits, long-term stability does not appear to have been an important objective of U.S. agricultural policy. With frequent changes in policy controls, which cannot be anticipated as far in advance as some investment decisions must be made, planning and investment efficiency is lost in agricultural production.

Just's grain market analysis showed that grain producers benefited early in the FOR program, but resulting maladjustment led to a net negative effect. As producers accumulated FOR stock in the program's first year, the program acted as a price support. This early upward price effect caused estimated real income to be higher for wheat and corn producers than it would have been with

no FOR and caused grain producers to increase production over what it otherwise would have been. However, due to increased demand associated with accumulating the FOR, feed prices were temporarily higher than they would have been without the FOR. This caused contraction in the livestock industry from what it would have been.

When the FOR grain was accumulated and the grain market could have returned to normal, the demand for feed was lower because the livestock industry had held back on production. Thus, grain prices were then lower than they would have been. This led to a subsequent decline in short-run profits for wheat and corn producers compared with the non-FOR case. These effects of the FOR took some time to wear off because of the long time lag required to change herd sizes and produce feeder animals.

Conversely, Just's analysis showed that grain consumers, feeders, private (non-FOR) storers, and importers were adversely affected by the initial price increases but then benefited from the later lower prices compared with a situation with no FOR. The analysis showed that for consumers, stockholders, and importers, the adverse effects during the 1977 crop year were more than outweighed by the beneficial effects during the 1978 crop year, with consumers benefiting the most.

Just's livestock industry analysis showed that during the 2 years analyzed, the livestock market participants suffered a net loss. This loss was caused in part by the early false price signals which caused the livestock industry to hold back on production. As noted above, recovery was slow because of the long time lag required to change herd sizes and produce feeder animals.

In the case of consumers, meat prices were higher than they would have been without the FOR. The related consumer losses were due to the initial slackening tendency of meat supply under the FOR, which was in part a result of the false grain price signals in 1977. The higher corn prices in the first three quarters of 1978 caused a reduction in investment in herd expansion and cattle placed on feed. These pressures were then reversed in mid- to late 1978 as the accumulation of FOR stocks slowed down. This reversal led to subsequent expansionary incentives for the livestock industry compared with the non-FOR case, the fruits of which began to come to market in mid-1979.

Just's analysis also showed that the upward pressure on livestock prices shortly after the FOR program was introduced led to increased livestock producer short-run profits which outweighed meat consumer losses. However, adverse effects of high prices on meat consumers caused net effects to turn negative in the first quarter of 1979. Then, as greater meat supplies became available in response to downward FOR grain price pressures beginning in 1978, the beef price effects of the FOR turned negative and led

to producer losses which dominated the related consumer benefits (relative to the case with no FOR).

These results suggest that substantial periods of adjustment may be required by the livestock industry when grain policies are changed. Furthermore, some of the related economic losses suffered because of inability to plan herd expansion or contraction effectively can be substantial.

According to Just's analysis, the overall effects on incomes in the first 2 years of the FOR program were large, with net economic losses as high as $4.4 billion for grain and livestock market participants combined. The net livestock industry loss, which made up $0.2 billion of the overall loss for the first 2 years, has probably increased since the period of analysis because the industry was still in a process of substantial adjustment in mid-1979.

Because these estimates relate only to the first 2 years under the FOR, it is possible that subsequent activity could result in overall net gains for the grain and livestock sectors jointly. However, with major modifications in program controls and methods for altering controls (see pp. 17 to 22), the effects of which could be better anticipated by producers in making decisions that affect later supplies, much of the losses of the type incurred thus far could be avoided in future reserve policy.

USDA STUDY OF FARMER-OWNED RESERVE IMPACT

A USDA study of the FOR wheat program entitled "Impact of Farmer-Owned Wheat Reserve on Total Wheat Stocks and Prices," released in April 1980, indicated that during the 1977-78 and 1978-79 marketing years, the wheat FOR provided a substantial additional demand for wheat. According to the report, each bushel of wheat added to the FOR contributed from 0.40 to 0.87 bushel to total inventories.

Assuming the 0.87-bushel contribution, the report estimated that the FOR increased wheat prices 8 cents in 1977-78 and 54 cents in 1978-79 over what the prices would have been with no FOR. The report concluded that under these circumstances, the FOR increased the value of wheat sold by producers by $1,265 million, of which $865 million would have been offset by reduced deficiency payments.

Assuming the 0.40-bushel contribution, the report estimated that the FOR increased wheat prices 8 cents in 1977-78 and 20 cents in 1978-79 over what the prices would have been with no FOR. In this case, the FOR would have increased the value of wheat sold by producers by $568 million, of which $410 million would have been offset by reduced deficiency payments.

The report emphasized that the data base used for estimations was small and many subjective market behavior conditions were imposed on the model; thus, pinpoint accuracy was not suggested. In addition, the study did not consider the interaction with other markets, such as the feed grain and livestock markets.

As noted earlier, our consultants' analyses of the FOR concluded that for each bushel of grain placed in the FOR, from 0.2 to 0.5 bushels were added to total grain stocks. Thus, the studies agree that the FOR's impact was less than 1 bushel added to total grain stock for each bushel placed in the FOR.

POSSIBLE FUTURE ACTIONS TO IMPROVE PROGRAM EFFECTIVENESS

Considering that the FOR, as currently structured, has not fully met its objectives, what can be done to improve the effectiveness of future grain management practices? The following alternatives could be considered:

--Retain the FOR concept, but with modifications.

--Discontinue the FOR, but continue CCC price-support loans and storage facility loans.

--Discontinue the FOR and pay producers a subsidy on carryover grain stocks.

--Discontinue the FOR and return to CCC storage.

--Discontinue the FOR, keep the CCC price-support loan rate low, and rely on unsubsidized private storage with no public inventory.

Retain FOR concept with modifications

This option would retain the essential features of the FOR (that is, producer ownership, loans, trigger prices, and storage payments) but change certain aspects. According to officials of grain-producer associations, the concept of producer ownership of the grain--in contrast to Government ownership--is popular with producers. By retaining ownership, producers can make the marketing decisions--within program constraints. Thus, this alternative may have the strongest popular appeal.

Certain aspects of the program, however, could be modified. Some possible modifications include (1) removing FOR quantity limits, (2) emphasizing long-term rather than short-term stabilization, (3) establishing methodical rules for adjusting loan rates and release and call levels, (4) allowing grain merchants, millers, exporters, and other middlemen to participate in the program, (5) ensuring that FOR grain is actually stored from one crop year to the next, and (6) changing release and call levels relative to loan rates.

Remove FOR quantity limits

Gardner suggests that removing the upper limits on the FOR should encourage the holding of private stocks outside the FOR in low-price years because the probability of a further price decline is reduced by the absence of a limit. Thus, increases in total stockholding could be encouraged. A negative aspect of removing the quantity limit might be that Government program management flexibility would be lost if producers chose to place too much grain in the FOR.

Emphasize long-term stabilization

The FOR has been operated with close attention to short-term price fluctuations--release and call decisions are based on a 5-day moving average. Yet, according to Gardner, price stabilization of most value to consumers, producers, and the economy generally occurs on a longer term basis.

Gardner's analysis showed that while smoothing out short-term, intraseasonal price moves would be beneficial, no indication could be found that the FOR had been effective in such short-term stabilization; in fact, indications were that the program moves had had a destabilizing effect. He suggests that fundamental supply/demand changes would seldom occur more than once within a crop year. These instances may be cases such as a Southern Hemisphere crop failure or a serious international crisis.

Thus, Gardner suggests that USDA focus on the program over the long term. One possibility he discussed would be to base program decisions on a several-month moving average within the crop year, after an initial decision on the program status for the coming year based on the situation following the first reasonably reliable crop forecasts, such as August 15 of each year. He suggests that this kind of change would remove USDA from the role of short-term manager of the U.S. grain markets and keep the program from being hampered by reactions to short-term State and regional price fluctuations due to situations such as transportation tie-ups, storage capacity crises, and strikes.

Establish methodical program adjustment rules

Just emphasizes the need for some type of self-adjusting policy that could be anticipated by producers and would provide for orderly program changes. Gardner also suggests that future adjustments in support, release, and call prices be made according to a published and stable rule.

In addition to agricultural policy changes every 4 years, developments have led to a number of within-year FOR program revisions. From the point of view of grain and livestock producers, these changes were unpredictable and thus made management decisions difficult because the producers had to react to the changes

after they were announced. Just's analysis indicates that the costs of these changes can be substantial.

Except in the case of the Russian grain embargo, when the FOR approached quantity limits, the policy has been to consider set-aside controls to avoid further reserve accumulation. Just suggests that, if set-asides are to continue, perhaps the set-aside level should be keyed to the level of accumulated reserves. For example, for every 20 million bushels of wheat in the FOR, a 1-percent set-aside could be required. Thus, producers could anticipate set-aside requirements quite closely and thereby avoid the present situation where, for example, there is either no set-aside or a 20 percent set-aside.

In addition, several changes have occurred piecemeal in loan rates, release levels, and call levels, apparently to correct inadequacies in the program. Producers were unable to anticipate the type and timing of such events and thus could not build these changes into their plans. While such uncertainties create a management problem for grain producers, they could create an even greater problem for livestock producers because of the longer production time lag.

Changes such as those mentioned above will likely continue to be necessary when specific levels of support are determined only after existing levels appear too far out of line. Just suggests that a better approach would be to change loan rates more frequently in smaller amounts in accordance with observed and anticipated changes in price levels. However, he suggests an even better approach would be to specify in advance how the loan rates and release and call levels would be changed in response to market conditions. These observed market conditions could include producer income levels, inflation of food prices, the size of Government-related stocks, and Government costs. Loan rates supposedly avoid low farm incomes, and release and call levels avoid rapid food price inflation. Yet, acceptable levels of farm income and consumer prices change with inflation. Just therefore suggests that the loan rates and release and call levels might be keyed to inflation. Gardner suggests that adjustments for changes in the general price level might be made by increasing all release and call levels and loan rates annually by the same percentage as the general price-level increase.

Just suggests that price incentives may be necessary to avoid reserve depletion. Thus, loan rates may need to be increased when reserves become low. To accomplish this goal methodically, Just suggests that the loan rate could be tied to the level of reserve accumulation as well as to inflation. For example, the loan rate could be increased 1 cent a bushel for every 3 million bushels the reserve is below some target level. This would allow producers to anticipate the loan rate changes.

Another self-adjustment mechanism suggested by Just involves the storage subsidy. Rather than having the "all or nothing"

storage payment tied to a specific price level as it has been, subsidies could be offered on a partial and sliding basis. This type of program is suggested in lieu of the present loan rates, release levels, and call levels and is a generalized version of the type of program suggested by a USDA agricultural economist. (See p. 22.) For example, producers could be paid a storage subsidy of a specified amount per bushel, say 25 cents, plus 10 percent of the difference between a target price and the current price. This would encourage storage when prices are low and vice versa. This sliding scale for storage subsidies would be announced well in advance so producers could anticipate rate changes.

To avoid the need for continual, unanticipated, year-to-year revisions in the storage subsidy rule, Just suggests that the target subsidy should be specified to depend on the FOR's accumulated yearend size. For example, the target subsidy could be determined by subtracting 5 cents a bushel for each million tons by which the FOR exceeds its desired level.

These suggested changes attempt to provide for orderly and definite adjustments. Producers would be able to anticipate such changes well in advance and plan accordingly. Being able to anticipate changes years in advance is important because many investment decisions affect production for years to come.

Allow nonproducers to participate

A modification that Gardner suggested for study is to allow grain merchants, millers, exporters, and other middlemen to participate in the program. He suggests that this modification might increase the FOR's ability to add to total grain inventories and reduce the social cost of storing the additional grain. It would allow nonproducers to expand their stocks at costs that in some cases may be lower than producers' storage costs. He argues that these merchants, exporters, millers, and other middlemen would be encouraged to hold stocks when expected price gains exceed storage costs. Under the current FOR program, the storage payment induced producers to increase their grain stocks above the levels they would have held in the absence of the FOR.

Gardner cites three objections to making nonproducers eligible for the FOR. First, some subsidies would be paid to nonproducers, as they currently are to producers, for storage of grain that would have been stored in the FOR's absence. Second, the quantity of nonproducer-owned grain stocks was quite small even before the FOR went into effect. Thus, making payments to nonproducers would be unlikely to make a large difference in total stocks. Third, it would be turning over some of the control and profit from grain carryover storage, currently in the producers' hands, to nonproducers. Gardner states, however, that while these objections must be taken seriously, they should give way if, in the interest of improving the FOR as a long-term

stabilization program, making nonproducers eligible can achieve any significant increase in stockholding.

Ensure storage from year to year

As mentioned earlier (see p. 11), one of the reasons Gardner gives for limited FOR impact on ending grain inventories is that producers who are short of storage space at harvest time can, if authorized by ASCS, sell old-crop reserve grain and not replace it with new-crop grain for up to 30 days. Also, any unauthorized switching of new-crop for old-crop FOR grain at harvest would have the same impact. Producers in effect can use the FOR as a within-year marketing tool, participating in the program year after year without ever adding a bushel to carryover stocks. Eliminating these practices, except where necessary (that is, to replace out-of-condition grain), would assure that old-crop grain is carried into the new-crop year.

Disadvantages of this proposal include the additional ASCS surveillance cost, especially to watch for unauthorized sale and replacement, and the uncertainty as to the degree to which such sale and replacement is occurring. Nonetheless, according to Gardner, these practices should be eliminated if the FOR program is to be truly effective in increasing carryover stocks.

Increase release and call levels relative to loan rates

Gardner states that the FOR program reduces the probability of observing prices above the release price but increases the probability of prices rising up to and just below the release price. His analysis showed that during the FOR period, prices tended to be at or near the loan rate or else at or near the release price, as compared with intermediate levels. This instability could be reduced by narrowing the distance between the loan rate and the release price. However, if this distance is too narrow, private speculative storage outside the FOR is discouraged. Also, it may encourage producers to sell grain at relatively low prices and thus do little to promote stockholding. Grain stocks then may not be available when needed. If the release level is too high (maybe twice the loan rate), the instability mentioned above is created. Current levels are set somewhere between, so the program provides some of the drawbacks of each. However, not enough is known about the price reactions to high or low release prices or the frequency or social costs of future severe shortages to make a scientific choice possible.

Discontinue FOR but continue price-support and storage facility loans

The FOR could be discontinued while retaining the price-support and storage facility loan programs. In his analysis,

Gardner suggests that the storage facility loan program concentrates its subsidies on reducing costs of storage at the margin and does not discourage private stockholding. For market stabilization purposes, the program would rely on private storage for carryover stocks. The CCC loan program would continue at a low support level for loan periods of less than a year. Grain acquired by CCC should be placed back on the market at prices relatively near the loan rate to avoid holding CCC stocks for long periods.

To assure availability of stocks to combat extreme shortages, there would be a limited amount of Government-held emergency stock. Gardner suggested possibly 5 million to 6 million metric tons of corn and wheat. Any sale of this stock would occur only when prices are well above the price expected to prevail under average conditions, so its impact on privately held storage would be minimized.

Discontinue FOR and pay an unrestricted subsidy

A USDA agricultural economist has suggested replacing the FOR with a farmer reserve subsidy. 1/ Under that program, producers would be eligible for a storage subsidy on grain they grew and held until the last day of the marketing year. USDA would announce the subsidy amount before the first day of the marketing year so it could be incorporated into everyone's marketing decisions. A possible alternative strategy to paying a lump sum grain subsidy would be to pay an equivalent subsidy per day until the grain is sold.

Under the subsidy system, only producers would be eligible for the subsidy and they would retain ownership of the grain. The system would also eliminate release and call procedures and producers themselves could decide when to sell.

The study approach assumed that (1) social benefits are derived from yearend stocks not captured by the market, (2) the political decision has been made that the bulk of the grain held in reserve should be under producer ownership, and (3) the criterion for measuring the program's performance is its impact on potential grain price variation. It was also assumed that a small, ongoing CCC program would exist under which the Government would hold some grain. The author noted that the success would depend on the public's belief that it is protected from grain shortages with a producer-held grain reserve over which the Government would have little control.

1/Jerry A. Sharples, "An Alternative Farmer Reserve Program," USDA-ESCS, Apr. 1979.

Gardner points out that an argument against a simple subsidy is that producers may respond to price changes irrationally and not sell when they should sell. However, he sees no evidence that the producers' judgment would be any better or worse than that of USDA if stock were held by the Government.

Discontinue FOR and return to CCC storage

Just suggests that Government ownership of stock might be considered and that if the rules of buying and selling Government-owned grain were announced in advance, decisionmakers could incorporate such anticipated actions into their plans. He suggests that one way of avoiding too large an inventory, and thus cost, would be to operate the controls according to a prespecified scale. For example, rather than offer to buy all grain at the loan rate, the Government would offer to buy 1 million bushels of grain for every 1 cent a bushel the market price is below the target price (and no deficiency payments would be paid). In contrast, it would sell 1 million bushels for each 1 cent a bushel the market price is above the target price. The market price used in these transactions should be some type of moving average price that would not be based on day-to-day random market fluctuations but perhaps on week-to-week or month-to-month price fluctuations.

In addition, a rule should be specified for modifying the target price. The modification could be based on the level of Government stocks relative to some Government stock goal. For example, if the long-term goal were 400 million bushels, the target price could be increased for each succeeding year by maybe 1 cent for every 3 million bushels the Government stock is below 400 million bushels.

According to Just, Government ownership of stocks has been unpopular because of the influence it places in the hands of a few individuals making Government buy/sell decisions. The changes discussed above, according to Just, should avoid those problems because Government buy/sell decisions would be controlled by a prespecified formula.

Free market system with low support prices

This alternative would involve discontinuing the FOR, retaining a low loan rate, and relying on unsubsidized private storage for price stabilization with no public stocks of any kind. Gardner states that this "free market" approach would eliminate substantial governmental costs and would probably not increase price instability, compared with the FOR, as much as might be expected. According to Gardner, the 1975-77 pre-FOR period does not look bad when compared with the FOR experience. Gardner also states that forward contracting and futures, options, and insurance markets may over the long term provide mechanisms for stabilizing producers' returns and grain users' costs more

efficiently than subsidized storage or other interventions in the grain markets.

However, it could be argued that under the conditions of this alternative, too little grain would be stockpiled. Also, deregulation of the grain markets may be too extreme an action at this time.

CONCLUSIONS

The FOR has only partially met its objectives based on analyses of the first 2 to 3 years of operation.

--The FOR has not added nearly as much to total grain inventories as the FOR quantities would indicate. Most grain that the FOR has attracted would have been stored by producers if the FOR did not exist.

--While the FOR initially succeeded in ensuring producer ownership of reserve stocks, the Government now holds grain purchased in response to the Russian grain embargo.

--The degree of price stability attributable to the FOR has been minor.

--The net FOR effect may have been an economic loss for the U.S. economy as a whole.

The FOR has been in operation only a relatively short time and not long enough to be adequately tested. However, modifications should be made to provide for methodical adjustments in program operations. Other possible modifications discussed in this chapter require further study before implementation is considered.

RECOMMENDATIONS TO THE SECRETARY OF AGRICULTURE

We recommend that the Secretary provide for methodical program adjustments in response to a broad range of potential market and political developments to allow decisionmakers in grain and related industries to anticipate such changes and adjustments, while still allowing for some necessary flexibility. We also recommend that the Secretary study the feasibility of other FOR program modifications discussed above and, if they provide remedies to the problems we found, incorporate them into the program. In addition, we recommend that the Secretary evaluate the FOR's effectiveness to serve as a basis for the Congress to use in making future grain policy decisions.

AGENCY COMMENTS AND OUR EVALUATION

USDA believes (see app. III) that the FOR program has been relatively successful, recognizing the problems associated with

its implementation and other problems such as the Russian grain embargo. It added that a longer period of FOR operation would no doubt provide a stronger basis for more definitive analyses.

USDA said that our consultants' studies reached conflicting conclusions on the FOR's effect on price variability: one reported an increase in price variability in the short run, while the other reported a decrease. It noted that results from other analyses (simulation studies) suggest that an FOR should reduce variability.

Although our consultants' studies showed some minor differences, their conclusions did not conflict. Both concluded that the FOR's effect on price variability was minimal. As to the results of other analyses, USDA says only that they suggest that an FOR should reduce variability, not that the FOR as it has operated has actually done so.

Regarding the impact of the FOR on grain inventories, USDA said that the consultants' studies miss an important point. It said that if the FOR had not existed, these stocks, if held, would have been held primarily by nonproducers and prices would have been sharply lower, thereby contributing to increased year-to-year price and production instability. Our consultants stated there was no evidence to support USDA's contention and that, even if nonproducers held these stocks, they felt there would probably be no impact on price. USDA statistics reveal the portion of all grain stored by producers has not changed materially since the FOR's inception.

Regarding Just's statement that the livestock sector was adversely affected by the FOR, USDA said that given the stage in the cattle cycle and financial market conditions, the problem was caused primarily by lower livestock product prices and high interest rates rather than higher corn prices associated with the FOR. According to Just, factors such as cattle product prices and interest rates were held constant (either implicitly or explicitly) in his analysis, both with and without the FOR, in determining the FOR's effectiveness. Thus, the FOR effects estimated in Just's study represent a situation after these factors are removed.

USDA said that a study based on a longer period and of a different methodological approach (that is, simulation analysis) would provide more insight into the longer run effects. Just notes that simulated analyses, in the way they have been applied thus far, generally use inflexible functional forms. As shown by the theoretical analysis in Just's study (vol. 3, sec. 8), this approach can arbitrarily limit the type of results that can be obtained.

Gardner used a simulated analysis in his study (vol. 2, sec. 7) where, using certain assumptions, he found that the potential long-term stabilization benefits of the FOR to consumers and producers jointly to be roughly $75 million annually. He pointed out, however, that several caveats had to be kept in mind about this estimate. Among these caveats was that the values of supply

and demand elasticities and the estimated reduction in price variance caused by the FOR, to which the estimated gain is sensitive, are not known with precision.

USDA said that the FOR enhanced producers' income in surplus production years and provided confidence to domestic and foreign markets during short crop years. Our consultants did not find that producers' income had been enhanced, and they stated that production and price had not varied enough in the FOR years studied to support USDA's statement.

USDA agreed with our recommendation that the program be modified to provide for methodical adjustments in program operations while still allowing for some necessary flexibility. It said that numerous changes had been made to simplify the program, to reduce the need to make changes, and to make the program better serve producers and consumers. It said that it intended to continue these efforts.

On other possible program modifications (see pp. 18 to 22), USDA said that it had some reservations regarding the removal of FOR quantity limits and allowing nonproducers to participate. It said, however, that these possible modifications would be examined as the FOR is reviewed in relation to other policy instruments. It said that all aspects of the FOR were being reviewed and that it would work with the Congress to provide a workable reserve program that will address the needs of all segments of the farm community and the Nation.

CHAPTER 3

THE FARMER-OWNED RESERVE INCLUDES SOME GRAIN OF QUESTIONABLE QUALITY

USDA studies show that although most of the farm-stored FOR grain at the times of the studies was of acceptable quality, some was of questionable quality. Questionable-quality grain is grain not suitable for storage due to high moisture, infestation, high kernel damage, contamination, or other conditions that could affect the grain's quality during storage. The studies did not show how much of the questionable-quality grain was of low quality when it entered the FOR and how much had deteriorated while in storage. Incurring storage or other costs, such as waived interest, for questionable-quality grain is not in the Government's best interest.

ASCS should obtain official grade determinations on grain in a sample of bins as they enter the FOR and on that same grain each subsequent year. This sampling would help to develop a profile of FOR grain quality and identify characteristics which are predictors of storability. On the basis of the above study results, as well as those of a Grain Marketing Research Laboratory project, ASCS should make procedural changes, as necessary, to eliminate questionable-quality grain from the FOR. In addition, ASCS needs to (1) require that, at a minimum, all grain be visually inspected immediately before it enters the FOR and (2) follow up in a timely manner on grain with quality problems serving as loan collateral to make sure corrective action is taken.

USDA STUDIES SHOW SOME RESERVE GRAIN TO BE NONSTORABLE

ASCS and OIG studies have shown varying percentages of FOR grain to be nonstorable.

ASCS grain quality studies

ASCS has made four nationwide random checks of farm-stored FOR grain quality. For the checks, ASCS compliance inspectors obtained samples and submitted them to inspection agencies, designated by FGIS, for official grade determinations. The respective dates and the commodities sampled are as follows.

Random check	Sample selected as of	Commodities sampled
1	Nov. 9, 1978	Barley, corn, oats, sorghum, wheat
2	Sept. 30, 1979	Barley, corn, oats, sorghum, wheat
3	May 23, 1980	Wheat, oats
4	Aug. 22, 1980	Corn

1978 and 1979 quality checks

For the 1978 and 1979 checks, ASCS projected the results to the total grain in the FOR as of the respective sampling dates. Grain that was musty, sour, distinctly low quality, heat damaged, and/or had high moisture was considered to be nonstorable. An ASCS official acknowledged that the definition of nonstorable was broad and included some storable grain, such as heat-damaged kernels from artificially drying grain at too high a temperature or grain that was once nonstorable but conditioned and made storable again.

ASCS projected the results of its 1978 statistically valid random sample and found that as much as 33.4 million bushels--or 5.4 percent of the total grain in the FOR--contained nonstorable grain. This amount included 4.1 percent of the wheat and 6.6 percent of the corn. 1/ ASCS concluded that, in general, grain in the FOR was good and that good storage management by producers and monitoring by county offices could greatly minimize poor grain quality and storability problems.

ASCS' projections on its 1979 check showed that as much as 94 million bushels serving as loan collateral--or 12.8 percent of the total grain in the FOR--contained nonstorable grain. In addition, as much as 37.2 million bushels were insect-infested. Although ASCS was concerned about the storability of infested grain, it did not consider infested grain to be nonstorable. An ASCS official said experience has shown that insects can be controlled with fumigation. ASCS concluded that the percentages of storable barley, oats, and wheat (90.1, 95.8, and 92.8 percent, respectively) were generally good and that corn and sorghum (83.9 and 80.0 percent storable, respectively) had higher rates of nonstorable and infested grain. The results of the 1978 and 1979 checks are shown in more detail in appendix II.

1980 quality checks

The final results of ASCS' analyses of its 1980 checks were not available as of December 9, 1980. However, some pre-

---

1/For purposes of projecting the results of the 1978 and 1979 quality checks to the total FOR, ASCS considered all the grain in a bin nonstorable if the official grade of the sample drawn met its definition of nonstorable. On this basis, the percentages may be overstated. The procedure followed would result in accurate projections to the degree that samples drawn were representative of the grain in the bin. Because some compliance inspectors used equipment that was not long enough to sample grain from the bottom of the bin, some samples contained a disproportionate amount of surface grain. It is not uncommon for surface grain to be deteriorated, but not grain below it, according to USDA officials.

liminary results were available through SEA. (As part of a research project [see p. 37], SEA received and analyzed a portion of all samples ASCS drew for random checks 3 and 4.) A draft SEA situation paper stated:

"Preliminary data * * * suggest that there is an insect problem in on-farm storage grain. The percentage of the samples found with one or more live insects after incubation are as follows:

Commodity	No. Samples Examined	Percent Infested
Corn	2,893	65.8
Oats	1,051	53.3
Wheat	4,115	23.1"

SEA incubated the grain samples, providing optimum conditions for insect hatching, which may have contributed to the high percentages. Information on the species and density of the insects in individual bins was still pending.

OIG grain quality study

In March 1980 OIG reported on its review of the quality of FOR corn and wheat in five States. The five States represented about 79 percent of the farm-stored FOR corn and wheat at May 31, 1979. OIG obtained FGIS grade determinations on samples its auditors drew from grain serving as collateral for 220 FOR loans. Grain serving as collateral for 50 of the loans graded U.S. Sample grade, the lowest quality designation under U.S. grain standards. Based on a projection of these results, OIG estimated with 95 percent confidence that at least 44.7 million bushels (6.8 percent) and as much as 91.8 million bushels (13.9 percent) of FOR corn and wheat in the five States would grade U.S. Sample grade. Of the 50 loans for which some grain graded U.S. Sample, 24 were so graded because of conditions caused by storability problems (that is, musty, sour, and/or with a commercially objectionable foreign odor) and 13 because of conditions which caused the grain to be unfit for human consumption (that is, animal filth).

We were not able to compare the OIG and ASCS results statistically because of the differences in the universes of loans sampled, time periods, and seasonal weather conditions. The results of our analysis of OIG data, shown in the following table, seem consistent with ASCS' results. The table shows that OIG classified grain as nonstorable in two ways--as a percent of bushels sampled and as a percent of bins sampled. We believe both are important in evaluating the quality of FOR grain. The percent of bushels indicates the maximum amounts of nonstorable grain; the percent of bins shows the number of problem bins needing corrective action.

Our Analysis of OIG Data on FOR
Corn and Wheat Quality in Five Midwestern States

Commodity and condition	Bushels		Bins	
	Number sampled	Percent	Number sampled	Percent
Corn:				
Storable	1,337,047	94.2	218	94.8
Nonstorable (note a)	82,825	5.8	12	5.2
Total	1,419,872	100.0	230	100.0
Wheat:				
Storable	982,055	97.6	107	89.9
Nonstorable (note a)	24,025	2.4	12	10.1
Total	1,006,080	100.0	119	100.0

a/Grain was musty, sour, and/or had a commercially objectionable foreign odor.

Based on its study results, OIG recommended that ASCS sample all grain at the time it is placed in the reserve and obtain a grade determination so that ineligible grain (that is, grain with excess moisture or grain that is weevily, musty, or sour) can be identified.

Experts' opinions on FOR grain quality

USDA officials, grain traders, and academic professionals knowledgeable about grain quality were unable to tell us what percent of grain stocks might be expected to be nonstorable at any specific time. An official of one firm said that he could not make a definitive statement but felt that the percentages which ASCS and OIG had found were high. Generally, the grain traders said that their level of concern would be based on the degree to which grain was infested or nonstorable. For example, their degree of concern about a musty odor--a grain quality characteristic included in ASCS' definition of nonstorable--would depend on whether the musty odor was weak or strong.

CAUSES OF QUESTIONABLE GRAIN QUALITY

Specific causes of the questionable-quality grain in any individual bin are not readily determinable because ASCS does not obtain official grade determinations on grain when it enters the FOR. We identified two causes of questionable-quality FOR grain--low-quality grain is allowed into the FOR and some FOR grain has deteriorated in storage. Other contributing factors include ASCS' inadequate procedures for identifying loans secured by grain with quality problems and for correcting or eliminating quality problems identified.

Low-quality grain is allowed into the FOR

While the act does not provide guidelines on what qualities of grain are eligible for the FOR, ASCS established minimum standards for farm-stored grain. Prior to the 1980 program, before a loan was approved on farm-stored grain, it had to be determined that the grain was reasonably expected to be stored with safety until maturity of the loan. ASCS amended this requirement for 1980 and subsequent crops. Under the new regulations, farm-stored grain is allowed into the reserve as long as the grain meets the eligibility standards for obtaining a price-support loan. Although the eligibility standards for each type of grain are not necessarily uniform, in general, these standards require that the grain be storable, merchantable, and free from substances poisonous to humans or animals, such as toxin-producing molds or mercurial compounds. In addition to these general standards, these new regulations specifically require that wheat entering the reserve must, be "merchantable for food" and must not grade ergotic, treated, weevily, smutty, or garlicky.

Even with the change, however, some wheat that may not meet the quality standards under the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) remains eligible. For example, wheat that has a commercially objectionable foreign odor is eligible for the FOR. However, under a memorandum of understanding between FGIS and the Food and Drug Administration (FDA), if FGIS or FGIS licensees sample and inspect a lot of grain and find it has a commercially objectionable foreign odor, they must report it to FDA for possible investigation. We do not believe such questionable-quality grain should be in the FOR.

ASCS county commodity inspectors are to determine whether or not farm-stored grain meets ASCS' standards by visually inspecting the grain. If the inspector questions the eligibility of the commodity, a sample shall be drawn and submitted to FGIS for quality analysis. ASCS has not provided adequate guidelines for making this determination and therefore has no assurance that standards are uniformly applied. In addition, all feed grain entering the FOR and all wheat that entered the FOR before August 1980 did not need to be visually inspected if it had been inspected at the time it was sealed under the price-support loan program and if the county committee had no reason to suspect that grain had been removed or had deteriorated. With the change to a food-quality wheat reserve, ASCS required county compliance inspectors to inspect all wheat immediately before it entered the FOR.

Some FOR grain deteriorated in storage

Some FOR grain has deteriorated because of improper storage management. The reasons other grain is deteriorated are less clear.

ASCS findings on FOR grain quality

We analyzed the reasons ASCS considered some FOR grain to be a problem--based on its 1978 quality check. In Minnesota, ASCS considered 293 of the 1,402 bins it sampled to have problems significant enough to require county office followup. The problems by type of grain are shown in the following table.

Quality problem	Percent	Bins			
		Total	Barley	Corn	Oats	Wheat
Presence of animal filth	29.7	87	13	1	16	57
Damage	18.8	55	1	36	0	18
Musty	16.0	47	22	7	6	12
Weevily	4.1	12	5	2	0	5
Heating and insects	3.4	10	3	2	1	4
Moisture content too high	2.0	6	4	1	1	0
Distinctly low quality and/or commercially objectionable foreign odor	2.0	6	2	0	4	0
Sour	1.0	3	2	0	0	1
Unsound storage structure	4.4	13	5	1	5	2
Problem not defined	18.4	54	13	20	11	10
Total	a/100.0	293	70	70	44	109

a/Total does not add due to rounding.

The presence of rodent excreta or other animal filth was the most frequent quality problem found. This problem clearly results from improper storage facilities and/or storage management practices. Either the storage facilities had holes large enough for rodents or other animals to enter or the producer left the facility doors or tops open.

The reasons for the other storage problems ASCS noted are less clear. For example, musty and sour odors may stem from mold growth which could be due to either improper storage management and/or inherent qualities of the grain. We were told that grain may mold if a bin is not properly aerated. Poor aeration may be due to such things as the improper use of aeration equipment or grain having high percentages of fine material, weed seeds, and extraneous materials packing together and impairing the air flow.

The USDA officials, grain traders, and academic professionals we talked with had a number of opinions about the quality of farm storage. Sixteen of 21 individuals indicated that onfarm storage in general falls short of optimum conditions because of poor grain management practices and/or inadequate storage structures. Examples of poor management practices included the failure to fumigate and control insects, rotate grain stocks, monitor grain quality, and control moisture. Problems of inadequate storage structures included structures which were not grain tight and lacked aeration equipment.

Views on grain storability

The USDA officials, grain traders, and academic professionals we talked with had various opinions about how long grain could be stored without deterioration and what variables determined the rate of deterioration. Storage management practices, storage facility condition, climate, and/or the characteristics of the grain itself were considered, by various individuals, to be important variables determining the deterioration rate. Time was not always considered critical when grain was stored under optimum conditions. Several individuals said that grain could be stored indefinitely under optimum conditions; others gave examples where wheat was usable after being stored for periods ranging from 15 to 25 years. Nine of 12 individuals who commented on grain storage life indicated that good quality grain could be stored under optimum conditions for more than the maximum period of an FOR loan--5 years.

Program management weaknesses

Although ASCS has taken or initiated some actions to improve its management of the program, weaknesses still exist. For example, (1) ASCS has not issued specific procedures to assure the proper sampling and inspection of farm-stored commodities and (2) county office officials do not always make sure that corrective action is taken when questionable-quality grain serving as loan collateral is identified.

No specific sampling and inspection procedures

In a January 29, 1979, letter to the ASCS Administrator, we said that improvements were needed in the controls over loan collateral. In his March 14, 1979, response, the Administrator said that the problems we had noted had been under study for quite some time; that many solutions had been proposed; and that because of increased loan activity, he felt that ASCS must seriously attempt to resolve these problems. He said that ASCS was developing specific procedures for county office use in 1979 to ensure proper sampling and inspection of farm-stored commodities. As of late December 1980, these procedures, which will be in the form of a handbook, had not been completed. ASCS plans to release the handbook in late 1981.

County offices not following ASCS policy on handling problem loans

County office practices in handling problem loans also need to be improved. ASCS policy on problem FOR loans is to notify the producer and ask that corrective action be taken. If the producer does not comply, the loan is to be called immediately. We found that the policy is not always followed.

In the five counties we reviewed, county office officials generally informed producers of any problems the compliance inspectors found and asked the producers to correct the problem and report back to the county office. Some producers reported back, but not always promptly. However, most did not report back and the county office rarely followed up. Therefore, ASCS had no way of knowing whether corrective action was taken. We found no case where a loan was called because the producer did not correct a problem.

At the three county offices which generally sent letters to producers asking them to take corrective action and report the disposition, we reviewed cases involving 55 producers who were asked to report back to ASCS. As the table below shows, only 24 did so. Also, ASCS followed up with only 1 of the 31 producers who did not report back.

Followup on Loans With Quality Problems in Three ASCS County Offices

County	Number of producers			
	Asked to take corrective action and report disposition	Who reported disposition	Who did not report disposition and ASCS followed up	Who did not report disposition and ASCS did not follow up
Freeborn, Minn.	22	13	0	9
Marshall, Minn.	21	3	1	17
Poweshiek, Iowa	12	8	0	4
Total	55	24	1	30

An example of the cases in which county offices allowed quality problems to continue uncorrected for an unreasonable period of time follows. On July 12, 1978, the Freeborn County ASCS compliance inspector found one of three bins under one loan had spoilage--"crusting" on the grain surface. On April 10, 1979, he found that the surfaces of two of the bins were black with mold because the bin tops had been off and that the third had started to mold. In October 1979 ASCS paid the producer $916 in advance storage payments even though he had not responded to ASCS' April 11, 1979, letter directing him to correct the problem and report back. On May 23, 1980, the compliance inspector rechecked the bins and still considered the grain to be a problem. ASCS again sent the producer a letter asking him to correct the problem and report back; however, he had not done so 3 months later when we made a followup inquiry.

The other two county offices we visited followed different procedures. Officials in Dodge County, Wisconsin, told us that they verbally informed producers of any quality problems they found; however, they did not document the conversations. Officials in Crawford County, Iowa, told us that they sent letters informing producers of the problem and continued to check problem loans

until they were certain the grain was storable. Our review of this county's records confirmed this practice.

Storage practices do not affect amount of storage payments

Grain producers who allow their grain to deteriorate in storage receive the same per-bushel storage amount (as of Nov. 30, 1980, 26.5 cents a bushel for barley, corn, sorghum, and wheat and 20 cents a bushel for oats) as those who maintain grain quality. Also, disincentives exist to clean or screen dockage, 1/ foreign material, and/or broken kernels from grain when it goes into storage because doing so could decrease the producers' eligible bushels, resulting in lower loan amounts and therefore lower storage payments. According to USDA officials, grain traders, and academic professionals we talked with, the presence of dockage, foreign material, and broken kernels may encourage deterioration.

When we discussed the lack of incentives for proper grain management with ASCS officials, they told us that producers are responsible for grain quality and bear the risk of lost revenue from deterioration. They claimed that profit motives should be incentive enough. Because the FOR contains some questionable-quality grain, however, profit appears not to be a sufficient incentive in some cases.

EFFECTS OF QUESTIONABLE GRAIN QUALITY

Permitting grain of questionable quality in the FOR program has financial and other implications. Paying for storage and incurring other program costs, such as waived interest, for questionable-quality grain is not an effective or efficient use of funds. Grain which has diminished in volume or nutritional quality results in a loss to society, brings less revenue to producers, and may jeopardize the adequacy of FOR loan collateral.

Storage payments made for questionable-quality grain

We question the desirability of spending funds to store questionable-quality grain. Assuming that ASCS' profile of farm-stored FOR grain as of September 30, 1979 (see app. II), had been constant throughout the fiscal year, up to 17.9 percent of the total storage earnings, or about $30 million, would have been made for nonstorable or infested grain. We cannot state the actual amount paid for nonstorable or infested grain because all the grain in a bin need not be nonstorable or infested. (See footnote, p. 28.)

1/Lower quality grain and foreign material that is generally deducted from the measured weight in determining the final sales price.

Deterioration reduces grain usefulness

Grain deterioration results in nutritional and economic losses, which have a significant effect on food supplies, producer profits, and collateral security. Insects, rodents, and other prey consume a large volume of stored grain. USDA reported estimated annual storage losses caused by insects during the 10-year period ending 1960 at 324,593,000 bushels of corn, wheat, barley, sorghum, and oats, or about 4.3 percent of the stocks. 1/ In that period's dollar value, the annual loss was nearly $453.8 million.

We could not locate more recent estimates of losses from insect damage, nor did we find published data estimating annual losses from rodents and other prey. However, the results of ASCS' November 1978 quality check of FOR grain stored in Minnesota (see p. 32), which showed animal filth present in 6.2 percent of the bins sampled, indicate that the volume losses from rodents and other prey may also be great. Food processors have no tolerance for animal filth, and therefore the direct nutritional value for humans for all such contaminated grain is lost. Because such contaminated grain may be used as animal feed, however, some nutritional value may reach humans indirectly through the meat and poultry they eat.

Grain deterioration may decrease the processing yield, palatability, or feeding value of grain. For example, an official of a corn refining firm told us that mold, insects, and other agents attack the kernel's germ. The result is a decrease in the amount of oil the germ will yield in processing. An official of a grain processing firm told us that heat-damaged grain has a bitter taste and is therefore avoided. A cattle feeder told us that although grain containing animal filth is fit for animal feed, it is less desirable because of its odor and taste. If cattle will not eat as much grain, it takes longer to fatten them for slaughter; therefore, feed costs are increased.

The same USDA study that estimated the annual dollar loss caused by insects at nearly $453.8 million, estimated additional quantity and quality losses from deterioration at over $92 million. Although this estimate is dated, it demonstrates the significance of such losses. If FOR grain deterioration is great, the value of the grain serving as loan collateral could be less than the loan amount.

ACTIONS TAKEN TO IMPROVE STORAGE PRACTICES

As early as June 1978, an ASCS task force which studied the FOR recommended that ASCS (1) inspect FOR grain more often and (2) undertake an educational effort to make producers aware of the need to watch their commodities and maintain the grain quality.

1/"Agriculture Handbook 291," USDA.

The basis for the recommendation was the task force members' belief that many producers were not familiar with the problems involved in storing grain on the farm for long periods and that some producers mistakenly believed the Government bears the risk of loss from deterioration.

ASCS has taken some steps to educate producers. Early in 1980, it distributed a booklet on insect control in farm-stored grain to participants. The booklet provided excellent information on reasons why infestation occurs, basic requirements for grain bins, and procedures for inspecting stored grain and treating infested grain. It included pictures of insects commonly found in stored grain.

Also, ASCS and the Grain Marketing Research Laboratory of USDA's SEA are conducting research on FOR grain, the results of which might help producers avoid or minimize deterioration. They are accumulating information on the age and quality of grain and producer grain management practices. This project's objectives, as stated in the research proposal, are to

--develop basic information on a national scale to characterize insect and fungal activity in FOR grain stored on farms;

--identify specific biological problem areas within the storage program; and

--suggest corrective actions, where required, to improve and maintain FOR grain quality.

We believe this project is important and will provide useful information.

CONCLUSIONS

The results of ASCS and OIG studies of FOR grain quality show that some FOR grain is nonstorable and/or infested. The questionable-quality grain is caused by either (1) low-quality grain entering the FOR due to inadequate FOR grain quality standards and entrance procedures or (2) grain deteriorating after it is in the FOR because of improper storage management practices and/or the inherent qualities of the grain.

Incurring storage or other program costs, such as waived interest for questionable-quality grain, is not desirable. Questionable-quality grain should not be allowed into the FOR or to remain in the FOR if it has deteriorated in storage.

ASCS should make whatever changes are necessary to eliminate questionable-quality grain from the FOR. To gain a better understanding of the extent to which questionable quality is caused by low-quality grain entering the FOR or grain deteriorating in storage, ASCS should, on a sample basis, obtain official grade

determinations on grain entering the FOR. Also, it should continue to monitor the sampled bins and periodically obtain official grade determinations to see what changes take place during the life of the loan. The results of this work should be used to refine eligibility standards. In addition, ASCS should have all grain at least visually inspected immediately before it enters the FOR and improve its followup activities of loans with quality problems to assure that producers take corrective action.

RECOMMENDATIONS TO THE SECRETARY OF AGRICULTURE

We recommend that the Secretary require ASCS to obtain official grade determinations, on a sample basis, as grain enters the FOR and on the same grain each subsequent year (where possible), to develop a profile of FOR grain and determine what characteristics are predictors of storability. This data and other information, such as the Grain Marketing Research Laboratory's analysis of FOR grain quality, can be used to determine whether to establish FOR eligibility criteria and/or modify procedures to further eliminate questionable-quality FOR grain. In addition, we recommend that ASCS improve its guidelines and procedures for identifying grain with quality problems serving as loan collateral and correcting or eliminating quality problems identified.

AGENCY COMMENTS AND OUR EVALUATION

According to USDA (see app. III), the report indicates that the FOR tends to increase farm-stored grain deterioration. It said that it could not substantiate this conclusion because non-FOR farm-stored grain quality was not examined. It also noted that warehouse-stored grain is not immune from quality deterioration during storage. We are not saying that farm-stored FOR grain has a worse deterioration problem than farm-stored non-FOR grain or that warehouse-stored grain quality could not deteriorate during storage. Our message is that the extent of the deterioration problem in farm-stored FOR grain indicates a need for corrective action because producers are receiving payments to store the grain and maintain its quality and because deterioration can lead to nutritional and economic losses, including losses for the producers themselves.

USDA said that there is no conclusive evidence that grain of questionable quality is being permitted to enter the FOR. Because USDA does not obtain an official grade determination on the grain when it enters the FOR, it is difficult to prove whether or not the grain was of low quality when it entered the FOR. Nevertheless, the fact remains that ASCS' procedures do not entirely preclude low-quality grain from entering the FOR.

USDA said that CCC has worked to improve maintenance of FOR grain quality. It said that current procedures require an inspection of grain before FOR loan approval and subsequent annual inspections of each farm-stored FOR loan. According to ASCS

procedures, however, the inspection required before FOR loan approval for some feed grain loans can be made at the time the grain is sealed under the price-support loan program, or as much as 9 months prior to FOR loan approval. Further, these inspections are usually only visual inspections and do not entail official sampling or grading.

USDA said that it had reservations about obtaining official grade determinations on a sample basis as grain enters the FOR and on the same grain each subsequent year (when possible). It said that this would require an effort of considerable magnitude with a promise of negligible payoff. It added that its experience has shown that essentially two elements--excess moisture and insects--increase the probability of grain quality deterioration.

We believe the approach we recommend would better identify the quality of the grain entering the FOR. Although we recognize that excess moisture and insects are the primary elements increasing the probability of grain deterioration, we believe other factors, such as the uniformity of quality and the cleanliness of the grain, can also contribute to deterioration. Information on these characteristics and their impact on grain quality would be useful for future FOR decisions.

According to USDA, the procedure for identifying quality problems is adequate, but it recognizes that its procedure for correcting problems could be improved. It said that ASCS is expanding procedures to require that farmers be notified when problems are found and to require that action be taken to eliminate the problem or the loan will be called.

Although USDA believes the procedure for identifying quality problems is adequate, ASCS had acknowledged problems in controls over loan collateral, including procedures for sampling and inspection of farm-stored commodities. The proposed sampling and inspection handbook (see p. 33) should help strengthen these procedures which, when properly followed, should help assure that quality problems are identified. The expansion of procedures for dealing with problems should also help assure that quality problems are corrected.

CHAPTER 4

STORAGE PAYMENT PRACTICES REQUIRE CHANGE

USDA pays producers grain storage payments to encourage FOR program participation. In some cases, however, these payments have been excessive.

--A conservatively estimated $28 million paid to producers for onfarm FOR grain storage in fiscal year 1979 represented an amount above estimated average onfarm storage costs and was, in effect, a producer subsidy.

--Producers earned about $900,000 in barley storage payments after barley reached call status even though the purpose of a call is to force grain from the FOR. A similar situation occurred with oats and sorghum.

--Producers have been allowed to retain unearned storage payments for excessive periods before repayment. Barley producers retained an estimated $2 million in unearned storage payments after barley was called from the FOR, some for as long as 10 months after call status was reached.

The Secretary needs to determine the average cost of FOR grain storage and limit producer storage payments to this amount. In determining the average cost of FOR grain storage, both onfarm and warehouse storage costs should be considered. ASCS has changed its procedures to stop storage earnings when a grain reaches call status but has not amended the program regulations. In addition, new program regulations provide that interest be charged immediately following the maturity date or the originally required settlement date.

STORAGE PAYMENTS SHOULD BE LIMITED TO AVERAGE STORAGE COST

The Food and Agriculture Act of 1977 states that producers are to be paid "such amounts as the Secretary determines appropriate to cover the cost of storing wheat and feed grains held under the program." However, storage rates established by the Secretary have not been based on determinations of FOR grain storage costs. When the FOR was established, the storage rate was set at 20 cents a bushel for corn, wheat, sorghum, and barley. 1/ On February 8, 1979, the annual storage rate on these grains was increased to

---

1/ASCS proposed a storage rate of 25 cents a bushel based on average commercial storage rates. The Office of Management and Budget reduced the rate to 20 cents a bushel.

25 cents a bushel to increase program participation. 1/ These rates were established on bases other than the cost of onfarm storage, which represented the majority of FOR storage.

Storage payments to producers in fiscal year 1979 (at 25 cents a bushel) exceeded estimated average onfarm storage costs by from 3.3 cents to 8.6 cents a bushel depending on whether a storage facility is assumed to have a 10-year or 20-year life. For fiscal year 1979, the excess represented $28 million or $72 million to producers storing FOR grain onfarm. In fiscal year 1979, about 76 percent of the FOR grain was stored on the farm, with the balance in commercial storage space. The average annual rate charged for commercial storage space nationwide was about 26.4 cents a bushel for the period July 1, 1978, through June 30, 1979, and about 26.8 cents for the period July 1, 1979, through June 30, 1980.

We found very few studies containing recent cost data on onfarm storage. The latest study we obtained was a master's thesis completed in 1978 by a Kansas State University graduate student. 2/ The study's purpose was to determine the costs of onfarm storage and drying of grain in Kansas. The study results showed that the estimated average annual cost for onfarm storage ranged from 19.2 cents to 10.7 cents a bushel for the smallest and largest facilities, respectively, based on 100-percent utilization and depreciation of the facilities over 20 years and of the equipment over 10 years. The study showed the average annual storage costs for a 10,000-bushel facility to be 15.8 cents a bushel.

Because of the lack of onfarm storage cost data, we developed estimates of such costs based on a random sample of ASCS' fiscal year 1979 storage facility loans, information from other studies, and discussions with county auditors and insurance agents. On the basis of this information, we conservatively estimated that farm storage payments in fiscal year 1979 were at least 3.3 cents a bushel, or a total of at least $28 million, more than the estimated average onfarm storage costs. We assumed a 10-year useful bin life and no salvage value, whereas the useful bin life could be much longer and some facilities may have residual or salvage values. We also assumed 100-percent utilization. Also, we used fiscal year 1979 facility construction costs, although it is unlikely that all FOR participants stored grain in facilities constructed in 1979 and many therefore may have had lower capital costs.

1/Effective Jan. 7, 1980, the annual storage rate on these grains was raised to 26.5 cents a bushel to offset the effects of the Russian grain embargo. This rate remained in effect at Nov. 30, 1980.

2/Randal L. Linville, "The Economics of Farm Grain Storage and Drying in Kansas," Kansas State University, Manhattan, Kansas, 1978.

To calculate farm storage facility costs, we gathered cost and other information on a random sample of the 53,669 storage facility loans which ASCS made during fiscal year 1979. The facilities were of varying sizes with and without drying equipment. From this universe, we selected 1,074 loans for sampling purposes, using a random starting point and selecting each 50th loan from the listing of the 53,669 loans. We drew a subsample of 154 loans and examined the relevant cost information in detail.

For the 154 sample facilities, we identified total capital cost and bushel capacity. The results showed that the sample facilities had an average capacity of about 10,000 bushels and an average per-bushel capital cost of $1.06. The per-bushel capital cost of the individual facilities ranged from $0.41 to $3.62. On the basis of our sample, we are 95 percent confident that the 53,669 loans in our universe had per-bushel capital costs of from $0.41 to $3.62.

Using the average per-bushel capital cost of $1.06, as well as other fixed and variable costs, we calculated that the average onfarm storage cost in fiscal year 1979, as shown in the table on the following page, was 16.4, 18.2, or 21.7 cents a bushel, depending on whether the capital cost is depreciated over 20, 15, or 10 years, respectively.

The difference between the storage payment rate and the estimated average storage cost has changed. For example, the interest rate ASCS charges on storage facility loans fluctuates. As of November 30, 1980, the rate was 12.5 percent. On April 1, 1981, it was raised to 14.5 percent. In addition, the minimum downpayment required on storage facility loans was raised from 15 percent to 25 percent effective April 1, 1981. Other costs have probably also increased due to inflation. These changes further emphasize the need for USDA to determine the average storage costs for purposes of establishing the level of storage payments.

STORAGE EARNINGS ALLOWED TO CONTINUE AFTER GRAIN REACHED CALL STATUS

Until October 1980 ASCS allowed producers to earn storage payments after grain was placed in a call status. This was contradictory because the purpose of call status is to force grain from the FOR. As a result of ASCS' not having procedures to prohibit producers from earning storage payments after a grain had reached call status, storage payments of about $900,000 were earned on barley in 1979 after it was placed in a call status. Storage payments were also earned on oats and sorghum after they reached call status. Effective October 31, 1980, ASCS changed its procedures to stop the earning of storage payments when a grain is placed in a call status.

However, ASCS did not amend its regulations to make them consistent with its newly adopted procedures. ASCS' current

Average Onfarm Storage Cost Per Bushel, Fiscal Year 1979

Cost item	Storage cost per bushel Useful life of storage facility 10 years	15 years	20 years
	(cents)		
Fixed costs:			
Depreciation (note a)	10.6	7.1	5.3
Interest (note b)	4.9	4.9	4.9
Taxes (note c)	0.7	0.7	0.7
Insurance (note d)	0.6	0.6	0.6
Repairs (note e)	1.1	1.1	1.1
Total fixed costs	17.9	14.4	12.6
Variable costs (note f)	3.8	3.8	3.8
Total cost per bushel	21.7	18.2	16.4

a/Depreciation was calculated on the straight-line method by dividing the average per-bushel capital cost of $1.06 by the respective useful life of 10, 15, or 20 years, assuming no salvage value. Under Internal Revenue Service guidelines, a 10-year life for depreciation of grain bins is acceptable for Federal tax purposes. Grain bin manufacturer representatives told us that grain bins may have a 20-year life or longer.

b/Interest was calculated using ASCS interest rates for fiscal year 1979. ASCS charged 7 percent interest on storage facility loans for the first 6 months of the fiscal year and 10.5 percent for the last 6 months, or an average of 8.75 percent. The producers' minimum downpayment was 15 percent as required by ASCS regulations. We valued the producers' downpayment money at 12 percent interest per year. The 8.75-percent rate at 85 percent of the facility cost and the 12-percent rate at 15 percent of the facility cost resulted in an overall effective interest rate of 9.24 percent. This rate was applied to the average investment, the average investment being considered one-half the producer's cost.

c/Property taxes were calculated at 0.7 percent of original capital investment, based on data from earlier studies and contacts with county auditors.

d/Insurance was calculated at 0.6 percent of original capital investment, based on data in other studies and discussions with insurance agents.

e/Repairs were calculated at 1 percent of original capital investment, based on the Kansas State University study.

f/Variable costs include such items as grain insurance, insect control, aeration, handling, and weight loss. The amount was based on the Kansas State University study—the highest estimate of variable cost in any of the studies reviewed.

regulations provide only that storage earnings stop at the end of the month following the month in which release status is reached.

Barley

Barley (reserve I) reached release status on June 5, 1979, at which time ASCS informed producers that storage payments could be earned at least through July 31, 1979. On June 26, 1979, barley reached call status. Instead of stopping storage earnings at that time, ASCS announced that storage earnings would stop the earlier of (1) the date of repayment or (2) August 5. Little barley was redeemed or forfeited before August 5. During the period June 26 to August 5, 1979, or about 40 days, producers earned an estimated $900,000 in storage payments on barley.

Barley represented only about 3 percent of the FOR grain in early June 1979, thus the storage earnings amount involved was not large. However, had similar circumstances occurred for wheat, for example, the storage earnings involved would have been 10 times greater.

USDA's Director of Economics, Policy Analysis, and Budget told us that USDA had not anticipated that grains would reach call status so quickly after they reached release status. He said that under anticipated circumstances, storage earnings would have stopped under the rules of release before call status was reached.

Oats and sorghum

Similar situations occurred for oats and sorghum. However, we did not calculate the amounts of storage earned after each grain reached call. The amounts for oats would likely be less than barley and the amounts for sorghum would likely be more than barley, considering the volume of oats and sorghum in the FOR.

On September 10, 1980, oats (reserve III) entered release status, and storage earnings were to continue through October 31, 1980. On September 17, 1980, this grain entered call status, yet storage earnings continued through October 31, 1980, or 44 days after the grain entered call status.

Sorghum (reserves I and II) entered release status on July 2, 1980, and storage earnings were to continue through August 31, 1980. On July 17, 1980, sorghum (reserve I) entered call status, but storage earnings continued through August 31, 1980, or 45 days after call status was reached. On July 25, 1980, sorghum (reserve II) reached call status; however, storage earnings continued through August 31, 1980, or 37 days after call status was reached.

In commenting on a draft of this report (see app. III), USDA said that it had recognized this problem and changed its procedures. It said that announcements of storage earning dates now provide

that these earnings will continue through a specified date, unless the commodity is called before that date.

USDA SHOULD COLLECT UNEARNED STORAGE PAYMENTS AT CALL WHEN THE PERIOD OF REDEMPTION OR FORFEITURE IS EXTENDED

ASCS has allowed producers to retain unearned storage payments for unreasonable lengths of time when the redemption period was extended. ASCS regulations provide that unearned storage will either be subtracted from any future storage payment or will be collected when the loan is redeemed or forfeited to CCC. In the case of barley, ASCS allowed producers to retain an estimated $2 million in unearned storage payments, some for as long as 10 months after barley was called from the FOR. This situation occurred for two reasons: (1) ASCS for various reasons extended the 30-day period producers had to redeem or forfeit their barley for up to 11 months in some States 1/ and (2) ASCS procedures do not provide for collecting unearned storage payments under these circumstances.

Unearned storage payments occur when a grain has been in release status for a period during the year and storage earnings have stopped or when a grain enters call status before the storage earnings period has expired. ASCS does not review loans or consider unearned storage payments unless the producer (1) redeems or forfeits the grain or (2) is entitled to an advance storage payment for the upcoming year. Any unearned storage payments are offset against the settlement proceeds or the next year's advance storage payment.

Barley reached release status on June 5, 1979. USDA stated that storage earnings would continue through July 31, 1979, at which time it would determine whether the release status would continue. On June 26, 1979, all barley (about 40 million bushels) was called from the FOR. On August 5, 1979, barley loans stopped earning storage payments.

Although some producers redeemed their barley loans after call status was reached, about 23.1 million bushels remained in the FOR in mid-May 1980, when USDA stopped reporting the amount of called barley in the FOR. We estimate that producers holding this grain retained about $2 million in unearned storage payments. Some producers retained these unearned payments for as long as 10 months beyond the date barley entered call status because ASCS did not have a procedure for collecting unearned storage payments at the end of the initially announced redemption or forfeiture period after a grain reaches call status.

1/The time period producers are allowed to redeem or forfeit their grain after call status is reached was increased to 90 days in Sept. 1980.

Consider the hypothetical case of a producer who had a barley loan with an effective date of October 1, 1978. On or about October 1 each year, he would receive an advance annual storage payment for the period October 1 through September 30. The producer earned storage payments through August 5, 1979, when earnings on barley were stopped. Therefore, on September 30, 1979, the last day of his annual storage period, he would have received storage payments for nearly 2 months (August and September) which he had not earned. Assume the producer held the barley during the extended call status period until May 1980. When he redeemed his loan in May 1980, that would be the first time ASCS had reviewed the loan and considered the unearned storage payments for the August-September 1979 period because barley had not been in a storage earning status. At that time he would have to repay the 2 months' unearned storage payments.

In this case the producer would have been allowed to retain these unearned storage payments for about 10 months (August 1979 through May 1980) beyond the date barley entered call status and storage earnings stopped. Delays in collecting these unearned payments deprive the Federal Government of the use of those funds and increase Federal interest costs if the Treasury has to borrow funds to meet governmental needs.

CONCLUSIONS

The estimated annual average cost of storing grain on the farm in a facility purchased in fiscal year 1979 was about 21.7 cents a bushel, assuming a 10-year useful bin life, while USDA paid for storage at the rate of 25 cents a bushel. Thus, producers were paid about 3.3 cents a bushel more than the estimated average cost of storing grain onfarm in 1979. This difference could be even greater because the useful bin life could be much longer. Storage payments should be limited to average storage costs, which should include both onfarm and warehouse storage costs. ASCS has changed its procedures to provide that storage payments stop when a grain reaches call status. It should amend its regulations to be consistent with these procedures. Also, ASCS amended its regulations to provide that interest be charged following the maturity date of the loan or the originally required settlement date.

RECOMMENDATIONS TO THE SECRETARY OF AGRICULTURE

We recommend that the Secretary determine the average cost of FOR grain storage and limit producer storage payments to this amount. In determining the average cost of FOR grain storage, both onfarm and warehouse storage costs should be considered. We also recommend that the Secretary amend program regulations to make them consistent with ASCS procedures which provide that storage earnings stop in all cases when a grain reaches call status.

AGENCY COMMENTS AND OUR EVALUATION

USDA agreed that the average storage cost should reflect both onfarm and commercial storage costs but said that it was difficult to ascertain the average cost of storing FOR grain. (See app. III). It said we used storage cost estimates from the Kansas State University graduate student's thesis, which was based on 1977 data, and that USDA analysts believed the costs were underestimated. It said that storage costs have risen significantly since that time due primarily to inflation.

While we used the Kansas State University graduate student's thesis, among other sources, to determine the lesser cost items, the majority of the cost (15.5 cents) was based on actual fiscal year 1979 data. We recognize that farm storage costs have risen. (See p. 42.) We believe such increases emphasize the need for USDA to determine the average cost of onfarm and warehouse storage and establish a rate based on this data.

USDA said that it realizes that some producers may profit from the applicable storage rates while others will realize losses. It said that storage rates are not intended to induce producers to participate in the FOR but that these rates should not discourage utilization of the program. Although storage rates may not always be set to encourage program participation, the President's announcement of the increase in rates from 20 to 25 cents in February 1978 indicated that the increase was for the purpose of increasing program participation.

USDA said that it had recognized that storage earnings should be stopped in all cases when grain reaches call status and that it had changed its procedures. It said that announcements of storage earning dates now provide that these earnings will continue through a specified date, unless the commodity is called before that date. However, ASCS should also amend its regulations to make them consistent with its newly adopted procedures.

On the matter of collecting unearned storage payments at the end of the initially announced redemption or forfeiture period after a grain reaches call, USDA said that it had amended its regulations to provide that interest be charged immediately following the maturity date or the originally required settlement date. It said that this action should encourage producers to settle their matured and called loans and repay unearned storage payments timely but that, if this action did not prove to be effective, other changes would be considered to effect timely settlement.

We believe USDA's actions will be beneficial. However, since this has not yet been tested, we have no means of assessing whether or not it will provide for an effective method of collecting unearned storage payments.

APPENDIX I

FARMER-OWNED RESERVE: CHRONOLOGY OF ACTIONS

1977:

Apr. 4 Increased price-support loan rates.

	Old loan rate	New loan rate
	(per bushel)	
Wheat	$2.25	$2.25
Corn	1.50	1.75
Oats	.72	1.00
Barley	1.22	1.50
Sorghum	1.43	1.70

Lowered commodity loan interest rate from 7-1/2 percent to 6 percent.

Established an FOR program for 1976 crop wheat and rice.

June Initial entries of FOR wheat.

Aug. 29 ASCS Administrator announced plans to form 30 to 35 million metric tons (MMT) farmer-owned food grain (wheat and rice) and feed grain (corn, sorghum, barley, and oats) reserve. Was to consist of 8.2 MMT wheat reserve, 17 to 19 MMT feed grain reserve, 6 MMT international food reserve, and 0.6 MMT rice reserve.

Sept. 29 Effective date of Food and Agriculture Act of 1977, which provides statutory basis for the FOR. The act provided for a wheat FOR of not less than 300 million bushels or more than 700 million bushels.

Oct. 19 Minimums/maximums for feed grains FOR proposed.

	Minimum	Maximum
	(million metric tons)	
Corn	12.75	14.25
Sorghum	1.87	2.09
Barley	1.02	1.14
Oats	1.36	1.52
Total	17.00	19.00

1977:

Dec. 6 — Announced expansion of FOR to include 1976 and 1977 crop corn, oats, sorghum, and barley, and 1977 crop wheat.

Announced storage rates to participating producers of 20 cents a bushel for wheat, corn, sorghum, and barley and 15 cents a bushel for oats.

1978:

Feb. 6 — Announced entry eligibility before price-support loan maturity for 1977 crop wheat, barley, and oats.

Feb. 9 — Increased annual storage rate from 20 cents to 25 cents a bushel for wheat, corn, sorghum, and barley and from 15 cents to 19 cents a bushel for oats.

Feb. 28 — Last day to transfer 1976 crop wheat, barley, and oats under price-support loan into the FOR.

Mar. 29 — Announced waiver of interest charges after first year for all FOR grains.

Announced entry eligiblity before price-support loan maturity for 1977 crop corn and sorghum.

Apr. 30 — Deadline for transferring 1976 crop corn and sorghum into the FOR.

June 9 — Announced commodity loan interest rate of 7 percent for commodity loans on 1978 crops.

July 5 — Release status reached on barley (I). 1/

July 29 — Reopened corn and sorghum loan program for 2 months but only for producers wanting entry into the FOR prior to price-support loan maturity.

Aug. 2 — Withdrew release authorization for barley (I).

Oct. 5 — Announced entry eligibility for 1978 crop corn.

Nov. 27 — Announced no more 1978 crop corn accepted.

1/Roman numerals refer to reserve designations discussed on pp. 3 and 4 of ch. 1.

1979:

Jan. 1	Initiated quality check of farm-stored FOR grain.
Mar. 12	Release status reached on oats (I).
May 2	Withdrew release authorization for oats (I).
May 11	Release status reached on oats (I).
May 16	Release status reached on wheat (I).
May 24	Announced commodity loan interest rate of 9 percent for 1979 crop commodity loans.
June 5	Release status reached on barley (I).
June 12	FOR quality check followup instructions issued.
June 19	Release status reached on corn (I).
June 22	Release status reached on sorghum (I).
June 26	Call status reached on oats (I).
	Call status reached on barley (I).
Aug. 1	Withdrew release authorization for corn (I).
	Withdrew release authorization for sorghum (I).
Aug. 1	Oats reentered the FOR.
Aug. 31	Initiated quality check of farm-stored FOR grains to be done in September.
Sept. 6	Release status reached on sorghum (I).
Sept. 20	Release status reached on oats (I).
Oct. 3	Release status reached on corn (I).
Oct. 22	Announced entry eligibility before price-support loan maturity for 1978 and 1979 crop corn, oats, sorghum, and wheat under price-support loan or eligible for loan.
Oct. 31	Withdrew release authorization for sorghum (I).
Nov. 30	Withdrew release authorization for corn (I).

1980:

Jan. 4 President announced embargo on grain shipments to the Soviet Union.

Jan. 8 Announced following changes to be effective Jan. 7, 1980:

--Increased release level for wheat from 140 percent to 150 percent; feed grains remain at 125 percent.

--Increased call level for wheat to 185 percent; feed grains to 145 percent.

--Waived interest on first 512 million bushels of corn entering the FOR for the first time.

--Increased storage rates to 26.5 cents a bushel for wheat, corn, sorghum, and barley and 20 cents a bushel for oats.

--Increased 1979 loan rates and release and call levels

	Old loan rate	New loan rate	New release level	New call level
	----------(per bushel)----------			
Wheat	$2.35	$2.50	$3.75	$4.63
Corn	2.00	2.10	2.63	3.05
Oats	1.03	1.08	1.35	1.57
Barley	1.63	1.71	2.14	2.48
Sorghum	1.90	2.00	2.50	2.90

Jan. 18 Release status reached on wheat (II).

Jan. 23 Waived interest on corn entering the FOR between Oct. 22, 1979, and Jan. 7, 1980, and corn producers were required to sign a new agreement (reserve II) to qualify. Producers remained liable for interest through Jan. 6, 1980.

Feb. 1 Withdrew release authorization for oats (I).

Feb. 7 Release status reached on oats (I and II).

Mar. 3 Withdrew release authorization for wheat (II).

1980:

Mar. 18	Announced increases in target prices: wheat--$3.63, corn--$2.35, sorghum--$2.50, and barley--$2.55. There was no target price for oats.
Mar. 25	FOR quality check followup instructions issued.
Apr. 1	Withdrew release authorization for oats (I and II).
Apr. 15	Release status reached on oats (I and II).
	Announced increase in 1979 crop year commodity loan interest rate from 9 percent to 13 percent for all loans made on or after Apr. 16, 1980. The 13-percent rate also applies to 1980 crop year commodity loans.
Apr. 16	Announced eligibility of nonparticipants to place 1979 crop corn in the FOR through May 15; interest on these loans not waived.
May 2	Withdrew release authorization for wheat (I).
May 8	Release status reached on wheat (I).
May 13	Announced extension of nonparticipant eligibility to place 1979 crop corn in the FOR from May 15 to June 13.
May 22	Announced new barley FOR (II) for 1978 and 1979 crop barley.
May 23	Call status reached on oats (I).
June 5	Announced quality check to be done in June 1980 for oats and wheat only.
June 12	Announced reduction in 1980 crop commodity loan interest rate from 13 percent to 11.5 percent.
July 2	Release status reached on sorghum (I and II).
July 8	Release status reached on barley (II).
	Release status reached on wheat (II).
July 11	Release status reached on corn (I and II).
July 15	Call status reached on oats (II).

1980:

July 17 Call status reached on sorghum (I).

July 25 Call status reached on sorghum (II).

July 28 Announced 1980 crop loan rates.

Reduced release level for wheat from 150 percent to 140 percent for reserve III agreements.

Reduced call level for wheat from 185 percent to 175 percent for reserve III agreements.

Changed loan rates and release and call levels.

	New loan rate	Release levels			Call levels		
		I	II	III	I	II	III
	----------(per bushel)----------						
Wheat	$3.00	$4.20	$4.50	$4.20	$5.25	$5.55	$5.25
Corn	2.25	2.81	2.81	2.81	3.15	3.26	3.26
Oats	1.16	1.45	1.45	1.45	-	-	1.68
Barley	1.83	-	2.29	2.29	-	2.65	2.65
Sorghum	2.14	2.68	2.68	2.68	-	-	3.10

Note: Blanks indicate grain was in call status.

Aug. 18 Announced quality check, to be done in Sept. 1980, for FOR corn.

Aug. 29 Release status reached on corn (III).

Release status reached on sorghum (III).

Sept. 5 Withdrew release authorization for wheat (I and II).

Withdrew release authorization for barley (II).

Sept. 8 Time allowed for producers to settle loans after call changed from 30 days to 90 days.

Allowed producers with reserve I and II contracts to convert to reserve III; conversion must be exercised before call status is reached.

Sept. 10 Release status reached on oats (III).

1980:

Sept. 17 Call status reached on oats (III).

Oct. 22 Release status reached on barley (II and III).

Oct. 22 Release status reached on wheat (I and III).

Oct. 23 Changed method for determining FOR grain call level. Grain called when the 5-day moving average price is at or above the commodity's call level for 5 consecutive market days.

Oct. 31 Call status reached on corn (I).

Nov. 6 Call status reached on sorghum (III).

Nov. 12 Issued FOR oats and wheat quality check followup instructions.

Dec. 3 President signed the Agricultural Act of 1980 (Public Law 96-494), which increased loan rates for 1980 crop grains placed in the FOR.

Legislation also waived all interest on loans for 1980 and 1981 crop grains placed in the FOR.

Dec. 8 Changed method for determining FOR grain call level to allow Secretary discretion not to call grains if the daily adjusted average price for any of the previous 5 days was below the call level.

Dec. 30 Call status reached on corn (II and III).

1981:

Jan. 6 Withdrew release authorization for wheat (I and III).

Feb. 5 Announced a 30-day extension on FOR corn (I, II, and III) and sorghum (III) settlements because of transportation problems. During the 30-day period, producers will pay 15.25 percent on their loans.

APPENDIX II

RESULTS OF ASCS 1978 and 1979 RESERVE GRAIN QUALITY CHECKS

Reserve Quality Based on 1978 and 1979 Quality Checks (note a)

Type of grain	Total bushels		Storable (notes b, c)				Nonstorable	
			U.S. No. 1, 2, or 3		U.S. No. 4, 5, or Sample		Any U.S. grade	
	1978	1979	1978	1979	1978	1979	1978	1979
	(000 omitted)		(percent)					
Barley	30,701	32,844	85.2	82.3	7.8	7.8	7.0	9.9
Corn	303,199	465,799	84.2	80.0	9.2	3.9	6.6	16.1
Oats	35,704	30,897	71.8	70.8	25.4	25.0	2.8	4.2
Sorghum (note d)	18	20	77.8	72.9	11.1	7.9	11.1	19.3
Wheat	253,990	205,573	87.0	88.3	8.9	4.5	4.1	7.2
Total	623,612	735,133	84.7	82.0	9.9	5.2	5.4	12.8

a/Because of differences in the universe of loans sampled, the 1978 and 1979 quality checks should not be compared statistically.

b/U.S. grades are official standards based on various quality factors for each grain. The standards facilitate grain trading by enabling buyers and sellers to transact sales based on the grain's grade rather than on personal observation. Some of the quality factors are test weight per bushel, percent of damaged kernels, moisture content, and percent foreign material. The numerical grade reflects the lowest grading factor. The highest numerical grade is No. 1, while the lowest is either Nos. 4 or 5 (for grains in the FOR), depending on the type of grain. The designation "Sample grade" means that one or more quality factors is lower than the minimum requirement for any grade.

c/The groupings of U.S. Nos. 1, 2, or 3 and U.S. Nos. 4, 5, or Sample grade were done by ASCS.

d/Percentages for 1979 do not total due to rounding.

The table below shows for the 1979 quality check the percentages of nonstorable grain and infested grain by commodity and crop year.

Commodity	Total bushels stored on farms (note a)	Percent nonstorable bushels	Percent nonstorable and infested bushels
	(000 omitted)		
1976 Barley	1,977	7.6	8.4
1977 Barley	30,867	10.0	13.7
1976 Corn	7,528	31.1	35.0
1977 Corn	324,477	18.0	23.3
1978 Corn	133,794	10.5	14.9
1976 Oats	344	0.3	14.1
1977 Oats	30,553	4.3	14.4
1976 Sorghum	1	-	-
1977 Sorghum	20	20.0	50.3
1976 Wheat	102,712	6.1	10.2
1977 Wheat	102,861	8.2	13.4
Total	b/735,134	12.8	17.9

a/The data represents estimates based on a statistically random sample projected to U.S. total in the FOR as of Sept. 30, 1979.

b/This total differs from the one on the previous page due to rounding.

APPENDIX III

DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20250

MAR 2 6 1981

TO: Henry Eschwege, Director
Community and Economic Development
Division

SUBJECT: Comments on Draft Report Entitled "The Farmer-Owned Grain Reserve -- It Has Partially Met Its Objectives But Modifications are Needed"

This report focused on three major issues: The ability of the farmer-owned reserve (FOR) to meet its objectives, quality of grain stored in the FOR and storage payment practices. The report is based on the findings of two independent studies commissioned by GAO, analyses undertaken by this Department and the investigation by GAO of certain issues related to the FOR. Our comments include those of a summary nature and those specifically focused on the recommendations. Separate detailed reviews of the GAO report are attached.

Summary Comments

The Department believes that the FOR program has been relatively successful, realizing the problems associated with its implementation and other problems such as the USSR grain embargo. This conclusion is supported by the GAO Report. However, GAO points out that their conclusions can only be considered tentative due to the short time that the FOR has been in operation. The FOR was evaluated during its initial three year (crop year) period 1977-79, a time of stock accumulation and adjustment in program administration. A longer period will no doubt provide a stronger basis for more definitive analyses.

As implemented, the FOR has been viewed as a tool which would come into play when unplanned or unexpected shifts in supply or demand caused a material inbalance between the two. When grain supplies substantially exceed demand at prices close to or below target price levels, grain enters the FOR. When the opposite occurs, grain is removed from the reserve. Thus, producers and consumers are protected from extreme fluctuations in prices.

To the extent that the FOR is effective it should temporize price variability by reducing the magnitude of the peaks and valleys. Hence, the range through which prices vary could be narrowed, while even shifting upward. The two studies commissioned by GAO reached conflicting conclusions on this question. One

study reported an increase in price variability in the short-run, while the other reported a decrease. Results from other analyses (simulation studies) suggest that a FOR should reduce variability.

Both commissioned studies suggested that inventories were increased little above levels that would have been held in the absence of the FOR. A 2 to 4 bushel increase of grain in the FOR was required to increase total inventories by one bushel. These studies miss an important point. If the FOR had not been in existence these stocks, if held, would have been held primarily by non-producers and prices would have been sharply lower, thereby contributing to increased year-to-year price and production instability. Also, if prices were driven below redemption costs, the Commodity Credit Corporation (CCC) could have become a major storer of grain, a point the studies have not recognized.

One of the commissioned studies stated that the livestock sector was adversely affected by the FOR. Department analysts believe that, given the stage in the cattle cycle and financial market conditions, the problem was caused primarily by lower livestock product prices and high interest rates rather than higher corn prices associated with the FOR.

Both studies tended to concentrate on how the FOR worked in 1977-79, a time of stock accumulation and initial program implementation. This analysis was complicated by the impact of the grain embargo to the USSR. A study based on a longer period and of a different methodological approach (i.e., simulation analysis) would provide more insight into the longer-run effects.

The FOR enhanced producers' income in surplus production years and provided confidence to domestic and foreign markets during short crop years. These are important benefits which are not adequately treated in the report.

Comments on Specific Recommendations made by GAO

A. The Farmer-Owned Reserve Has Not Fully Met Its Objectives and Needs Modification.

GAO Recommendations:

(1) The program should be modified to provide for methodical adjustments in program operations, while still allowing for some necessary flexibility.

The Department agrees with this recommendation, and in fact numerous changes have been made to simplify the program, to reduce the need to make changes, and to make it better serve producers and consumers. The Department intends to continue these efforts.

(2) Remove quantity limits.

(3) Emphasize long-term stabilization

(4) Allow non-producers to participate.

The Department has reservations regarding recommendations (2) and (4); however these recommendations will be examined as the farmer-owned reserve is reviewed in relation to other policy instruments.

Currently, all aspects of the farmer-owned reserve are being reviewed. The Department will work with the Congress to provide a workable reserve program that will address the needs of all segments of the farm community and the nation as a whole.

B. Quality of Farm-Stored Reserve Grain is Questionable.

It indicates that the farmer-owned reserve tends to increase the deterioration of farm-stored grain. We cannot substantiate this conclusion, since quality of non-reserve farm stored grain was not examined. It should be noted further that warehouse-stored grain is not immune from quality deterioration during storage.

The report also indicates that since low quality grain has been found by reserve spot checks, grain of questionable quality is being permitted to enter the reserve. There is no conclusive evidence which suggests this conclusion. The storage of grain requires constant vigilance during the storage period, regardless of whether or not it is stored on the farm or in a warehouse. When farm-stored grain is placed under CCC loan, the producer is responsible for maintaining the quality of the grain. If the grain is ultimately delivered to CCC, the settlement is based on the quality of grain delivered. Even so, CCC has worked to improve maintenance of grain quality stored in the FOR. Current procedures require an inspection before a reserve loan is approved and there are subsequent annual inspections of each farm-stored reserve loan.

Two specific recommendations were made in regard to maintaining quality.

(1) That ASCS be required to obtain official grade determinations on a sample basis as grain enters the reserve and on the same grain each subsequent year (when possible) to develop a profile of reserve grain to determine what characteristics are predictors of storability.

The Department has some reservations to this approach. Our experience indicates that there are essentially two elements which increase the probability of grain quality deterioration. These are excess moisture and insects. To develop a profile of FOR-stored grain would require an effort of considerable magnitude with a promise of negligible pay off.

(2) That ASCS improve its guidelines and procedures for identifying loans secured by grain with quality problems and correcting or eliminating quality problems identified.

APPENDIX III

Mr. Henry Eschwege

The Department believes the procedure for identifying quality problems is adequate. However, it recognizes the procedure for correcting problems could be improved. ASCS is expanding procedures to require that farmers be notified when problems are found and to require that action be taken to eliminate the problem, or the loan will be called.

C. Storage Payments Exceed Storage Costs.

GAO made one recommendation regarding storage payments.

(1) The Department should determine the average cost of reserve grain storage and limit producer storage payments to this amount.

The Department agrees with GAO that the average storage cost should reflect both on-farm and commercial warehouse storage costs. It is difficult to ascertain the average cost of storing reserve grain. The costs may vary greatly by area. There are few current studies addressing the costs. The GAO report uses estimates of farm-stored costs included in a master's thesis completed by a Kansas State University graduate student in 1978 but based on 1977 data.

Department analysts believe that farm storage costs were underestimated. Since that time the costs of storing grain have risen significantly due primarily to inflation. Energy is required for most of the operations; its cost has risen most sharply. When farmers store grain on the farm for an extended period, the costs can become distorted if the basis has been calculated on annual storage elements. The farmer will probably be required to fumigate the grain more often. Grain stored for shorter periods quite often requires no fumigation.

We realize that some farmers may profit from the applicable storage rates while others will realize losses. Although the storage rates are not intended to induce farmers to participate in the reserve, these rates should not discourage utilization of the program.

D. Storage Earnings Allowed to Continue after Call Status is Reached.

Procedures should be established to stop storage earnings in all cases when grain reaches call status.

The Department has recognized this problem and procedures have been changed; earnings stop when a reserve is called.

Beginning with the call of Corn Reserve I on October 31, 1980, storage earnings are stopped on or before the call date. Notices announcing storage earnings dates now provide that these earnings will continue through a specified date, unless the commodity is called before that date.

E. Unearned Storage Payments Not Collected on a Timely Basis.

Unearned storage payments should be collected at the end of the initially announced redemption or forfeiture period after a grain reaches call status. [See GAO note 1 below]

The Department has recently amended the regulations to provide that interest be charged immediately following the maturity date or the originally required settlement date. Interest will be charged at the higher of the rate recorded on the loan document or the rate CCC is required to pay the U. S. Treasury in January of the year in which maturity is reached.

This action should encourage producers to settle their matured and called loans and repay unearned storage payments in a timely manner. If this action does not prove to be effective, other changes will be considered as necessary to effect timely settlement.

The Department recognizes that any changes or modifications will affect the welfare of grain producers, livestock producers, others in the syster and the Federal budget. Thus, the need exists for a careful on-going examination of the interrelated factors and benefits essential to farmer participation in a FOR that is cost-effective and facilitates assuring adequate supplies for meeting domestic, export and carryover requirements. The Department will continuously monitor and assess the program from this perspective.

Specific comments from Departmental agencies are enclosed for your consideration.

SEELEY G. LODWICK
Under Secretary for
International Affairs and
Commodity Programs - (designate)

Enclosures [See GAO note 2 below]

GAO note 1: This proposal in our draft report has been deleted from the final report.

GAO note 2: The material in the enclosures, which are not reproduced herein, was considered in finalizing the report.

(022500)