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Report to the Chairman, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate

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CROP INSURANCE

Federal Program Faces Insurability and Design Problems

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Resources, Community, and
Economic Development Division

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May 24, 1993

The Honorable Patrick J. Leahy
Chairman, Committee on Agriculture,
Nutrition, and Forestry
United States Senate

Dear Mr. Chairman:

In response to your request, this report discusses the insurability and design problems faced by the federal crop insurance program.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days after the date of this letter. At that time, we will send copies to the appropriate congressional committees and subcommittees; the Secretary of Agriculture; the Director, Office of Management and Budget; and other interested parties. We will also make copies available upon request.

If you have any questions about this report, please contact me at (202) 512-5138. Major contributors to this report are listed in appendix III.

Sincerely yours,

John W. Harman
Director, Food and
Agriculture Issues

Executive Summary

Purpose

Farming is a risky business. Catastrophic events, such as severe drought, can damage crops and impose considerable financial hardship on farmers. The federal crop insurance program, which offers farmers protection from such risk, was revised in 1980 to achieve, among other things, actuarial soundness and widespread participation. However, the program has not achieved these goals or replaced other forms of disaster assistance, which accounted for 76 percent of the approximately $25 billion in federal disaster assistance during the 1980s.

Because of concerns about the inability of the program to realize its goals, the Chairman, Senate Committee on Agriculture, Nutrition, and Forestry, asked GAO to determine (1) how well the program meets basic conditions of insurability, which help to promote actuarial soundness, and (2) how provisions designed to foster participation have affected the achievement of actuarial soundness. The Chairman also requested information on other countries' crop insurance programs. This report is the second of three in response to these concerns. The first report provided a historical perspective on some major problems affecting the program since 1980.[1] A third report will explore federal options for managing agricultural risks.

Background

Commercial insurers offered multiple-peril crop insurance in the early 1900s but withdrew coverage because of high losses. The Federal Crop Insurance Corporation (FCIC), in the U.S. Department of Agriculture (USDA), was established in 1938 to offer such insurance. But that program was not widely available and had low participation, leading the Congress to provide supplemental disaster payments and emergency loans to farmers after severe crop losses.

The Congress enacted legislation in 1980 to make crop insurance the preeminent means for providing agricultural disaster assistance. Key goals were to (1) increase participation to eliminate other disaster assistance, (2) incorporate private sector delivery and risk bearing, (3) subsidize premiums, and (4) operate the program on an actuarially sound basis. However, as GAO reported in 1992, participation remained below expectations, while other disaster assistance expanded; the program lost $2.6 billion over planned subsidies from 1981 through 1992. In addition, although private insurers delivered the vast majority of crop insurance, the government retained virtually all crop insurance liability.

[1]Crop Insurance: Program Has Not Fostered Significant Risk Sharing by Insurance Companies (GAO/RCED-92-25, Jan. 13, 1992).

Results in Brief

The federal crop insurance program does not meet three basic conditions of insurability that help achieve actuarial soundness. First, some crop insurance risks are not independent—some perils may strike a large number of insured farmers in the same crop year, as in 1988 when a severe drought affected 43 percent of the United States. The lack of independence is intensified by the concentration of policies in the Midwest and the Plains states: In 1988, for example, indemnity payments went to 92 percent of insured wheat farmers in two of the Plains states.

Second, because FCIC does not have sufficient farm-level information to differentiate among farmers' risks, it may charge similar premiums to both high-risk and low-risk farmers. Consequently, high-risk farmers are more likely to find premiums attractive and to participate than are low-risk farmers—a situation referred to as adverse selection. Third, FCIC also lacks sufficient information to detect moral hazard—when an insured producer's actions increase the chance or extent of loss. FCIC is undertaking efforts that it believes will help alleviate information problems. However, studies we reviewed were inconclusive about whether FCIC could collect sufficient information to become actuarially sound.

Program provisions to foster participation by making crop insurance more attractive to producers have further inhibited achieving actuarial soundness. Moreover, these provisions have not enabled FCIC to meet the 50-percent national participation goal envisioned by the House Committee on Agriculture. With the program's premium subsidy, these provisions may be ineffective in encouraging more participation because many farmers have risk management options other than crop insurance, such as self-insuring through personal savings or relying on federal disaster payments.

Principal Findings

Some Perils Affect Many Producers

Some perils cause widespread losses that can affect a large number of insured farmers. For example, drought is a widespread risk and the leading cause of crop loss, accounting for 57 percent of crop insurance payments from 1981 through 1991. Large numbers of policies are clustered in the Midwest and the Plains states, making it easier for widespread perils to affect a large number of insureds. For example, in 1988 about

75 percent of policies insured land in the Midwest and the Plains states, and a widespread drought in that area contributed to total indemnity payments that were 240 percent of premiums—over $616 million.

FCIC Lacks Sufficient Information to Reduce Adverse Selection and Moral Hazard

FCIC does not have sufficient information to set premiums that would reduce the problem of adverse selection. Studies show that adverse selection may increase the chance of indemnity payments by 3 to 6 percent and, for at least one major crop, account for as much as 10 to 15 percent of losses. Studies show that FCIC could make better use of some data it currently collects and could also collect additional data to address adverse selection. However, these studies indicated that it would be difficult and costly for FCIC to collect extensive farm-level information to overcome adverse selection.

The lack of sufficient information also creates difficulties in combating moral hazard. According to one study, up to 20 percent of wheat and grain sorghum yield losses may be the result of a farmer's actions rather than of unavoidable natural perils. For example, a farmer may reduce inputs, such as pesticides, making it difficult for FCIC or its representatives to determine the cause of the losses. The study indicated that FCIC's possibilities for overcoming this problem are limited.

Results From Efforts to Address Insurability Problems Are Inconclusive

FCIC has recently implemented several measures to address insurability problems: (1) a classification system to identify high-risk farmers, (2) task forces to address yield-determination and rate-making methodologies, and (3) an experimental program to pay indemnities on the basis of area rather than individual yields. In addition to current FCIC efforts, researchers indicate that, at least for some crops, information on the variability of a farmer's crop yields could improve actuarial soundness at modest additional costs. Researchers also indicate that FCIC could collect more farm-level information, such as soil quality and moisture level before planting, to more directly address information problems. While it is too early to determine whether FCIC's current efforts will improve the program, researchers are uncertain whether current or future efforts could overcome insurability problems: Determining the types of farm-level information necessary for assessing risk and loss would be difficult, and collecting such information would increase administrative costs. For example, Japan's program ratio of indemnity payments to premiums is approximately one-half of FCIC's ratio. However, to achieve this low ratio, Japan's administrative cost ratio is 6 times greater than the United States'.

Provisions Designed to Foster Participation Contribute to Inability to Achieve Actuarial Soundness

Legislative and administrative provisions designed to encourage participation have further limited FCIC's ability to become actuarially sound. These provisions include (1) allowing all farmers to participate regardless of risk (entitlement); (2) allowing farmers to insure for higher-than-expected yields, thereby increasing the likelihood of indemnity payments; (3) restricting FCIC premium increases; and (4) allowing farmers more time to assess growing conditions before purchasing insurance, which enables them to better determine the likelihood of loss and to purchase insurance when the likelihood is high.

Congressional efforts to increase participation through program provisions have been adversely affected by other factors. For example, nearly 25 percent of nonparticipating farmers surveyed by USDA reported that there is not enough coverage, 23 percent that the premiums are too high, and 23 percent that other risk management alternatives—such as self-insurance—are preferable. In addition, 37 percent reported that the availability of other disaster assistance programs was a secondary reason for their decision not to participate.

Recommendations

This report makes no recommendations for improving the crop insurance program. Specific changes to the program should be considered in the context of overall federal policy on agricultural disaster assistance. A thir report being prepared at the Chairman's request will analyze and compare options for this federal policy.

Agency Comments

FCIC stated that the report generally outlines the problems inherent in providing actuarially sound crop insurance and preventing ad hoc disaste assistance. However, FCIC said that the report should not be construed to mean that viable options are not available. The agency agreed that the provisions to increase participation identified in the report have had an effect on the program's ability to become actuarially sound. FCIC said the report does not examine the public policy issues concerning the crop insurance program; it anticipated that a subsequent report would examine these issues in more detail. Where appropriate, GAO has incorporated FCIC' comments into the body of this report. FCIC's comments, and GAO's detaile responses, appear in their entirety in appendix II.

Contents

Abbreviations

APH	Actual Production History
ASCS	Agricultural Stabilization and Conservation Service
FCIC	Federal Crop Insurance Corporation
GAO	General Accounting Office
NCS	Nonstandard Classification System
SRA	Standard Reinsurance Agreement
USDA	U.S. Department of Agriculture

Introduction

Each year farmers can incur production shortfalls that result from unavoidable risks such as drought and excess moisture. Federal crop insurance, administered by the U.S. Department of Agriculture's (USDA) Federal Crop Insurance Corporation (FCIC), is one means by which farmers can reduce the cost of bearing that risk.

This report examines (1) the extent to which the federal crop insurance program meets basic conditions of insurability that are conducive to actuarial soundness and (2) other factors that affect the achievement of an actuarially sound program. Information on national crop insurance experiences in other countries, requested by the Chairman, Senate Committee on Agriculture, Nutrition, and Forestry, is presented in appendix I.

Our 1992 report explored FCIC's inability to achieve all the goals of the 1980 act that established the current crop insurance program (P.L. 96-365, Sept. 26, 1980),[1] highlighting low risk sharing by reinsured companies. A subsequent report will explore policy options available to protect farmers against unavoidable production risks and identify some of the tradeoffs policymakers will encounter in redesigning the federal programs.

How the Current Crop Insurance Program Works

Farming is a risky business. Farming is susceptible to natural disasters that, in addition to fluctuating market prices, can have a profound and unanticipated effect on crop production and on farmers' finances. Droughts, floods, wind, freezes, frost, hail, insect infestations, and plant diseases can severely damage or even destroy crops.

Insurance allows farmers to lower the potential costs of bearing the risk of these hazards by transferring the risk to an insurer. For example, in the federal crop insurance program, insured farmers who do not achieve specified production levels are paid indemnities out of the total premiums paid by all insured farmers or by other sources of funds available to the insurer. The farmer achieves greater revenue stability in exchange for the premium payment, even though the inherent risk of a low crop yield remains.

With the exception of a brief period in the 1940s, the federal government has offered some form of crop insurance since the 1930s. Under the current federal crop insurance program, FCIC insures individual crop yields

[1]Crop Insurance: Program Has Not Fostered Significant Risk Sharing by Insurance Companies (GAO/RCED-92-25, Jan. 13, 1992).

against losses from unavoidable production risks. Losses due to negligence or poor farming practices are excluded. FCIC offers county crop programs for specific crops in individual counties. Farmers may participate in the insurance program if they plant an eligible crop where FCIC offers a county crop program.

Approximately 90 percent of these crop insurance policies are sold to farmers through private insurance companies that are reinsured by FCIC. FCIC establishes premiums, program policies, and reinsurance terms that are governed by the Standard Reinsurance Agreement (SRA), which is revised annually by FCIC after consultation with the reinsured companies.[2] Reinsured companies sell and service policies and adjust claims. FCIC reimburses these companies for administrative expenses at a rate of 32 percent of the total premium.

Participating farmers can elect yield-guarantee coverage of 50, 65, or 75 percent of their 10-year actual production history (APH) yield, if available. For example, a farmer with a 10-year average yield of 100 bushels per acre who selects a 50-percent level of coverage would be eligible for an indemnity payment if production fell below 50 bushels per acre. To translate a yield loss into a dollar loss, participants also select a commodity price level—from 30 to 100 percent of the crop's expected market price,[3] which is then multiplied by the actual number of bushels that fall below the coverage level. Premiums depend on the insured crop, location, farming practice (such as irrigated or nonirrigated), and yield level, as well as coverage and price levels selected.[4]

[2]The remaining crop insurance is sold through sales and service contractors—private companies that sell crop insurance as agents for FCIC. FCIC retains all premiums, pays all indemnities, and adjusts losses on these policies.

[3]FCIC must estimate crop market prices, and the accuracy of price forecasts can also affect actuarial soundness. In 1991 GAO found that FCIC overestimated expected market prices, contributing to program losses. See Crop Insurance: Inaccurate FCIC Price Forecasts Increase Program Costs (GAO/PEMD-92-4, Dec. 13, 1991).

[4]For premium rate-setting purposes, producers are placed in a yield category on the basis of their APH yield. There are nine categories per crop per rating district. The lowest category encompasses producer APH yields that are less than 50 percent of the district's average, the highest category encompasses APH yields greater than 150 percent of the district's average, and the remaining seven categories fill the gap. Premium rates per amount of liability decrease with the higher yield categories

Federal Crop Insurance Program Has Undergone Many Changes

In the early 1900s, private insurance companies made several attempts to offer multiple-peril insurance covering agricultural production risks. However, these attempts failed because insurers lacked sufficient crop data and a satisfactory actuarial basis for setting rates. In addition, companies writing insurance only in limited areas of the country experienced severe losses when widespread crop failures in those areas affected many insured farmers simultaneously. Therefore, during the 1930s the federal government began to explore the possibility of offering crop insurance to fill the void left by private insurers. Policymakers believed that there was a need for crop insurance and that the government could offer crop insurance on a large enough scale to overcome the information problems incurred by the private insurance companies.

Experiences With the Federal Crop Insurance Act of 1938

In 1938 the Congress passed the Federal Crop Insurance Act, which established FCIC to administer a crop insurance program. FCIC initially offered coverage only for wheat and, subsequently, cotton production because it had more complete information for these crops than for others. However, despite the limited scope of insurance coverage, the program experienced high costs, low participation, and an inability to accumulate adequate reserves for catastrophic losses. The program was canceled in 1944 because of large operating losses. The Congress reinstated the program in 1947, restricting program coverage to crops and areas where the program would not need federal subsidies. As a result of these restrictions, many farmers had no opportunity to purchase federal crop insurance, even though they still faced production risks from natural hazards.

Partly because of the crop insurance program's limited coverage, the government provided other forms of assistance to farmers to mitigate losses from widespread agricultural disasters. Consequently, beginning in the mid-1970s, USDA provided disaster assistance for crop failure mainly through direct cash payments under a disaster payment program and through emergency loans through the Farmers Home Administration. Federal crop insurance remained limited in scope, covering only 30 crops in one-half of the nation's counties by 1980. Further, crop insurance participation rates were low. For example, about 10 percent of the eligible acreage was insured in 1980—about 7 percent of the total planted acreage.

By 1980 the Congress had begun to turn away from disaster assistance because the disaster payment program was (1) costly; (2) inequitable, providing payments only to farmers of the six primary program

crops—wheat, corn, sorghum, barley, upland cotton, and rice; and (3) inefficient, encouraging farmers to plant crops on marginal land that was susceptible to natural disasters.[5]

Federal Crop Insurance Revitalized in 1980 to Replace Other Forms of Disaster Assistance

In 1980 the Congress redesigned crop insurance to make it the preeminent form of agricultural disaster assistance. The Federal Crop Insurance Act of 1980 (P.L. 96-365) established goals, including the following:

- Erase government-funded disaster payments by increasing crop insurance participation. The act authorized FCIC to expand the number of crops and counties insured. Policymakers anticipated that the program would insure 50 percent of eligible acres.
- Provide crop insurance more efficiently by taking advantage of private sector expertise. The act promoted the use of private insurance companies—to the maximum extent possible—to sell, service, and bear risk on federal crop insurance.
- Decrease insurance costs for farmers by providing federal subsidies. The act included a subsidy of up to 30 percent of the premium to encourage participation.
- Operate the program within a budget. The act required FCIC to become actuarially sound. The Congress would consider the program to be actuarially sound if premiums, over time, were sufficient to cover indemnities and to establish a reserve—interpreted by FCIC as approximately 10 percent of premiums—for catastrophic losses. The premium subsidy and administrative costs were considered operating costs of the program that would not be recouped.

1980 Goals Not Met

As noted in our 1992 report, the redesigned crop insurance program has been unable to meet all of these goals. Between 1980 and 1992, FCIC expanded the availability of crop insurance from 30 to 50 crops and from 39 to 50 states, increasing the number of county crop programs by over 360 percent. In 1992 FCIC offered 21,388 county crop programs and collected roughly $750 million in premiums on approximately 685,000 policies. FCIC also achieved the goal of subsidized premiums, paying 30 percent of the premium costs for all policies up to the 65-percent coverage level. However, crop insurance participation did not achieve the anticipated levels. Crop insurance participation attained its highest level only when droughts in 1988 and 1989, coupled with new provisions

[5]Ad hoc disaster assistance programs are also prone to significant administrative problems. See Disaster Assistance: Problems in Administering Payments for Nonprogram Crops (GAO/RCED-91-137, June 28, 1991).

requiring the purchase of crop insurance as a condition for receiving disaster payments, pushed participation to 40 percent in 1989 and 1990.

Partly because of the low participation in the crop insurance program, the Congress approved yearly ad hoc disaster payments, even expanding the number of crops and counties eligible for the payments. Expenditures on crop insurance exceeded expenditures on disaster payments for much of the early and mid-1980s. However, average annual inflation-adjusted expenditures on disaster payments increased over tenfold between 1982-86 and 1987-90, while crop insurance expenditures during that period, also adjusted for inflation, increased much less.

Private reinsured companies now sell the vast majority of federal crop insurance policies, but they do not bear a substantial amount of risk on those policies. As noted in our 1992 report, from 1981 to 1990, FCIC sustained over $2.3 billion in net underwriting losses, while the companies had net underwriting gains of $101 million. The 1992 Standard Reinsurance Agreement between FCIC and private companies increased the amount of risk those companies will bear, but the amount of risk retained by the companies remains limited. Although FCIC made crop insurance more affordable for farmers by subsidizing up to 30 percent of the policy premium, it has not achieved two requirements for actuarial soundness—premiums sufficient to cover indemnities and a 10-percent reserve for unforeseen losses.

For fiscal years 1981 through 1992, FCIC program losses exceeded planned subsidies by $2.6 billion. Program costs totaled $11.6 billion: $8.8 billion paid to farmers for crop losses, $1.6 billion to reinsured companies, $251 million to sales and service contractors, and $858 million for FCIC operations. Farmer premiums funded $4.7 billion, or about 40 percent, of program costs, while the government funded $6.9 billion, or about 60 percent. The costs borne by FCIC consisted of

- $1.5 billion in FCIC premium subsidies to farmers;
- $2.7 billion in FCIC administrative operating funds, including expense reimbursements to private companies; and
- $2.6 billion in FCIC indemnities that exceeded total premiums (excess losses).[6]

[6]Figures do not add to $6.9 billion due to rounding. All figures are as of Dec. 22, 1992.

Objectives, Scope, and Methodology

In a July 5, 1990, letter and in subsequent discussions with his office, the Chairman of the Senate Committee on Agriculture, Nutrition, and Forestry asked us to review the performance of the crop insurance program. We agreed to address the Committee's concerns in three reports, of which this is the second.

The first report, issued in January 1992, provided a historical perspective on some of the major problems affecting the program since 1980, including information on the lack of success of the federal government in shifting its risk to reinsured companies and an overview of FCIC's actions to shift more risk.

This report provides information on how well the federal crop insurance program meets the basic conditions of insurability conducive to actuarial soundness and what other factors hinder the achievement of crop insurance goals. This report makes no recommendations because fundamental issues regarding federal policy options for providing protection to farmers against unavoidable production risks must first be addressed. A third report will address these issues.

To identify the conditions of insurability, we reviewed economic analyses of insurance and insurance literature. While these sources discussed the many basic conditions associated with successful insurance operations, we selected three conditions for examination in this report that researchers frequently associate with the crop insurance environment. These conditions are (1) independence of risk, (2) sufficient information to assess risk, and (3) sufficient information to assess cause of loss.

To determine how well crop insurance meets these selected conditions of insurability, we analyzed available literature and selected pertinent studies concerning crop insurance and other forms of disaster assistance published by agricultural economists in the academic community, USDA, the Congressional Research Service, and other organizations. We selected studies done by leading crop insurance researchers because of the appropriateness of their methodology. These studies addressed the relevant issues and generally agreed in their findings. We also reviewed applicable records, files, and studies at FCIC's headquarters in Washington, D.C., and the Corporation's main field office in Kansas City, Missouri.

To determine what other factors hinder crop insurance performance, we reviewed crop insurance and other disaster assistance legislation and interviewed FCIC officials, including the Manager and Deputy Assistant

Manager. We obtained the opinions of representatives from several participating private insurance companies and crop insurance industry organizations.

To identify federal crop insurance programs in other countries and to determine their performance, we collected information from officials representing other countries and reviewed studies and reports supplied by the World Bank and other international crop insurance experts. Appendix I presents a summary of our review of crop insurance in other countries. Although Japan's agricultural sector is very different from the United States', we used Japan's crop insurance program as an example of the potentially high costs of addressing crop insurance problems.

A crop insurance consultant, W. Michael Gudger, helped us to ensure the overall quality of the report and to assist in collecting information on other countries' crop insurance programs.

We conducted our review from August 1991 to January 1993 in accordance with generally accepted government auditing standards.

Insurability Problems Hinder Actuarial Soundness

The federal crop insurance program has not been able to fully satisfy three basic conditions of insurability needed for actuarial soundness. Some agricultural production risks are not independent and may strike a large number of insured farmers in the same crop year. Also, because farmers have more knowledge than FCIC about their production practices and yield distributions, FCIC finds it difficult to distinguish between high-risk and low-risk insureds and to charge actuarially sound premiums. Finally, FCIC does not have sufficient information to attribute losses to specific causes and determine whether individual farmers have acted in ways that allow losses to occur.

Preliminary results from recent FCIC efforts to address actuarial soundness problems are incomplete. Researchers have indicated that additional efforts, such as collecting more farm-level information, are needed if FCIC is to improve actuarial soundness. But they have not determined the extent to which additional measures would solve the program's information problems. Moreover, the costs of collecting additional farm-level information could be high, as illustrated by Japan's crop insurance program. Multiyear insurance contracts could also lessen insurability problems but could be difficult to implement.

Some Crop Insurance Losses Are Not Independent

Many weather-related hazards can reduce crop yields over large areas of the nation, thereby increasing the chance that a substantial number of policies will require indemnification during the same year and affect actuarial soundness. This widespread impact reduces the effectiveness of insurance because risk pooling, one important way insurers can reduce the costs of bearing risk, is less likely to be successful if there is a large degree of correlation across the risks facing the individual insureds.[1]

For example, drought is a widespread risk and the leading cause of crop loss, accounting for 57 percent of crop insurance indemnity payments from 1981 through 1991. The 1988 crop year experienced a severe drought that, on a national level, reduced corn yields by 29 percent from 1987 levels, soybean yields by 21 percent, and wheat yields by 10 percent. In 1988, 92 percent of 34,773 crop insurance policies purchased by North Dakota and Montana wheat farmers resulted in indemnity payments, as

[1]The cost of risk is often expressed in terms of the variance of production or income. If loss events are independent, an individual's variance of production is reduced significantly by accepting a portion of the total risk faced by a group, or pool, of similarly situated producers. The total risk faced by the pool does not change, but the individual's cost of risk bearing is reduced. Compared with the case in which an individual must set aside reserves to cover a possible loss, insurance permits the individual to set aside an amount (an insurance premium) based not only on the magnitude of loss but also on its probability.

did 58 percent of 65,159 policies purchased by corn farmers in Iowa, Minnesota and Illinois. Drought indemnities accounted for 85 percent of all 1988 indemnity payments and increased FCIC's loss ratio—the ratio of indemnity payments to premiums collected—to over 240 percent, resulting in program losses of over $616 million.

In theory, the program's expanded geographic coverage provides more opportunities for diversification because weather patterns vary across the nation and yields of specific crops vary by region. In practice, however, these opportunities may be limited. For example, although the expanded crop insurance program offers coverage for 50 crops, the top 3 crops—corn, soybeans, and wheat—account for roughly half of total premium revenue. Furthermore, these crops have experienced similar movements in loss ratios over the recent past, as shown in figure 2.1.

Figure 2.1: Similarity in Loss Ratios for Major Crops, 1988-91

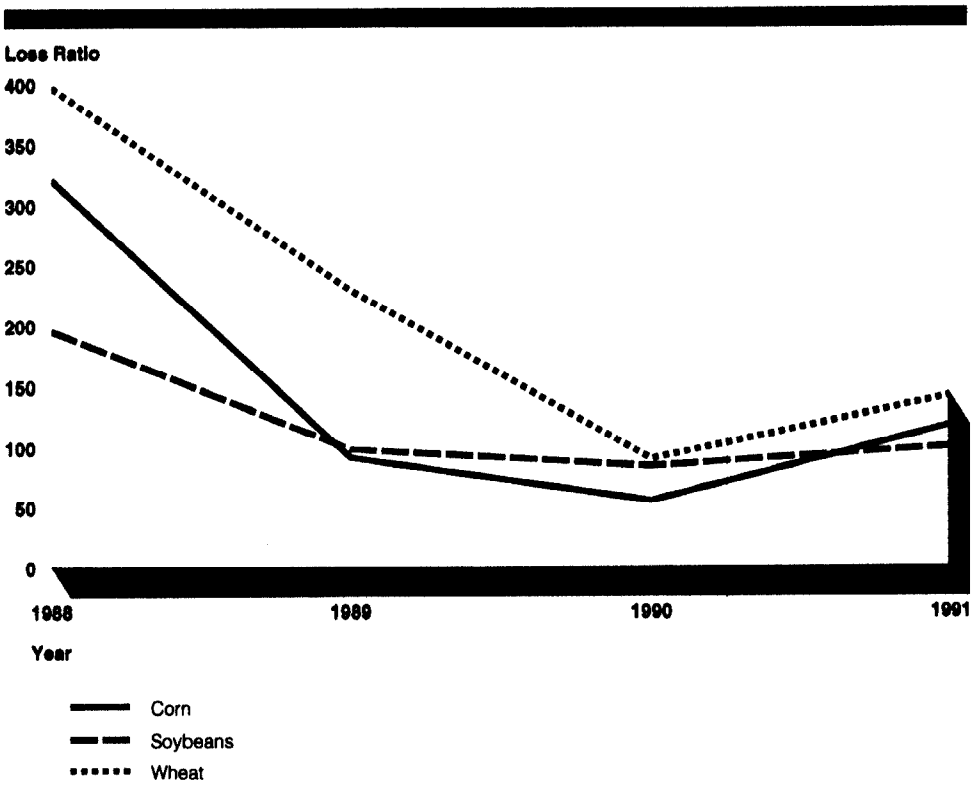
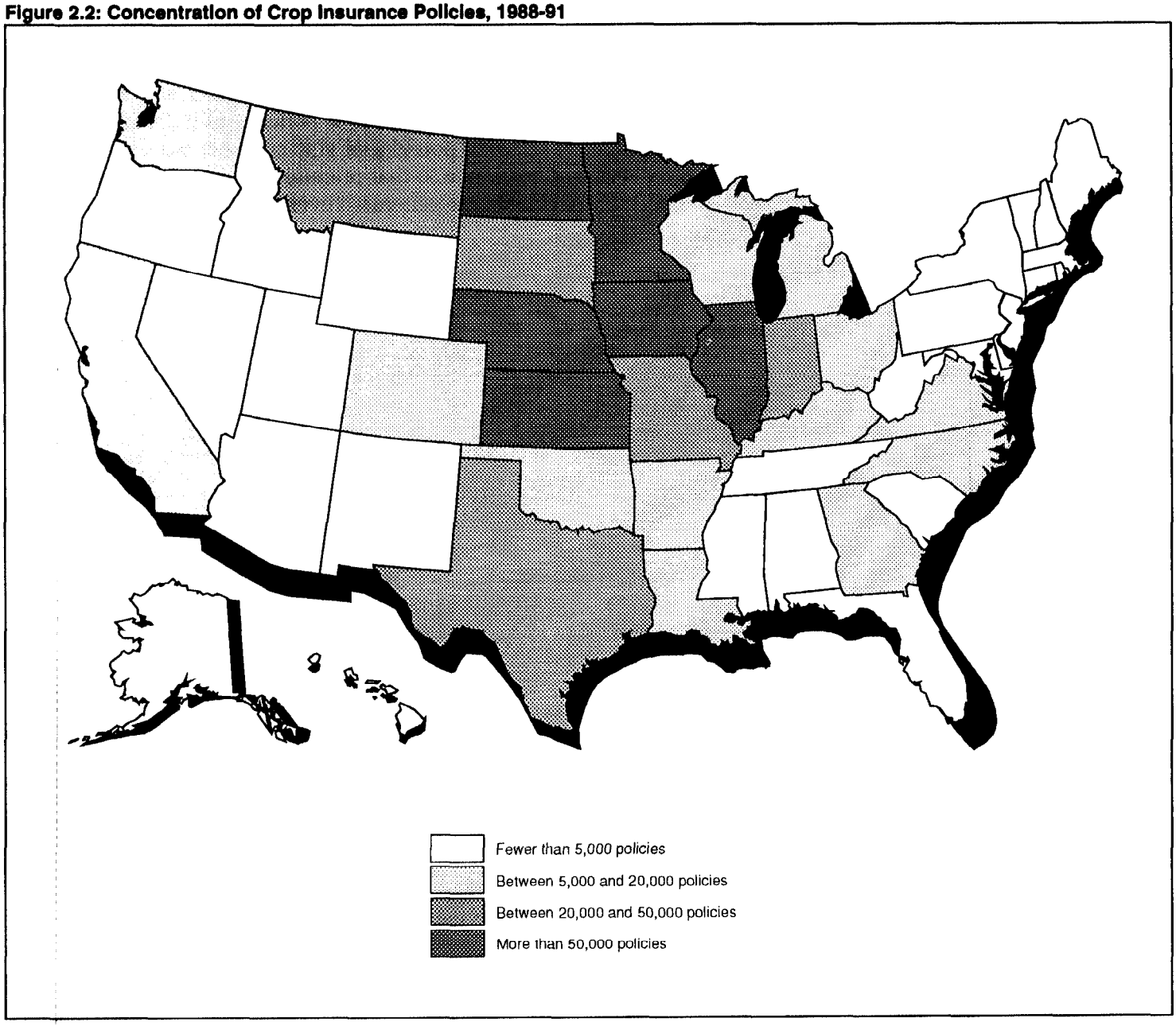


Figure 2.2 shows that the vast majority of the crop insurance business is written in the contiguous areas of the Midwest and the Plains states, where much of the nation's corn, soybeans, and wheat are grown. A widespread drought there can result in indemnity payments to a large proportion of the program's total number of policies, as it did in 1988. Therefore, to achieve actuarial soundness, FCIC must set rates and structure the terms of insurance so that premium revenues covering this level of indemnity payments are generated over a number of years.

Figure 2.2: Concentration of Crop Insurance Policies, 1988-91



Limited Information Causes Adverse Selection Problems

The lack of sufficient farm-level information leads to a problem known as adverse selection: High-risk farmers are more likely to find crop insurance premiums attractive and purchase insurance than are low-risk farmers, who are more likely to consider the premium to be too high for the

insurance coverage provided and therefore not purchase insurance. FCIC relies on one key piece of farm-level data—an estimate of the farmer's average yield—to represent the individual farmer's riskiness, although risk level also depends on yield variability. FCIC can more fully utilize current data by computing yield variability in addition to yield average or can collect additional data to address adverse selection problems. However, it is uncertain whether FCIC can substantially lessen adverse selection even with these efforts.

The studies we reviewed indicated that adverse selection resulting from the lack of sufficient farm-level information may be responsible for 10 to 15 percent of losses for one major crop—soybeans—and as much as 5 percent for two others—wheat and grain sorghum. These studies examined the use of yield variability data to reduce adverse selection.

Yield Estimates Are the Sole Farm-Level Risk Indicators and Are Not Always Accurate

Because crop insurance guarantee levels, premiums, and indemnities are based on the individual farmer's yields, an accurate estimate of potential loss depends on individual farm information. FCIC's estimate of a farmer's expected yield is the only farm-level information FCIC uses to determine an individual farmer's riskiness.[2] In 1987 FCIC began using actual production history (APH) data, a 10-year average of yields at the individual farm level, instead of county averages to estimate a farmer's average yield. However, FCIC does not use APH data to determine a farmer's yield variability as an additional measure of risk.

APH data present three problems. First, farmers do not always have 10 complete years of data to compute the APH average yield. For instance, when farmers rotate crops among several fields, it will take longer than 10 years to get yield histories for each crop-and-field combination. For those years without sufficient documentation, FCIC substitutes yields that are based on other, less individual sources, such as yields based on those established for Agricultural Stabilization and Conservation Service (ASCS) farm program payments. These substitutes may not accurately reflect the farmer's actual yield and therefore may skew the average yield on which

[2]Empirical evidence suggests that higher-yielding producers often have relatively smaller year-to-year fluctuations in yields than do lower-yielding producers. Because higher-yielding producers have less yield risk, other things being equal, crop insurance premium rates typically decrease with increases in average yield. This issue was investigated by Jerry R. Skees and Michael R. Reed, "Rate Making for Farm-Level Crop Insurance: Implications for Adverse Selection," American Journal of Agricultural Economics, Vol. 68 (1986).

FCIC assesses risk.[3] Second, APH data may not capture increases in crop yields; over time, crop yields tend to increase because production methods improve. Therefore, the APH yield may be lower than the farmer's true expected yield.[4] Third, there can be difficulties in verifying a producer's production claims, especially if separate histories are needed for distinct plots of land within the farming operation.

An estimated yield that is significantly different from a farmer's true expected yield may influence that farmer's participation decision. For example, a farmer insured at the 75-percent level with an APH yield of 100 bushels per acre would be entitled to claim a loss if production falls below 75 bushels per acre. However, if the farmer's true expected yield is 120 bushels per acre, that farmer would have to suffer a loss of more than 45 bushels per acre, or a 37.5-percent loss, to be eligible for a claim and would thus be less likely to participate. Conversely, a farmer with a true expected yield of 80 bushels per acre would have to suffer a loss of only 5 bushels per acre, or about 6 percent, and would therefore be more likely to participate. Thus, greater-than-average participation by farmers whose yields are overestimated and less-than-average participation by farmers whose yields are underestimated is likely.

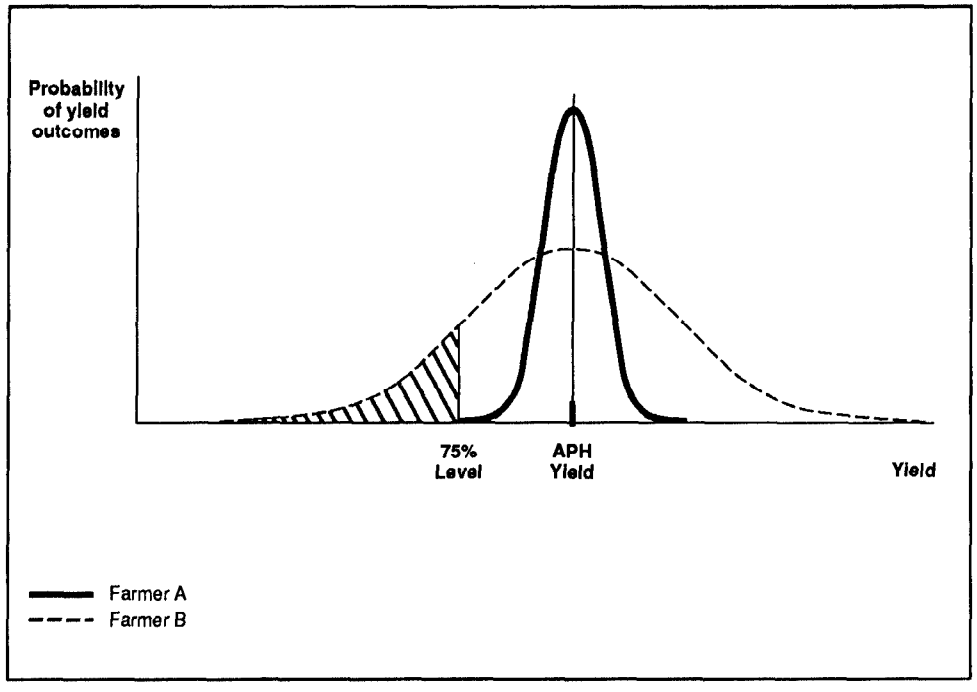
Yield Variability Can Also Influence Participation Decisions

Figure 2.3 illustrates the effects of yield variability. Farmers A and B have the same APH, or expected crop yield, as indicated by the center of each curve. Farmer A's probable yield outcomes are not likely to deviate much from the APH yield, as the steeper curve indicates. In contrast, farmer B is more likely than farmer A to experience much higher and much lower yields. If both farmers are insured at the 75-percent level, farmer A is less likely than farmer B to receive an indemnity payment because farmer A's yield is less likely to fall below the 75-percent level: farmer A is less risky. Therefore, farmer A is less likely than farmer B to purchase crop insurance, even with a premium subsidy.

[3]ASCS program yields are not based on planted acreage, are based on less than 10 years of production history, and have not changed since 1985.

[4]In part, this is due to FCIC's use of a simple average of past yields in preference to other averaging techniques, such as one that weighs more recent yields more heavily.

Figure 2.3: Effect of Yield Variability on Riskiness



Although APH data are limited, they could be used to calculate yield variation. As figure 2.3 showed, two farmers in the same county may have the same expected average yield yet have quite different historical variations in yield. Nevertheless, given current practices for setting crop insurance rates, FCIC offers both farmers identical premiums for any given level of coverage. While yield variability can be determined from APH data, data limitations that affect the accuracy of the measured average yield would also affect the measure of yield variability.

Evidence Suggests Adverse Selection Problems

Studies using a nationwide sample of insured and noninsured corn, grain sorghum, soybean, and wheat[5] producers indicated that crop insurance faces serious adverse selection problems for these four crops.[6] These studies estimated that insured farmers in the sample had a 3- to 6-percent

[5]Corn, soybeans and wheat were the three largest insured commodities, representing about 70 percent of policies written and about 60 percent of insurance premiums in 1988, the year examined. Grain sorghum was the sixth largest commodity in terms of policies written and ninth in terms of premiums.

[6]Richard E. Just and Linda Calvin, "Adverse Selection in U.S. Crop Insurance: The Relationship of Farm Characteristics to Premiums;" and "An Empirical Assessment of Adverse Selection in U.S. Crop Insurance," work in progress, University of Maryland, Apr. 1992; Richard E. Just, Linda Calvin, and John Quiggin, "Risk Aversion, Asymmetric Information, and Adverse Selection in Crop Insurance," work in progress, University of Maryland, Apr. 1992.

greater chance than noninsured farmers of having a yield outcome that would trigger an indemnity payment. These studies then investigated the extent to which this result could be attributed to problems in correctly assessing the expected yield—the APH or assigned yield—or to differences in yield variability. The results suggest that FCIC faces greater difficulties in assessing the expected yield for soybeans, grain sorghum, and wheat than for corn. However, corn producers who purchased insurance had a yield variance over 40-percent larger than those who did not purchase crop insurance.[7] Thus, for each of these four major crops, there was evidence that the knowledge farmers had about their yield distributions was important in explaining their participation in the crop insurance program. The studies concluded that adverse selection contributes substantially to program losses, accounting for as much as 10 to 15 percent of losses for soybeans, and 3 to 5 percent for wheat and grain sorghum.

Other economic research we reviewed provides further evidence of the potential importance of incorporating the yield variability of corn producers in combating adverse selection problems.[8] These studies focused specifically on corn producers in a corn-producing area with a fairly low rate of participation in the crop insurance program. In most respects, such as age, farming experience, and size of operations, insuring and noninsuring farmers were similar. However, insuring farmers had lower average yields and greater yield variability.[9] By categorizing farmers on the basis of variability of yield in addition to expected level of yield, these researchers designed an alternative crop insurance policy based on a yield-risk model.[10] When asked their opinion on this hypothetical alternative, producers indicated that participation rates may increase from 44 to as much as 84 percent of acreage, with a decrease in total government costs.

[7]A similar result held for grain sorghum producers but not for soybean and wheat producers. For wheat producers, Just and Calvin, "An Empirical Assessment" (1992), suggest that because so much of the insured acreage is in Montana and North Dakota, the typically low yields found there result in correspondingly low variances of yield.

[8]Monte L. Vandeveer and Edna T. Loehman, "Fixing Crop Insurance: Farmer Responses and Policy Implications," Purdue Agricultural Economics Report (June 1991); Monte L. Vandeveer, "Demand for Crop Insurance and Contract Design: A Case Study for Corn in Indiana," Ph.D. thesis, Purdue University, 1990.

[9]Of the noninsuring farmers, 25 percent indicated that they had never had a yield below 70 percent of average.

[10]Low-risk producers were offered coverage at higher guarantee levels than the current program maximum of 75 percent.

Crop Insurance Suffers From Moral Hazard Problems

The crop insurance program is susceptible to losses from moral hazard, making it difficult for the program to achieve actuarial soundness. Moral hazard arises because the actual yield is subject to influence by the producer's actions throughout the growing season, as well as by several different insured perils that may have damaged the crop during that time. As a result, it is often difficult at the end of the season for FCIC or a private insurer to determine the actual cause of loss. Perils such as drought, for instance, may have a large cumulative effect on yields over a large part of the growing season. For crop insurance indemnification, the magnitude of a loss attributed to drought may be measured as the difference between the actual yield outcome and the guarantee level.[11]

Although the potential for moral hazard in the crop insurance program has long been understood, empirical demonstrations of the existence and magnitude of underwriting losses because of moral hazard have not been available because of the lack of individual farm-level data. However, one recent study has attempted to quantify this impact by incorporating FCIC data on specific insured producers with related survey and interview data.[12] The study concluded that moral hazard is an important problem that contributes to a large part of the persistent losses incurred by FCIC. Specifically, results indicate that moral hazard could be responsible for yield losses of as much as 20 percent or more in major crops such as wheat and sorghum. The study also suggested that (1) current FCIC methods of loss adjustment generally cannot detect moral hazard and (2) monitoring for moral hazard would require more farm-specific information, such as customary use of fertilizer and pesticides and the productivity of individual tracts of lands within farms. While the study concluded that moral hazard may have a significant impact on FCIC losses, it also indicated that improvements may be limited in part because of the difficulty of monitoring an individual farmer's actions.

Monitoring difficulties in crop insurance are another manifestation of the insurer's information disadvantage, compared with the producer's, concerning yield outcomes. Although such information problems can be found to one degree or another in many lines of insurance, the insurer in

[11]In crop hail insurance, by contrast, hail storms occur at specific places and times, and it is not only easier to attribute the cause of crop loss to the storm but also to measure the loss on the basis of the difference between imputed yields before and after the storm. Hail coverage is typically purchased in dollars of liability per acre. If the hail storm resulted in a loss of 50 percent of the crop, 50 percent of the dollar amount is paid to the farmer. The same indemnity is paid if actual yield would have been 20 bushels and the storm reduced it to 10, or would have been 60 bushels and the storm reduced it to 30.

[12]Richard E. Just and Linda Calvin, "Moral Hazard in U.S. Crop Insurance: An Empirical Investigation," work in progress, University of Maryland, Apr. 1992.

many cases can gather, or the insured can provide, information that demonstrates the riskiness of the insured.[13] Credible or verifiable actions are key to the success of demonstrating risk level. One potentially useful indication of risk would be information on general management practices or on the level of care of individual producers, including the loss-prevention actions they take.[14] Loss-prevention actions for crop insurance might include, for example, use of a drought-resistant crop variety in an area subject to drought or monitoring growing crops for disease and insect infestation. Under the federal crop insurance program, however, a producer who employs loss-prevention measures will face the same premium schedule as a neighboring producer who does not. This reduces the incentives for many insured producers to bear the expense of engaging fully in loss-prevention activities and, at the same time, discourages producers who take loss-prevention steps from purchasing crop insurance because their lower risk levels are not reflected in premium rates.

Improvements From FCIC Actions Are Inconclusive

FCIC recently initiated efforts to address insurability problems, but it is too early to determine results. These efforts include (1) the Nonstandard Classification System (NCS) to charge premiums appropriate to a farmer's risk, (2) task forces to address yield issues, and (3) an area-yield experiment to address adverse selection and moral hazard. FCIC officials believe that these steps will be effective in dealing with the program's problems. Although these steps are likely to improve the program, they have only recently been implemented and, as of December 1992, had produced limited results.

However, researchers indicate that for the program to continue to be based on individual yields and yet be more actuarially sound, FCIC must do more. For example, collecting additional farm-level information would combat adverse selection and moral hazard. However, collecting more information would probably increase costs, and it is unclear how much adverse selection and moral hazard problems can be lessened through such efforts. Japan's federal crop insurance program illustrates the high costs of collecting information to address adverse selection and moral

[13]These arrangements are sometimes referred to as market signaling. For example, FCIC's APH program permits high-yielding producers to improve insurance coverage by demonstrating their production levels. By providing records showing production patterns that cannot be matched by low-yielding producers, high-yielding producers are able to qualify for better coverage.

[14]For example, an insurer may offer lower premiums to a business owner who installs a sprinkler system in an older building, or to an automobile owner whose car is equipped with airbags because these loss-prevention factors diminish the probability or magnitude of loss.

hazard. In addition, while multiyear contracts may present opportunities for improvement, the benefits from such contracts are limited.

Nonstandard Classification System Improves Actuarial Soundness

FCIC implemented the NCS in crop year 1991 to improve actuarial soundness by charging premiums appropriate to farmers' risk experience. The NCS is an example of experience rating, an insurance industry practice by which an individual's insurance coverage and rates can be adjusted depending on specific loss experiences. Noting that about 6 percent of policies accounted for about 28 percent of losses, FCIC established regulations to identify specific producers or land that generated particularly high insurance losses in order to place these in the NCS. By identifying high-risk farmers, FCIC can charge more actuarially sound rates, thereby decreasing adverse selection and financial losses.

However, the NCS cannot identify all high-risk farmers. Before being placed under the NCS, a farmer must experience losses that (1) differ significantly from the experiences of others in the area for at least 3 years and (2) occur frequently, at least 60 percent of the years in which insurance was purchased. Therefore, the NCS is designed to identify only those farmers who are known to represent extreme risks. The NCS is also unable to identify high-risk farmers who are new to the program, because the program is based on insurance loss experience.

FCIC Task Forces Addressing Yield Issues

FCIC task forces are currently reviewing yield determination and rate-making methodologies to refine the current risk classification system. Specifically, task forces are currently exploring historical yield issues, such as the minimum number of records needed to estimate yields, methods for dealing with missing years of data, and the possibility of incorporating yield-trend adjustments.

An FCIC Deputy Assistant Manager told us that incorporating yield variability is feasible in principle and permitted under current authority. This official cautioned, however, that there may be practical problems in implementing such a change. For instance, incomplete yield data limit the ability to measure yield variation. In addition, this official was not optimistic that incorporating yield variability would offer much improvement.

Area-Yield Plan Eliminates Adverse Selection and Moral Hazard

In 1992 FCIC implemented an "area-yield" pilot program to combat adverse selection and moral hazard in 30 soybean markets in 13 states characterized by very high rates and low coverage levels. In this program, if the measured yield of the area drops below a specified point, indemnities would be paid to all insured producers in the area, regardless of whether the yield on their own farm is reduced. Producers can select different coverage levels, expressed as percentages of the county yield, and different liability amounts, expressed as dollars per acre. This plan does not provide an indemnity when the area's yield is high but an individual's yield is low.

Area-yield coverage eliminates many of the information problems encountered in individual coverage because problems in determining individual information and in providing negative incentives are removed. Adverse selection could be substantially alleviated by an area-yield approach since, in general, information regarding the distribution of an area's yield is more readily available and more reliable than that of an individual farmer's yield. Moreover, since the indemnities would be based on the area yield rather than on the producer's yield, a producer could not expect to significantly increase the chances or size of an indemnity payment by reducing management effort or other important inputs. Therefore, moral hazard is reduced. Administrative costs would also be substantially reduced under an area-yield program, at least under the version being tested by FCIC, because claims would not have to be adjusted individually and APH record keeping would not be required.

Area-yield insurance may have a disadvantage because farmers could view the coverage as less effective and not participate. Area-yield represents a change from the traditional crop insurance program based on individual coverage. Therefore, indemnities would not be as closely correlated with individual yield loss under an area-yield plan as under an individual-yield plan.

FCIC officials state that area-yield insurance may also provide a basis for a redesigned catastrophic reinsurance program in which reinsurance commitments are not triggered unless there is an areawide loss. Individual policies would be sold by commercial insurers, who would be responsible for making indemnity payments in the event of a farmer's loss. However, unless that loss was part of a broader, areawide loss, FCIC would not share in the loss through reinsurance.

Additional Information and Multiyear Contracts May Improve Insurability

While FCIC efforts are a step in the right direction, researchers agree that collecting more farmer-specific information both prior to and during the growing season would enable FCIC to lessen adverse selection and moral hazard problems in the current program. However, collecting such information could prove costly. In addition, multiyear contracts could lessen insurability problems.

Additional Farm-Level Information Needed

More accurate assessment of a farmer's riskiness prior to and during the growing season would enable FCIC to charge more actuarially fair premiums and therefore lessen adverse selection and moral hazard problems. For example, researchers point out that FCIC could more efficiently utilize current APH data by computing yield variability and incorporating a trend adjustment prior to the growing season. In principle, FCIC could also collect additional farm-level information, such as soil quality, farm size, and crop specialization. Researchers also agree that identifying unfavorable individual farm management practices and monitoring insured crops during the growing season could lessen moral hazard problems. Such monitoring would entail periodically checking on the progress of the crop and collecting and verifying information on management practices.

The extent to which adverse selection and moral hazard could be lessened in a multiple-peril crop insurance program is unknown. In addition, FCIC faces a tradeoff between the costs of collecting more information, including costs borne by producers, and the benefits of decreased adverse selection and moral hazard through more actuarially sound rates.

On the basis of our review of other countries' crop insurance programs, we believe that Japan's federal crop insurance program illustrates the high costs of overcoming adverse selection and moral hazard problems. Japan's crop insurance program is based on an intensive network at the local level that gathers information from and monitors insured farmers. While this effort effectively combats adverse selection and moral hazard, the costs associated with it are high. For instance, Japan's indemnity loss ratio for 1985 through 1989 was .99—lower than that of any other country reviewed. However, when administrative costs are included, Japan's combined loss ratio leaps to 4.56—the highest of any country reviewed.

Multiyear Contracts May Address Insurability Problems

A contract term requiring multiyear purchases might mitigate insurability problems that occur because some crop insurance perils, particularly drought, are not independent. Because of the geographical concentration of crop insurance policies in the Midwest and the Plains states, a

widespread drought can mean substantial indemnity payments. However, the current crop insurance contract permits producers to choose whether to participate in the program each year. Drought-year indemnity payments might be even larger if producers perceive that below-average yields are likely and are thus encouraged to purchase crop insurance only in some years rather than every year—an adverse selection problem.

A multiyear term of insurance may permit FCIC to earn premium revenues over a longer period of time to cover the level of indemnity payments made in a year of widespread drought or other catastrophe. In 1937 Senate hearings, an insurance industry executive testified that a multiyear contract would increase the likelihood of success of the federal crop insurance program. However, this testimony also noted that there would be difficulties in establishing a multiyear contract because, for example, rental or crop-sharing arrangements may be of shorter duration. Additionally, an FCIC Deputy Assistant Manager noted that, under the current system—which allows farmers to pay their insurance premium after harvest— a farmer could take out a multiyear contract but not pay the premium at harvest if no loss occurred. As we will discuss in chapter 3, FCIC does offer one insurance product requiring a multiyear purchase, but this is viewed as a special case.

Conclusions

The federal crop insurance program has not achieved actuarial soundness because (1) crop production risks are not normally independent, (2) FCIC does not have sufficient information to calculate individual risks, and (3) FCIC does not have sufficient information to determine the cause of losses. FCIC has taken steps that it believes will help alleviate these problems and make the program more actuarially sound. However, the extent to which any of these changes will result in substantial improvements is not clear. We concur with researchers who concluded that additional data would improve the program's actuarial soundness but might not address the program's inherent insurability weaknesses. Furthermore, collecting additional information could prove costly, and the benefits from multiyear contracts are uncertain.

Agency Comments and Our Evaluation

In commenting on a draft of this report, FCIC stated that the report should not be construed to mean that viable crop insurance alternatives through FCIC are not available. FCIC stated that, over the long term, drought could be considered an insurable risk, although not in a commercial insurance sense. We recognize that the lack of independence in drought risks and the

lack of viable commercial insurance provided an important rationale for the government's crop insurance program. However, we maintain that FCIC could reduce the government's exposure to catastrophic financial losses related to drought by, for instance, pursuing multiyear terms of insurance. In addition to initiatives highlighted in the report, FCIC also identified some initiatives to combat adverse selection and moral hazard. While we agree with FCIC that it is too early to evaluate the success of these initiatives, collecting additional data for FCIC's pilot programs illustrates the potentially high costs that may be involved in addressing information problems.

Provisions Designed to Enhance Participation Inhibit Actuarial Soundness

Legislative and administrative provisions designed to increase participation also impair actuarial soundness. Even with these provisions and a 30-percent premium subsidy, 50-percent participation has not been achieved nationally. The overall 50-percent goal envisioned by the House Committee on Agriculture when the program was reformed in 1980 may be unrealistic because many producers do not find crop insurance attractive for a variety of reasons. Low participation may encourage the Congress to continue to authorize competing forms of disaster assistance, which may further reduce farmers' incentive to purchase crop insurance.

Legislative and Administrative Requirements Add to Problems of Actuarial Soundness

Certain provisions of the crop insurance program are designed to encourage producers to purchase crop insurance. However, because they can also affect the conditions under which production risk is transferred from producers to insurers, these provisions can be at cross-purposes with the achievement of actuarial soundness. These provisions include (1) offering crop insurance to all farmers (entitlement), (2) allowing farmers to use less individualized yield data in place of APH data, even when such data are available, (3) setting a 20-percent per year limit on premium increases, and (4) setting insurance sales closing dates that, in some cases, are late enough in the crop year for the farmers to determine whether they are likely to have losses.

Entitlement Provisions Exacerbate Problems of Actuarial Soundness

Under the crop insurance program, any farmer in a county with a county crop insurance program is generally eligible to participate in that program.[1] Although universal entitlement is consistent with the program goal of expanded insurance coverage to replace disaster payments, it can increase the chance of underwriting losses when higher-risk farmers are allowed to purchase insurance on terms that do not fully reflect their underlying riskiness. As we discussed in chapter 2, adverse selection and moral hazard problems exist. The entitlement features contribute to the program's large underwriting losses in the face of these problems.

The crop insurance program's entitlement characteristics create insurance marketing and delivery conditions that differ from those in commercial insurance. A commercial insurer does not view applicants as entitled to insurance, differentiates among customers on the basis of risk, and may

[1]Exceptions include producers who have abused the program or are not in compliance with the "sodbuster" and "swampbuster" programs initiated in the 1985 farm bill—the Food Security Act of 1985 (P.L. 99-198, Dec. 23, 1985), sections 1211 and 1221. Producers who are in the NCS program are covered under a nonstandard contract. Also, some land may be classified by FCIC as high-risk or uninsurable.

refuse to cover individual applicants for insurance. If commercial insurers do provide coverage to higher-risk individuals, they charge premiums appropriate to the perceived level of risk. Additionally, commercial insurers may not offer coverage in situations where only a very limited volume of sales is possible.

Legislative Changes in Yield Determination May Lead to Increased Losses

Legislation requires that FCIC use ASCS-assigned yields for determining normal crop production for many farmers, even if APH yields are available. This may further impair the actuarial soundness of the program. As discussed in chapter 2, FCIC currently uses yields that are based on ASCS information if APH yields are unavailable. The 1990 farm bill directed FCIC to give farmers of many program crops an option to substitute the ASCS yields for the APH yields when the ASCS yields are higher.[2] FCIC officials stated that this option may be available for eligible crops planted in spring 1993. This mandate can increase the chance of indemnity payments to farmers if the yield level that is the basis for the crop insurance yield guarantee overstates the expected yield.

ASCS yields do not necessarily represent the true productivity of the land. Furthermore, assigned yields typically do not vary as much among farmers in an area as do actual yields; ASCS yields have been constant since 1985. Thus, for a producer whose historical yields are less than the assigned ASCS yield, crop insurance would transfer more risk to the insurer if the yield guarantee was based on the ASCS yield.[3]

However, the statute provides FCIC with the ability to counteract some of the incentive for producers to select the ASCS option. In implementing this directive, FCIC will assess higher premium rates to the farmer for the amount that the ASCS yield exceeds FCIC's lower yield assessment. Furthermore, FCIC will not subsidize the portion of the premium that exceeds FCIC's lower yield assessment.

[2]The Food, Agriculture, Conservation and Trade Act of 1990 (P.L. 101-624, Nov. 28, 1990), section 2205.

[3]For example, a farmer insured at the 75-percent level with an ASCS-assigned yield of 100 bushels per acre would be eligible for an indemnity payment if the yield falls below 75 bushels per acre. However, if the farmer's true expected yield is 80 bushels per acre, this farmer essentially has to suffer a loss of only 5 bushels per acre in order to file a claim.

Legislative Limits on Rate Increases Contribute to Reduced Actuarial Soundness

To avoid the hardship of large premium increases on producers, the Congress limited FCIC's ability to raise rates—no more than 20 percent in any year. The 1990 farm bill required FCIC to determine the premium rates by region and by crop that would be necessary to achieve actuarial soundness and to adopt rates and coverages that would be actuarially sound. However, the limit on annual rate increases has contributed to the program's underwriting losses.

In responding to the legislative requirement, FCIC reported that the limits on premium increases will lengthen the time needed for some crops to become insured under actuarially sound conditions. FCIC noted that substantial increases in premium revenues are necessary in some cases to make the program actuarially sound. Specifically, seven crops—wheat, soybeans, cotton, barley, peanuts, grain sorghum, and tobacco—accounted for over 80 percent of FCIC's $2.3 billion in excess losses over the 20-year period ending in 1989. With increases limited to 20 percent annually, it will take over 3 years, according to FCIC, for the crop insurance for these crops to achieve actuarial soundness.

FCIC's report focused on rate increases for crops in different growing areas. Typically, at least half of these growing areas for these seven crops required a rate increase to achieve actuarial soundness. In the case of wheat, the crop with the largest excess losses, 75 percent of the areas need rate increases of up to 20 percent, with 27 percent of them estimated to achieve actuarial soundness after the first year, 16 percent in the second year, and 31 percent in the third or subsequent years, as shown in table 3.1. FCIC initiated premium increases in response to the 1990 legislation—beginning for the 1991 crop year—and, according to FCIC officials, the benefits from these rate increases are already being realized.

Table 3.1: FCIC Estimates of Rate Increases

Dollars in millions

Crop	Loss	Percent of areas requiring rate increases	Percent reaching actuarial soundness in 1 year	Percent reaching actuarial soundness in 2 years	Percent reaching actuarial soundness in 3 or more years
Wheat	$ 656	75	27	16	31
Soybeans	618	63	12	15	36
Cotton	183	61	38	15	8
Barley	135	81	20	14	47
Peanuts	103	50	31	14	6
Grain sorghum	98	94	9	3	81
Tobacco	82	48	19	13	16
Total	**$1,875**				

Note: For some crops, the total percent of areas requiring rate increases does not equal the sum of the last three columns due to rounding.

However, these estimates do not consider the effects of premium increases on participation. Because of the tradeoff between increasing premiums and participation, it may not be possible for FCIC to become actuarially sound just by increasing premiums. As noted in FCIC's report, many factors in addition to premium increases—such as policy terms and conditions, marketing, and claims services—contribute to the actuarial soundness of crop insurance. Therefore, the figures in the report may be best interpreted as indicating the relative magnitudes by which past indemnity payments have exceeded premium revenues.

Late Sales Closing Dates and Lack of Multiyear Contracts Heighten Adverse Selection

FCIC has established sales closing dates and contract terms that enable many farmers to delay their purchase decision until they may have a very good idea about growing conditions, such as the amount of subsoil moisture. By setting the closing dates relatively late and not requiring a multiyear commitment, FCIC gives farmers an opportunity to buy insurance in what appear to be worse-than-average years and not to buy in what appear to be better-than-average years.

According to an FCIC actuary, identifying proper sales closing dates for crops is a "balancing act." He said FCIC must select a point in the season late enough to encourage participation yet early enough to minimize adverse selection. If sales closing dates are early, producers may not have

made key production decisions, such as quantities of specific crops to plant. If sales closing dates are late, producers have until much closer to planting time to decide whether to obtain crop insurance. This allows producers to assess initial growing conditions, such as subsoil moisture or the amount of recent rainfall, and make insurance decisions partly on the basis of their assessment of the likelihood of disappointing yields. A crop insurance executive suggested that there are many cases in which sales closing dates were too late, perhaps by as much as a month in some cases, and stated that while the late dates might be good for program participation, they are bad for the program's financial performance.

A contract that requires multiple-year purchases is one method to prevent farmers from purchasing insurance only when poorer growing conditions appear likely. Recently, such a policy was implemented for California citrus producers, many of whom were interested in insurance when a freeze soon after the 1992 crop year sales closing date of November 30, 1990, destroyed much of the 1991 crop and damaged prospective 1992 production. The policy required crop insurance purchase for 3 consecutive years, beginning with the 1992 crop year, as one condition of getting insurance coverage for a year with greater-than-average expectation of losses.

FCIC views the 3-year California citrus policy as a special case in response to exceptional conditions.[4] However, FCIC could, in principle, address the closing date issue by requiring multiyear policies. In chapter 2, we showed the concentration in the Midwest and the Plains states and the importance of drought in reducing the yields of crops grown there. To the extent that the current crop insurance contract permits producers to participate or not participate in the program over time, indemnity payments in years of widespread drought may be larger than they would otherwise be. Multiyear policies would spread the risk of drought over a few years by collecting premiums from more farmers over a longer period of time.

Efforts to Increase Participation Fall Short of Goal

In response to the objectives of the 1980 act, FCIC rapidly expanded the crop insurance program to provide widespread access to the program and used private insurance companies to sell and service the insurance policies. Despite these efforts and subsidized premiums, overall participation has never reached 50 percent nationwide.

[4]Acreage devoted to a tree crop such as citrus is, in the short term, dedicated to a specific crop. Producers of field crops may make choices among several crops each growing season, and any particular crop might not be grown in a given year. This could make a multiyear crop insurance contract more difficult to implement.

Our 1992 report noted that participation would be higher if farmers did not expect federal disaster payments in periods of widespread catastrophe. While this perception may be a contributing factor to lower-than-expected participation levels, evidence suggests that it is probably a secondary reason. Primary reasons pertain to risk-management alternatives to crop insurance, attitudes towards risk, and limitations on crop insurance coverage that render crop insurance unattractive to some producers. Although a premium subsidy was a key component of the 1980 act, evidence also suggests that premium subsidies would have to be quite large to generate participation increases consistent with the participation goals of the program.

Participation Goal May Not Be an Accurate Measure of Success

Producers' decisions to purchase crop insurance are influenced by a range of available risk-management options and attitudes toward risk. For many producers, crop insurance, even with its subsidies, may not be a useful risk-management tool. Therefore, as shown in our 1992 report, 50-percent participation may not be an accurate measure of success.

Farmers can reduce production risks by engaging in farming practices that decrease the effect of natural hazards on crops, such as irrigation and pesticide application, planting only in favorable soil locations, diversifying their crop (and livestock) mixture, or planting hardier crops. For instance, by choosing to incur the costs of irrigation, a producer faces a more predictable crop yield and a reduced risk of low crop yield because of drought. Some analysts have observed that the relative lack of crop diversification options available to many wheat producers explains why their crop insurance participation has traditionally been higher than for many other crops.[5] Other methods of dealing with risk include building up personal reserves to "self-insure" against bad years.

A farmer's willingness to purchase crop insurance also depends on individual attitudes toward risk. A risk-averse farmer is more willing to purchase crop insurance and reduce the adverse financial consequences of a low crop yield.

Moreover, producers with large amounts of equity in their operations may be better able to bear the financial consequences of poor crop yields because they have less stringent cash-flow commitments. Furthermore, producers with sizeable off-farm income may be less attracted to crop

[5]Additionally, wheat yields do not tend to increase as much as those of other crops, such as corn. Therefore, the APH yield-averaging technique—which, as discussed in ch. 2, does not account for trends—may be more accurate for wheat than for other crops.

insurance because their total income depends less on the success of their crops. According to USDA, approximately 75 percent of farmers derive some portion of their income from off-farm sources.

According to a 1989 USDA survey of nonparticipating farmers, farmers do not buy crop insurance for two major reasons: (1) crop insurance offers insufficient insurance coverage for the premium charged and (2) many farmers prefer to absorb rather than transfer the risk.[6]

Crop Insurance Participation Is Influenced by Ad Hoc Disaster Assistance Programs

The expanded crop insurance program was expected to eliminate other forms of disaster assistance, but as shown in our 1992 report, increases in crop insurance participation during the 1980s were insufficient to reduce the demand for alternative disaster programs. To the extent that continuing disaster payments are viewed as a premium-free substitute for crop insurance, some farmers may be less likely to purchase crop insurance.

In the USDA survey of nonparticipating farmers, fewer than 4 percent said that their primary reason for not buying crop insurance was a belief that the government would provide assistance payments in the event of a major disaster. However, about 37 percent cited this expectation as a secondary reason for not buying crop insurance. Crop insurance industry representatives argue that the continued availability of disaster payments makes it difficult to sell crop insurance to many producers. They say that farmers generally believe that if conditions are really bad, the Congress will provide disaster relief. Industry executives believe that crop insurance is a better risk-management tool than disaster payments, that disaster payments generally provide poor incentives to producers, and that producers are frustrated when payments are smaller than anticipated. However, lower-than-anticipated participation may encourage the Congress to continue authorizing competing forms of disaster assistance.

Studies Show Premium Subsidies May Not Be Sufficient to Reach Participation Goals

According to empirical studies, crop insurance participation depends on such fundamental factors as risk and return considerations, including the level of premiums. That is, other things being equal, producers are more likely to purchase crop insurance or increase insurance coverage as

[6]The top-ranked responses were (1) there is not enough coverage to insure against most of the risks I face (24.8 percent ranked as most important factor); (2) the premiums ... are too high (23.3 percent ranked as top factor); (3) I prefer to take the risk (23 percent ranked as top factor). Recommendations And Findings To Improve The Federal Crop Insurance Program, Commission for the Improvement of the Federal Crop Insurance Program, Principal Report (Wash., D.C.: 1989), p. 57.

premiums decrease. Because pre-1980 participation levels were low, the 1980 act provided for a premium subsidy—up to 30 percent of the full premium—to encourage more producers to participate. However, evidence suggests that participation is not particularly responsive to changes in insurance premiums; very large premium subsidies may be necessary to increase participation levels substantially.

The form of the premium subsidy itself provides some evidence that producers who choose to insure do respond to the level of premiums. Producers receive a subsidy equal to 30 percent of the policy's premium if they select the 50- or 65-percent coverage levels, and a subsidy equal to the dollar amount of the subsidy associated with the 65-percent level if they purchase the 75-percent coverage level. Consequently, producers' out-of-pocket expenses can increase substantially if they choose the highest coverage level, and in fact most insured producers choose the 65-percent coverage level because of the extra expense of the additional coverage.

A 1993 study of Iowa corn farmers provides further evidence that changes in insurance premiums influence crop insurance decisions but indicates that effects of premiums on participation may be greater for lower-risk producers, heightening adverse selection problems.[7] This study found that participation and choice of coverage levels in counties with historically low loss ratios were more responsive to premium increases than were participation and choice of coverage levels in counties with historically high loss ratios. That is, lower-risk farmers were more likely than higher-risk farmers to reduce or drop crop insurance coverage when premiums increased.

A 1992 USDA study examined crop insurance participation in 1987 for 1,226 wheat and corn-soybean farmers in 15 states.[8] According to this study, (1) premium subsidies may not be very effective in encouraging noninsured producers to purchase crop insurance and (2) participation is unlikely to be substantially altered by increasing the size of premium

[7]Barry K. Goodwin, "An Empirical Analysis of the Demand for Multiple Peril Crop Insurance," American Journal of Agricultural Economics, Vol. 75 (1993). Forthcoming.

[8]Linda Calvin, "Participation in the U.S. Federal Crop Insurance Program," U. S. Department of Agriculture, Economic Research Service, Technical Bulletin Number 1800 (Wash., D.C.: 1992).

subsidies. Other studies also report that participation is not very responsive to changes in premiums.[9]

Another study suggested that increased crop insurance participation, at least among producers of high-value irrigated crops, is more likely to be achieved by changing the kinds of insurance products offered rather than by increasing premium subsidies.[10] According to this study of irrigated, diversified operations in California's Imperial Valley, the crop insurance program is not well suited to a production environment with high average yields. Typical production practices in the Imperial Valley require high cash costs and land rents, so that yield shortfalls can be "financially disastrous" without exceeding 25 percent of normal yield, the smallest indemnifiable yield loss.[11]

Conclusions

Farmer participation in the crop insurance program, a long-standing concern, was addressed by the Congress in the 1980 reforms to the program. Under current legislation and implementing regulations, the program is designed to foster participation through several provisions that (1) offer crop insurance to all farmers, (2) allow farmers to use less individualized yield data in place of actual production data, (3) set a 20-percent per year limit on premium increases, and (4) set "late" insurance sales closing dates. However, these provisions have not resulted in widespread national participation and in some cases have impeded actuarial soundness. Even a 30-percent premium subsidy, a key component of the 1980 legislation, has not been sufficient to bring participation up to the 50-percent level envisioned in 1980. These incentives have not worked because producers' decisions to participate are influenced by a range of available risk-management options, including the expectation of additional disaster assistance, and attitudes towards risk.

[9]B. L. Gardner and R. A. Kramer, "Experience with Crop Insurance Programs in the United States," Crop Insurance for Agricultural Development: Issues and Experience, ed. Hazell, Pomareda, and Valdes (Balt., Md.: The Johns Hopkins University Press, 1986). W. L. Nieuwoudt, S. R. Johnson, A. W. Womack, and J. B. Bullock, "The Demand for Crop Insurance," Agricultural Economics Report #1985-16, (Columbia, Mo.: Department of Agricultural Economics, University of Missouri-Columbia, Dec. 1985).

[10]Kelly D. Zering and C. O. McCorkle, "Federal Multiple Peril Crop Insurance in Irrigated, High-Value Crop Agriculture," Multiple Peril Crop Insurance: A Collection of Empirical Studies, (Stillwater, Okla.: Agricultural Experiment Station, Division of Agriculture, Oklahoma State University, May 1988), pp. 103-124.

[11]FCIC officials emphasized that the 1990 farm bill authorized private insurers to develop supplemental policies offering, for instance, increased coverage levels.

The extent to which the program can attain actuarial soundness with widespread participation is questionable. Program losses have exceeded premiums, and the program has not become the primary form of disaster assistance. As discussed in chapter 2, improvements to the system are possible, but the results of current FCIC efforts are uncertain and implementation of additional efforts could prove costly and might not address the program's inherent insurability problems. Therefore, we are not making any recommendations at this time because a more fundamental issue regarding the future of crop insurance and disaster assistance must first be addressed. As requested by the Chairman, Senate Committee on Agriculture, Nutrition, and Forestry, a subsequent report will explore options available for federal policy to help manage agriculture risk.

Agency Comments

In commenting on a draft of this report, USDA agreed that the four provisions identified in this chapter have had an effect on its ability to become actuarially sound.

Crop Insurance Experiences in Other Countries

Other countries that provide subsidized multiple-peril crop insurance have not been successful in providing actuarially sound insurance, as illustrated by the comparison of loss ratios in table I.1.

Table I.1: Comparison of Federally Subsidized Multiple-Peril Crop Insurance Programs in Selected Countries

Country	Indemnities loss ratio[a]	Administrative costs loss ratio[b]	Combined loss ratio[c]
Canada, 1974-90	2.20	0.24	2.44
Costa Rica, 1970-89	2.26	0.54	2.80
Japan,[d] 1985-89	0.99	3.57	4.56
Mexico, 1980-89	3.18	0.47	3.65
Spain, 1987-92	1.08	0.16	1.24
United States, 1980-90	1.87	0.55	2.42

[a]Indemnities loss ratio = Indemnities/premiums.

[b]Administrative costs loss ratio = Administrative costs/premiums.

[c]Combined loss ratio = (Indemnities + administrative costs)/premiums.

[d]Japan's administrative cost data based on 1989 only.

Source: World Bank, except for Spain. Data on Spain developed by GAO.

Japan's Information Collection Efforts Increase Administrative Costs

Japan's multi-risk crop insurance provides an example of the high cost associated with collecting information to overcome adverse selection and moral hazard. Japan's three-tiered approach to crop insurance—town, county, and federal levels—creates an intensive network at the local level designed to gather information on individual farmers that, as discussed in chapter 2, can be used to combat adverse selection and moral hazard problems. However, the administrative costs of collecting this level of information are high. For instance, although Japan's indemnities loss ratio is .99, the lowest ratio of any federal multiple-peril crop insurance program examined, the addition of the administrative costs loss ratio of 3.57 brings the combined ratio to 4.56, the highest of any country reviewed.

Mexico and Costa Rica Have Been Unsuccessful in Overcoming Adverse Selection

From the 1940s until the program ended in 1989, Mexico provided a subsidized, all-risk, yield-based crop insurance program through the Aseguradora Nacional Agricola Y Ganadera, S.A., the oldest and largest private agricultural insurer in Latin America. Although Mexico's average loss ratio for administrative costs was less than FCIC's during the 1980s, the loss ratio for indemnities was 1.7 times greater, largely due to adverse selection problems. To combat adverse selection, Mexico made the

program obligatory for farmers who borrowed money through the federal lending institution. In theory, obligatory participation should eliminate adverse selection since both high- and low-risk farmers are required to participate. However, farmers who borrowed money through commercial lenders or who did not borrow money generally did not participate in the crop insurance program.

Costa Rica provides an all-risk, yield-based crop insurance program that insures costs of production. The program is administered by the state insurance monopoly, the Instituto Nacional de Seguros, with field administration handled in coordination with the Ministry of Agriculture and the government-owned banking system. From 1970 to 1989, Costa Rica has experienced an average indemnities loss ratio of 2.26 when separated from administrative costs, largely because of adverse selection.

Canada's Competing Programs Have Hindered the Performance of Crop Insurance

Canada provides federally subsidized crop insurance to farmers through cost-sharing arrangements with the provinces. Canadian farmers can insure most crops at 60 or 70 percent of the historic average yield at a price fixed annually before planting. In some provinces, farmers may choose individual average yields rather than historic area average yields.

According to a Canadian official, the Canadian crop insurance program competes with other farm income stabilization programs, particularly the ad hoc drought assistance programs. In addition, since 1986, competition in the world grain market has decreased the efficiency of the crop insurance program. Although Canada's administrative costs loss ratio of .24 is less than half that of the United States', the indemnities loss ratio of 2.2 brings the combined loss ratio to 2.44, which is similar to the United States' combined loss ratio of 2.42.

Spain Separates Crops Into Viable and Experimental Lines

Like the United States, Spain utilizes private insurance companies to deliver federally subsidized crop insurance and provides reinsurance for those companies. However, Spain retains loss-adjustment functions within the government.

Spain also distinguishes between "viable" and "experimental" insured crops. Viable crops tend to have indemnity loss ratios that are less than that of experimental crops. For example, the average indemnity loss ratio from 1987 to 1992 for viable crops was .71, while the ratio for experimental crops was 1.42. Overall, the average indemnities loss ratio for both lines

was 1.10, as shown in table I.1. Closer examination of viable and experimental crop categories, however, reveals that "viable" crop insurance is limited primarily to frost and hail coverage for a few specific crops. The experimental category encompasses a much broader range of crops and perils, which is more similar to multiple-peril insurance in the United States.

Australia Does Not Provide Federal Crop Insurance

Australia provides federal drought-related assistance rather than crop insurance. Through disaster policy revisions in May 1991, the Australian government provides assistance to farmers at all times to help them prepare for drought. For example, the program provides assistance for improved watering facilities in nondrought periods. During drought periods, financial support is provided to farmers who are considered to have sound long-term prospects, while other farmers are provided with relocation assistance and short-term income support.

Comments From the Federal Crop Insurance Corporation

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

United States Department of Agriculture | Federal Crop Insurance Corporation | Office of The Manager | Washington, D.C. 20250

APR 1 5 1993

Mr. John W. Harman
Director
Food and Agriculture Issues
General Accounting Office
Washington, D.C. 20548

Dear Mr. Harman:

Enclosed is the Federal Crop Insurance Corporation's (FCIC) comments to your draft report entitled Crop Insurance: Federal Program Faces Insurability and Design Problems (GAO/RCED-93-98).

See comment 1.

The report generally outlines the problems FCIC faces in providing a universal product expected to be actuarially sound yet prevent the need for ad hoc disaster assistance. However, the report should not be construed to mean viable alternatives or options for solving this complex problem are not available.

The report examines insurability and design problems faced by FCIC and their symptoms, but did not examine public policy issues of the crop insurance program and the role of society to provide disaster assistance. Hopefully, the next report will examine the issues surrounding this matter in a more indepth manner.

Thank you for the opportunity to comment on the contents of the report. If you have any questions, please contact Mary Ann Manor, Director of the Internal Controls Staff at 254-8272.

Sincerely,

KATHLEEN CONNELLY
Acting Manager

Enclosure

Reviewed by:

ROBERT PETERS
Acting Under Secretary
Small Community and
Rural Development

FEDERAL CROP INSURANCE CORPORATION (FCIC)
COMMENTS TO THE GENERAL ACCOUNTING OFFICE (GAO)
REPORT RCED-93-98, CROP INSURANCE: FEDERAL PROGRAM
FACES INSURABILITY AND DESIGN PROBLEMS
April 8, 1993

The audit report outlines risk management issues that any insurance operation would face to properly assess risk and establish fair prices when the insurance product is expected to be universally available, actuarially sound, and is not mandatory.

Our comments to the report are outlined below and are categorized according to the principle findings outlined in the executive summary.

Some Perils Affect Many Producers

See comment 2.

GAO questions whether drought can be an insurable risk because it is widespread and can affect a significant portion of the multiple peril crop insurance business. Drought is used to illustrate the point that crop insurance may not meet a criterion of an insurable risk: that losses be independent. This principle is very important in commercial lines of insurance because private companies operate over very short planning horizons. Most, if not all, such companies do not have the "deep pockets" to survive a major catastrophe. Drought is generally thought to be uninsurable in the commercial sense. Within a short period of time (say 10 years), such excess loss cannot be offset with rate adjustments only. However, if the planning horizon is sufficiently long, drought may as a matter of public policy become insurable.

FCIC Lacks Sufficient Information to Reduce Adverse Selection and Moral Hazard

See comment 3.

"Adverse selection" and "moral hazard" are inherent problems of any insurance product. The problems are not solved solely by any one solution or necessarily by some determined amount of information that may be collected. Insurers cannot be in all insured places at key moments and events; therefore, the insurer is left to address the problem through risk incentives, stringent underwriting rules, equitable risk sharing among the parties, and long term product affordability (i.e., availability of a needed coverage). FCIC has several initiatives, as GAO indicated, under consideration to address these issues.

See comment 3.

The report refers to FCIC's limited ability to monitor the program, resulting in uncontrollable moral hazard. FCIC is attempting to improve monitoring. FCIC has in place two pilot monitoring programs in areas where "moral hazard" is believed to have occurred. One pilot program, the peanut monitoring program in three Southeastern States involves selecting high risk policies; performing growing season inspections and preharvest appraisals on

REPORT RCED-93-98

the policies; and heavily publicizing this increased oversight. The other pilot program involves irrigated wheat and barley losses in Montana. It requires certain growers to submit records of such items as water and fertilizer that are applied to the crop before collecting an insurance indemnity. FCIC has no data at this time to gauge the success of these programs.

One cause of adverse selection has been FCIC's inability to effectively track those individuals who are ineligible for insurance based on past actions or debts. FCIC is resolving this issue by creating an automated system to track these individuals by Social Security Number or Employee Identification Number. Authority to use those numbers was granted in the 1990 amendments to the Federal Crop Insurance Act.

Results from Efforts to Address Insurability Problems Are Inconclusive

See comment 4.

Yield Variability

FCIC is currently evaluating the need to give greater consideration to yield variability. Considerable administrative and logistical problems are involved in the issue of yield variability cited by GAO. FCIC believes this issue cannot be resolved adequately by capturing farm yield data. Instead, indicators such as soil type, slope, measurable characteristics of the farm, or other factors, must be considered. FCIC does not believe statistically valid data will ever exist for every insurable unit.

See comment 5.

Comparisons to Other Countries Insurance Programs

It is not clear what GAO's objective is in discussing other countries' crop insurance programs. Was this discussion meant to be a comparison with FCIC's program or just a statement on what other countries are doing? The information provided was sketchy and did not recognize differing socio-economic systems and mores. For these reasons, it is difficult to make any valid comparisons.

See comment 6.

Actual Production History (APH) and Alternatives

FCIC is constantly in the process of revising and improving the APH program. A task force was formed to review the APH program and make recommendations for improvement. A modified 10-year APH concept was presented to and approved by the FCIC Board of Directors. This concept was designed to modify the yield determination methodology for establishing an individual producer's insurance coverage recognizing yield variability by more accurately and quickly establishing yields that better reflect the individual's insurable risk. FCIC is studying a proposal to compute the APH average yield using a minimum 4-year data base and building to a 10-year data base.

See comment 6.

Under this plan, an individual can have an approved yield based on actual yields only if 4 or more years of production history during the 10-year base period is supplied.

FCIC is studying a proposal to limit the use of T-yields to 4 years. The 4-year limitation on T-yields eliminates the adverse effects of inappropriately high or low T-yields much more rapidly than the current program. Several alternatives will be available to producers based upon the number of years' records available and whether records are submitted annually.

Provisions to Enhance Participation Contribute to Inability to Achieve Actuarial Soundness

FCIC agrees the four provisions identified in the report have had an effect on its ability to become actuarially sound.

Technical Corrections

See comment 7.

Throughout this report terms such as "combined loss ratio" and "administrative cost loss ratio" are used. We believe these terms may refer to the "expense ratio" and "combined ratio." Losses are not figured into the calculation of the "administrative costs ratio" ("expense value"). "Expense ratio" should not be used since the Federal Crop Insurance Act provides that administrative costs are not to be included in calculating premiums.

See comment 8.
Now on p. 9.

Page 9 contains an error. Premium RATES do not depend on price levels. However, overall PREMIUM charged does depend on price levels.

See comment 9.
Now on p. 31.

Page 36 refers to an administrative requirement allowing farmers to use T-yields in place of APH data, even when such data are available. The only time FCIC allows the use of T-yields in lieu of actual or assigned yields is when the producer shares production from a unit with another insured who does not have production record history. In that case, FCIC uses the T-yield if it is higher than the related yield. In crop year 1994 this has been changed so that T-yields are never substituted for actual yields.

See comment 10.
Now footnote 1 on p. 30.

Footnote 22 states that Nonstandard Classification System (NCS) individuals are denied crop insurance coverage. The individuals selected for NCS are NOT denied coverage, their coverage is reduced and/or their rates increased.

See comment 11.
Now on p. 17.

Page 19 states that FCIC's rates and terms of insurance structures should be that premium revenues covering indemnity payments are generated over a number of years. FCIC already establishes rates on this premise where allowed by statute.

The following are GAO's comments on the Federal Crop Insurance Corporation's (FCIC) April 15, 1993, letter.

GAO Comments

1. This report is intended to highlight the inherent insurability weaknesses in federal crop insurance. We realize that there may be viable alternatives to the current crop insurance program, including changing the terms under which insurance is offered, changing the basis of insurance from individual to area coverage, or pursuing noninsurance options. As discussed in our report, we will explore these alternative federal policies for agricultural disaster assistance in a subsequent report.

2. We recognize in our report that, in theory, a sufficiently long time period could allow even widespread nonindependent perils, such as drought, to become insurable. In practice, we believe that FCIC could take steps to make drought more insurable. As discussed in our report, multiyear policies would spread the costs of drought-related indemnities over several years.

3. Our report recognizes FCIC's initiatives to address adverse selection and moral hazard problems. However, while we agree with FCIC that it is too early to evaluate these initiatives, we believe that collecting additional data for FCIC's pilot monitoring programs may be costly, as we discussed in chapter 2.

4. We recognize that incorporating yield variability is not a stand-alone solution and that significant data problems will exist, at least for some crops. However, we believe that FCIC could make better use of currently available yield information.

5. We acknowledge that crop insurance programs in different countries are not directly comparable because of different socioeconomic systems and geographic locations. In response to the request by the Chairman, Senate Committee on Agriculture, Nutrition, and Forestry, we briefly described crop insurance experiences in other countries and focused on financial performance to illustrate that other countries face problems similar to FCIC's.

6. We believe that APH is an improvement over previous rate-setting methods and that FCIC is taking steps to improve the APH program. However, as discussed in chapter 2, we also believe that APH has limitations that are not addressed by FCIC's initiatives.

7. In our discussions of loss ratios, we used terms that are consistent with World Bank sources. In response to FCIC's comments, we included more explicit definitions of these terms in appendix I.

8. We changed the wording to "premiums" from "premium rates."

9. Our statement does not refer to T-yields specifically but rather to the legislative requirement that allows some producers to substitute yields assigned by ASCS for program payment purposes in place of APH yields.

10. We recognize that producers in the Nonstandard Classification System program are not denied coverage, and we changed the wording to clarify that the NCS program simply alters the terms of insurance.

11. Our statement was intended to convey the importance of setting actuarially sound rates over a period of time, and we recognize FCIC's efforts to establish rates based on this premise.

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