



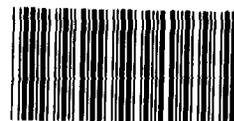
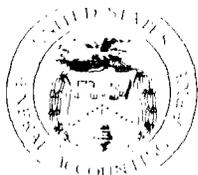
United States General Accounting Office

Report to the Chairman, Committee on
Agriculture, House of Representatives

July 1990

CONSERVATION RESERVE PROGRAM

Determining Program's Effects on Production Depends on Assumptions



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United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

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July 25, 1990

The Honorable E. (Kika) de la Garza
Chairman, Committee on Agriculture
House of Representatives

Dear Mr. Chairman:

In response to your request, this report discusses assumptions that would influence an analysis of the Conservation Reserve Program's (CRP) effects on past and future agricultural production. The Food Security Act of 1985 authorized the U.S. Department of Agriculture (USDA) to implement the CRP, whose purposes included addressing soil erosion, protecting long-term agricultural productivity, and curbing production of surplus commodities. The program was to remove 40 to 45 million acres of highly erodible cropland from production by 1990. Thus far, about 34 million acres have been enrolled.¹

The assumptions discussed in this report are important in analyzing the production effects of the CRP. However, they are not meant to represent a complete set of considerations, nor to suggest a complete methodology for estimating the CRP's effects on domestic crop production. Further, we discuss these assumptions as they affect estimates of the program's impact on wheat production because wheat was the predominant crop enrolled in the CRP.

Results in Brief

From the time that the first acres were enrolled in the CRP the program has affected domestic crop production and will continue to affect it until the last contracts end in late 1999. Estimating the extent of the CRP's effects on past and future U.S. production depends on assumptions made about a number of factors. Moreover, because of the range and complexity of these assumptions, a simple estimate is unlikely to be accurate.

To determine the CRP's effects on past production the following factors, among others, should be considered: (1) the total amount of CRP acreage removed from production, (2) the size of other set-aside programs if the CRP did not exist, (3) the productivity of the CRP acreage and (4) the possible reallocation of farm resources (i.e. labor, fertilizer, etc.) from

¹CRP enrollment occurs when CRP participants enter into contracts with USDA to retire or "set aside" acres for 10 years.

CRP acres to increase production on other acres. In addition to assumptions about these factors, other assumptions must be made when determining the CRP's future effects on production. They include total future U.S. production; the percentage of CRP acreage to be returned to productive use after CRP contracts expire; natural resource factors (e.g. weather conditions); economic factors, (e.g. supply, demand, price); and public policies.

Background

An estimated 5.4 billion tons of soil are eroded each year on nonfederal land. More than half of this erosion occurs on the nation's 423 million acres of cropland. Soil erosion contributes to reduced agricultural productivity, air pollution, and sedimentation and pollution of streams and other water bodies.

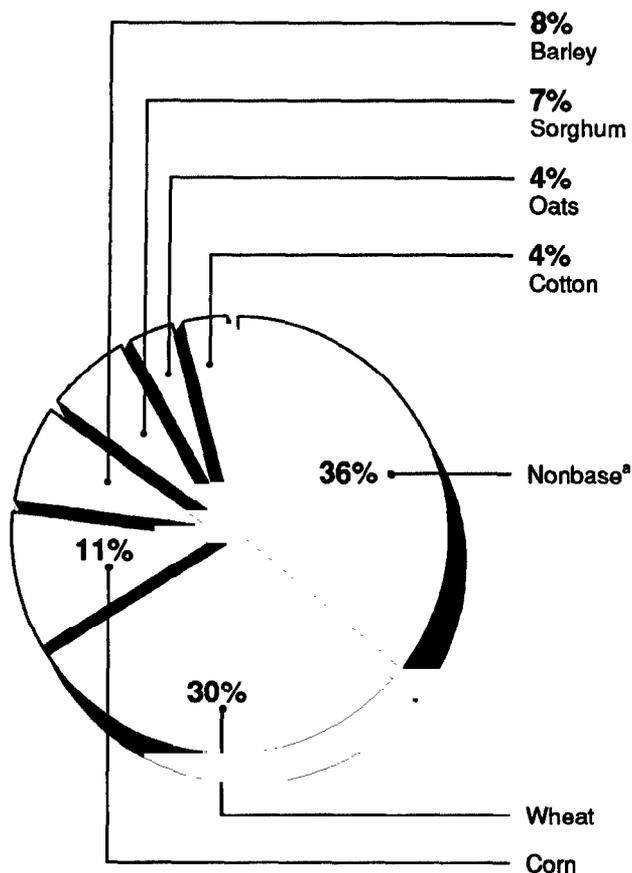
Concerned about long-term agricultural productivity and the environmental problems caused by soil erosion, the Congress included major new conservation provisions in Title XII of the Food Security Act of 1985. One of the provisions contained in the legislation is the provision authorizing the USDA to carry out a 40- to 45-million acre CRP. Under the act, the Secretary of Agriculture enters into contracts with agricultural producers to remove highly erodible cropland from production for 10 to 15 years in return for annual rental payments. As part of the contract, producers implement a USDA-approved conservation plan that usually includes planting a conservation cover such as grass or trees on the acreage to hold soil in place and reduce erosion. Producers are also reimbursed by USDA for a portion of the cost—usually 50 percent—to establish the conservation cover.²

From the initial enrollment in 1986 through the last enrollment in 1989, almost 34 million acres of cropland were enrolled in the program. Figure 1.1 shows the percentage of acres enrolled by various crops.³

²In *Farm Programs: Conservation Reserve Program Could Be Less Costly and More Effective* (GAO/RCED-90-13, Nov. 1989), we made several recommendations to the Secretary of Agriculture to improve the targeting of CRP land and the process for establishing contracts.

³For the most part, CRP acreage consists of base acres (those crop acres that are included in federal price support programs). The base acreage for some crops, such as rice, peanuts, and tobacco, are not included in figure 1.1 because they each represent less than 1 percent of CRP acreage.

Figure 1.1: Share of Acreage in the CRP by Crop



^aNonbasic acres consist of crop acreage that is not included in federal price support programs.
 Source: GAO Analysis of Agricultural Stabilization and Conservation Service Data on the CRP

The CRP's Effects on Past Production

In estimating the CRP's effects on past production, one needs to determine production directly foregone and make assumptions about other factors. Production directly foregone might be estimated by determining the number of acres enrolled in the CRP by crop, such as wheat, and multiplying this number by the expected yield per acre. For example, if 600,000 acres of wheat were enrolled in the CRP in 1986 and the weighted average yield per acre were 26 bushels,⁴ the amount of wheat production directly foregone would be 15.6 million bushels in that year. However, this simple calculation may not accurately reflect the effects

⁴In determining a weighted average yield for total CRP acres, the average yield for each farm is weighted by the number of acres enrolled in the CRP.

of the CRP on production because other factors must be considered. These include, among other things, (1) the amount of CRP acreage removed from production, (2) the number of acres that might have been in other set-aside programs if the CRP did not exist, (3) the potential productivity of the CRP acreage, and (4) the possible reallocation of resources from CRP acreage to make other acres more productive.

First, although 600,000 acres of wheat were actually enrolled in the program, not all of these acres should be counted in calculating lost production because producers who chose to participate in other federal farm programs instead of the CRP were subject to set-aside requirements imposed by those programs. For example, since many wheat producers in 1986 were subject to a 10-percent set-aside, the full 600,000 base acres of wheat enrolled in the CRP cannot be assumed to have affected production because some of that land enrolled in the CRP (up to 60,000 acres) would have been idled under a 10-percent Acreage Reduction Program (ARP).⁵ Therefore, the reduction in wheat production attributable to the CRP could have been 540,000 base acres.

Second, the CRP's effect on production is also affected by a related but broader assumption about how other set-aside programs like the ARP would have changed in the absence of the CRP. USDA establishes annual ARP requirements on the basis of assumptions about supply, demand, and CRP enrollment in an attempt to maintain reasonable production levels and prices. Therefore, if the CRP did not exist, then the ARP percentage established by USDA might have been adjusted upward. This in turn, would affect the calculation discussed above since the set-aside percentage, without the CRP, would have been larger. Under this assumption and using our wheat example, the 10-percent wheat set-aside in 1986 might have been increased in order to compensate for CRP acres enrolled. If this assumption holds, then the reduction in wheat acreage attributable to the CRP would have been even less than 540,000 acres. Such an assumption appears valid given that set-aside acres, whether under the CRP or a program like the ARP, are used to adjust crop supplies and maintain prices received by farmers.

Third, assumptions must be made about the potential productivity of CRP acres. For example, assumptions would need to be made about the

⁵Under the ARP, the most common set-aside program besides the CRP in recent years, producers of program crops retire the portion of their base for 1 year as prescribed by USDA as a condition for receiving benefits of other programs, such as deficiency payments and Commodity Credit Corporation loans. Set-aside programs like the ARP are used to contract or expand production of crops, thereby influencing price.

extent to which some or all of the acres enrolled in the CRP represent the producers' least productive acres because it would be economically advantageous to idle these acres first. If a farmer's least productive acres were enrolled first, the CRP's impact on production would be less than it would be if CRP acres were as productive as the other acres of cropland. A related assumption about the productivity of acreage would be the possibility of enrolling more productive acres in later sign-ups. If CRP sign-ups enrolled progressively more productive land, because the least productive acres were already enrolled early on, then the calculation of the impact on total production would have to be adjusted.

A fourth assumption involves another factor—the possible reallocation of resources because of the CRP. If an assumption is made that the acreage idled by the CRP allows farm resources to be redistributed to other acres, then the productivity of these acres may be increased and the CRP's impact on production would be reduced. Resources such as labor, fuel, fertilizer, and irrigation may be shifted from acres idled by the CRP to productive acres on other sections of a farm. Such increases in resources for the remaining productive acreage could increase the output of these acres. Thus, the CRP's effects on production would be lessened by this amount.

The CRP's Future Effects on Production

Besides depending on the above factors, estimating the CRP's effect on future production depends on assumptions about total U.S. future crop production and about CRP acreage returning to production at the end of the contract period. To determine future U.S. crop production, consideration must be given to the interrelationship of an array of factors, such as those described below.

Natural conditions in the environment could limit land available for agricultural use, and could influence the quality and/or quantity of agricultural products of those lands and the economic viability of farms. Natural conditions include, among other factors, location, climate, soil conditions, and proximity to water.

Economic conditions include the price and availability of labor and capital, as well as domestic and international production/consumption patterns and import/export conditions.

Public policies include federal, state, and local efforts that directly or indirectly influence production. Local zoning regulations of pesticide

applications may influence yields. Further, USDA programs, such as the ARP or the Export Enhancement Program may affect production.

Determining the number of CRP acres that will return to production depends on whether producers decide to continue idling these acres or to return them to productive use. For example, about 6 percent of the CRP acreage has been planted with trees. Assumptions about the extent to which these 2 million acres of trees will be cleared and returned to cropland would be a consideration in determining the CRP's impact on production. If the land is not cleared, an adjustment would need to be made in determining how much of the CRP acreage will return to cropland use between 1996 and 1999.

These factors, as well as others, should be considered in order to reliably estimate the CRP's effects on production. As a result, the assumptions presented about these factors illustrate the complexity in making such an estimate.

We conducted our review from November 1989 through April 1990 at USDA headquarters in Washington, D.C. and USDA's Kansas City Management Office, which maintains the computerized CRP contract files. We did not independently verify the accuracy of USDA's data base.

To determine relevant assumptions about the CRP's effect on production, we talked to USDA officials, university researchers who have estimated the CRP's effects on production, and representatives of several nonprofit organizations interested in agricultural programs including the CRP. We also reviewed studies by USDA, the Center for Agricultural and Rural Development at Iowa State University and a study by the Food and Agricultural Policy Research Institute, sponsored by the University of Missouri and Iowa State University—all of which estimated the CRP's effects on production.

USDA officials generally agreed with the assumptions discussed in this report. However, as agreed with your office, we did not obtain written agency or industry comments on this report. We plan to distribute this report today to the Secretary of Agriculture and other interested parties.

If you have any questions, please contact me at (202) 275-5138. Major contributors to this report are listed in appendix I.

Sincerely yours,

A handwritten signature in black ink, appearing to read "John W. Harman". The signature is written in a cursive style with a large initial "J" and "H".

John W. Harman
Director, Food and
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