# Agricultural Conservation Alternatives: The Greening of the Farm Bill

**October 1994**

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# Executive Summary

In late 1993, American Farmland Trust initiated the Agricultural Conservation Alternatives project in preparation for the 1995 Farm Bill. Eighteen agricultural leaders reviewed 25 existing and proposed programs for the farm bill that addressed environmental issues facing agriculture. The ACA working group identified nine ideas worthy of further analysis:

*The findings of the white papers and the ACA working group recommendations set the framework for a new generation of agricultural resource conservation and farm support programs.*

**Green Ticket Certification Program**: GTC would set environmental and resource conservation performance standards for farms to meet in order to qualify for certain benefits. It could prove to be an effective but somewhat expensive approach.

**Conservation Credit Initiative**: CCI offers property tax credits to farmers who voluntarily agree to implement conservation plans. The program has been successfully tested in several counties in Wisconsin and is considered a "potential bargain."

**Environmental Stewardship Incentive Program**: ESIP offers three levels of payments to farmers based on the complexity and completeness of implemented conservation plans. Proposed by the Illinois Corn Growers and Illinois Farm Bureau, ESIP is in the concept stage.

**Water Quality Incentives Program**: WQIP was authorized in the 1990 Farm Bill and offers per-acre incentives and technical assistance to farmers to develop and implement multi-year water quality protection plans. It has not lived up to its potential.

**Integrated Farm Management Program**: IFM was also authorized in the 1990 Farm Bill to encourage feed grain farmers to plant resource-conserving crops. Participation has been dismal.

**Sustainable Agriculture Research and Education**: SARE, authorized in the 1985 Farm Bill, introduced a unique funding and research structure to directly involve farmers in research on sustainable farming systems. SARE has not yet reached its full potential.

**Environmental Reserve - Rural Land Trust**: ER-RLT is a new concept that would combine the many separate conservation and land retirement programs into a unified program to allow both short-term and long-term environmental goals to be addressed.

**Revenue Insurance/Assurance**: Two similar guaranteed revenue programs could potentially replace current farm programs. Both programs could significantly reduce the costs of current programs but may be politically unfeasible.

**Inter-farm Transfer of Acreage Conservation Reserve Acres**: Analogous to trading pollution credits in the industrial sector, this idea would encourage the inter-farm transfer of acreage conservation reserve acres to advance conservation objectives.

The findings of the white papers and the ACA working group recommendations set the framework for a new generation of agricultural resource conservation and farm support programs.

# Acknowledgments

The following white papers focus on conservation alternatives for the 1995 Farm Bill — what is becoming known as a "greening" of the farm bill. They are the result of a lot of time and effort on the part of many individuals. In addition to the working group and resource staff (listed in the Introduction) who helped us prioritize alternatives and the authors themselves, I'd also like to thank the academic reviewers. They not only donated their time and talent to critically review the papers, but they did so rapidly in the interest of making this information available as quickly as possible.

Reviewers included: George Bird, Michigan State University; Dick Clark, University of Oklahoma; Jerry DeWitt, Iowa State University; Michael Dicks, Oklahoma State University; Harold Duither, University of Illinois; Emily Eide, Iowa Farm Bureau Federation; David Ervin, Oregon State University; Dave Freshwater, University of Kentucky; Jerry Griswold, U.S. EPA; Chuck Hassebrook, Nebraska Center for Rural Affairs; Bob Hauser, University of Illinois; Ralph Heimlich, USDA ERS; Dennis Keeney, Iowa State University; Larry Libby, University of Florida; Mike Linsenbigler, USDA ASCS; Pat Madden, USDA SARE advisor; Marshall Martin, Purdue University; Mike Monson, University of Missouri; Tim Osborn, USDA ERS; Betty Plummer, Pepin County Conservationist, Wis.; Kitty Reichelderfer Smith, Henry A. Wallace Institute for Alternative Agriculture; Steve Taff, University of Minnesota; Ed Weber, River County Resource Conservation and Development Area, Wis.; and Bob Wisner, Iowa State University.

In helping organize and conduct the meetings leading up to the white papers, I'd like to particularly thank Dick Esseks, Northern Illinois University, and Steve Kraft, Southern Illinois University, (both affiliated with American Farmland Trust's Center for Agriculture in the Environment (CAE)). Also, I'd like to acknowledge Bryan Petrucci, Carolyn Miller, Kim Sullivan and Patrick Stewart, all on the CAE staff, for their efforts in making the meetings a success. Carolyn Miller also deserves credit for putting the papers into final form for publication.

Finally, I'd like to thank our funders, who saw merit in helping bring together leaders from the agricultural, conservation and environmental communities to talk about opportunities and new directions for the 1995 Farm Bill: Archer Daniels Midland Company, Nathan B. Cummings Foundation, E. I. DuPont Agricultural Products and The Ford Foundation (for continued support of the CAE).

# Table of Contents

# Agricultural Conservation Alternatives: The Greening of the Farm Bill

## Background

In October 1993, American Farmland Trust initiated the Agricultural Conservation Alternatives project as part of AFT's activities in preparation for the 1995 Farm Bill. The ACA project sought to 1) analyze incentive-based approaches to resource conservation and 2) develop consensus among agricultural and conservation groups in support of incentives to encourage and reward environmental stewardship. The project was part of a larger effort by American Farmland Trust to set the framework for a new generation of agricultural resource conservation and farm support programs.

*The goal of the project was to analyze incentive-based approaches to resource conservation and develop consensus in support of incentives to encourage and reward environmental stewardship.*

The ACA project focused on incentive-based programs that could:

- Encourage the use of tillage practices that prevent soil erosion and protect water quality.
- Provide increased flexibility for the rotation of crops and livestock.
- Concentrate crop production on our best land while reducing or halting production on land of lesser quality.
- Protect environmentally sensitive areas (wetlands, riparian areas, unique wildlife habitats, etc.) from agricultural impacts.
- Help producers maintain high levels of crop residue before and after planting.

Based on current policy trends, we asked working group members to use the following assumptions as guidelines for the development of incentive based approaches:

- Current farm-based support programs will change in the years ahead due to trade, budget and other factors.
- Federal and state agencies will set commodity specific goals for pesticide reductions and the use of Integrated Pest Management strategies.
- No new funds will be available for the implementation of new programs, but some funds may be reallocated.
- All agricultural practices will have to have minimal impacts on water quality.
- Farms may be required to reduce soil losses to a level at or below tolerable limits ("T").

- New programs should be market oriented and reduce dependence on commodity support payments.
- Programs will be judged by a Congress dominated by urban interests.

With these objectives in mind, 18 agricultural leaders agreed to serve on the ACA working group (see list of participants, p.8).

## The ACA Working Group

*The working group considered 25 ideas for changes in the 1995 Farm Bill, from mild adjustments to radical departures. They identified nine as worthy of further research.*

The ACA working group met for the first time in DeKalb in February 1994, to prioritize more than 20 ideas for changes in the 1995 Farm Bill. In convening the group, we had several objectives: 1) to discuss the need for changes with representatives of various agricultural factions; 2) to use the working group as a reality check to determine what kinds of changes the agricultural community could support; and 3) to develop consensus to implement those changes.

Before coming to DeKalb, group members and resource staff were given brief summaries of 17 existing and proposed programs that addressed or could address environmental issues (AFT, 1994). Ideas ranged from a mild adjustment (improvements in the Water Quality Incentives Program) to a radical change (elimination of base acreage). In DeKalb, the group discussed the existing proposals, introduced other ideas and voted on those ideas they felt merited further research (see p. 9-10 for additional details). Nine ideas were identified for further analysis with respect to criteria developed by the working group.

Following this meeting, AFT commissioned white papers to further explore these ideas. Authors for the white papers were chosen both for their expertise and their ability to forge further consensus among some of the more active groups in the farm bill debate. Each paper was rigorously reviewed by three to five researchers familiar with the topic. In addition, the papers were sent to 15 Washington, D.C., lobbyists for a political reality check.

A second meeting of the ACA working group was held in June in DeKalb. The group heard summaries from all of the white paper authors and a report on political realities of the 1995 Farm Bill. The group then identified criteria to use in judging proposals for the 1995 Farm Bill:

- Programs must be acceptable to producers, and the resulting environmental benefits, particularly on land that needs to be targeted, must be acceptable to the public.
- Programs should have a positive effect on rural job markets and agriculture's competitiveness in the world markets.
- Programs must be based on strong technical knowledge.
- The government must be able to both pay for the program and provide knowledgeable staff to administer it.

- Programs should have appeal for key legislators, administrators and citizen participation groups whose support is needed for legislative acceptance.
- Programs should be compatible with similar existing state and local programs and easily understood by participating farmers.
- Impediments to conservation practices should be removed.
- Policies should reflect the full environmental and social costs of implementation.
- Programs must ensure food security.
- Individual producers should be guaranteed some flexibility to achieve goals within the program.

These criteria will continue to be used by AFT as we evaluate various farm bill initiatives.

## The ACA White Papers

*The ideas that received the highest priority ranking from the working group were voluntary programs that direct payments to farmers in return for some sort of environmental benefit -- the "green payments" approach. How farmers would be certified to receive payments was the highest-ranked priority.*

The ACA working group participants identified nine ideas worthy of further research. What follows is a quick summary of the papers AFT commissioned:

**Green Ticket Certification Program**: *Dr. Charles Benbrook.*
Green Ticket Certification could play a modest or major role in the implementation of future farm programs and policies. GTC would set environmental and resource conservation performance standards that a farm would have to meet in order to qualify for certain benefits (higher cost-share rates, interest rate buy-downs, real estate tax breaks, etc.). The costs are estimated at between $1,000 to $3,000 per average size farm. Dr. Benbrook concludes that GTC will be worth its cost only if it is farming system and performance based, if it remains flexible and open to on-farm innovation and if it focuses on the management of biological processes with the ultimate goal of building soil quality and improving the efficiency of farming systems.

**Green Payments Approaches:**

Green payments have been defined as voluntary programs that direct monetary payments to farmers or landowners for the provision of some sort of environmental benefit (Lynch and Smith, 1994). Federal programs that currently qualify as green support programs include the Conservation Reserve Program, the Water Bank Program, the Wetlands Reserve Program and the Water Quality Incentives Program.

The ACA working group heard about two novel forms of green payments, the Conservation Credit Initiative and the Environmental Stewardship Incentives Program. We decided to analyze both programs:

**Conservation Credit Initiative**: *Kim Sullivan*
The Conservation Credit Initiative, which offers property tax credits to farmers who voluntarily agree to implement conservation plans, has been successfully tested in several counties in Wisconsin. The pilot projects have had strong support from participating farmers, some of whom had never participated in other government programs. The modest incentives (a property tax credit of about $5 per acre) coupled with administrative costs totaling only 3 percent of the program budget make CCI a potential bargain.

**Environmental Stewardship Incentives Program:** *Bryan Petrucci*
The concept of an Environmental Stewardship Incentives Program (ESIP) was proposed two years ago by the Illinois Corn Growers and Illinois Farm Bureau. AFT did some preliminary work with these groups in March 1994 to develop operational characteristics on how such a program might function. Basically, ESIP offers several levels of payments to farmers based on the complexity and completeness of implemented conservation plans. ESIP is still in the concept stage and pilot testing will have to be done to determine if it will work.

*Programs in the 1990 Farm Bill that the working group felt merited further consideration included the Water Quality Incentives Program, the Integrated Farm Management Program and the SARE Program.*

**Water Quality Incentives Program**: *Drs. Steve Kraft and Chris Lant*
The Water Quality Incentives Program was authorized in the 1990 Farm Bill. Farmers who agree to work with the Soil Conservation Service in the development and implementation of multi-year water quality protection plans receive technical assistance and a per-acre incentive payment of up to $3,500 for three to five years. To date, a large majority of farmers who would be eligible for the program are not interested in it. The authors recommend a number of administrative changes, additional funding to support SCS in developing WQIP plans, possible shifting of WQIP from a voluntary program to a cross-compliance program and greater involvement of farmers and environmental groups in the process of monitoring plan development.

**Integrated Farm Management Program**: *Dr. Michael Duffy*
The Integrated Farm Management Program was also offered as an option in the 1990 Farm Bill. The purpose of the program was to encourage feed grain farmers to plant resource-conserving crops. Under the IFM program, farmers can plant 20 percent of their commodity program base to an approved (USDA SCS) resource-conserving crop, harvest and market it, and still receive deficiency payments and maintain base acre histories as if they had planted the program crop. Participation has been dismal. Dr. Duffy speculates that farmers who needed a rotation crop already had a base that reflected that rotation, that many farmers did not understand or know of the program, that farmers were unwilling to change cropping patterns simply for program benefits and that farmers were unwilling to make major changes for marginal benefits.

**Sustainable Agriculture Research and Education**: *Dr. Neill Schaller*
The Sustainable Agriculture Research and Education program first ap-

peared in the 1985 Farm Bill. It introduced a unique funding and review structure whereby farmers and regional representatives from the agricultural and environmental communities could be directly involved in research on sustainable farming systems. By and large, SARE has been quite successful. However, Dr. Schaller concludes that its full potential is restrained by lack of federal support, difficulties of addressing certain research needs and the program's declining uniqueness. He argues that 1995 Farm Bill provisions need to clarify and simplify SARE's authority, improve USDA coordination, elevate the SARE program in USDA's organization, strengthen the role of extension education and reinforce ties between research and extension agencies.

*The working group also showed interest in three novel approaches: eliminating base acreage (Revenue Insurance/ Assurance), combining land retirement strategies (Environmental Reserve-Rural Land Trust) and taking a more flexible approach to short-term land retirement (inter-farm transfer of ACR acres).*

**Environmental Reserve - Rural Land Trust**: *Liz Mansager*
The Environmental Reserve-Rural Land Trust Program is a new concept that would combine the many separate conservation and land retirement programs into a unified program to allow both short-term and long-term environmental goals to be addressed. Objectives include 1) improving cost-effectiveness by maximizing the net environmental benefit of cropland set-asides and retirement programs; 2) continuing supply management; 3) protecting farm income; 4) increasing commodity program flexibility; and 5) removing the most highly sensitive cropland from intensive production. As conceived, the program would not increase current federal expenditures and not result in any significant income transfer or loss of income among producers.

**Revenue Insurance/Assurance**: *Dr. Otto Doering*
Two similar guaranteed revenue programs are being discussed to replace current farm programs. In revenue insurance, gross revenue is guaranteed while in revenue assurance crop yield risk and price risk are separately insured. Both programs offer the opportunity to reduce the costs of current programs from $6-7 billion/year to $4-5 billion for revenue assurance or to less than $4 billion under revenue insurance depending upon the contribution made by farmers. Acceptability of guaranteed revenue programs will largely depend upon the political will of Congress.

**Inter-farm Transfer of Acreage Conservation Reserve Acres**: *Dr. Darrell Good*
USDA's annual Acreage Reduction Program requires participating producers to devote a percentage of their crop bases acreage to conserving uses. The inter-farm transfer of acreage conservation reserve acres would work by allowing the transfer of conserving use acres from highly productive farms to more environmentally sensitive farms in return for payment for production rights. It is somewhat analogous to trading pollution credits in the industrial sector. Such a transfer would increase overall net farm returns without changing the level of crop production. Increased net farm returns would generate increased income tax revenues to federal and state governments. Transfers could also advance conservation objectives. On the negative side, significant reductions in crop production in a particular area could adversely impact related agricultural industries and therefore the local economy. Limitation on cropland transfer might be required.

## Toward Consensus:

*The 1995 Farm Bill might simply involve fine-tuning the current legislation **or** it may involve significant overhauling of the commodity programs, including decoupling payments from crops.*

As the working group concluded its June meeting, some broad areas of agreement evolved based on the white paper findings. We agreed that no one could accurately predict the shape of the next farm bill but that budget and environmental issues would be significant factors. We also agreed that the 1995 Farm Bill might simply involve fine-tuning the current legislation **or** it may involve a significant overhauling of the commodity programs, including decoupling payments from crops.

Although details must still be developed, the working group reached preliminary agreement that:

- Some level of income support/stabilization is necessary (and justifiable) to assure the nation of a dependable food supply, but decoupling from specific commodities is desirable.
- Tying public support to conservation is worth further consideration.
- Any shifting of current program benefits to conservation initiatives must be accomplished without losing any more funding in agriculture.
- Any re-allocation of funds should provide for more state-level discretion in setting environmental priorities.
- Increasing flexibility in crops grown and acres used in response to market signals offers the potential to improve competitiveness and environmental quality.
- To meet environmental goals and avoid supply and price disruption, a substantial conservation reserve must be available to farmers nationwide.
- Increasing management-intensive farming methods will necessitate a much broader public/private partnership (USDA agencies, state ag departments, land grant universities, private consultants) to provide the resources farmers will need.
- Compliance as a prerequisite to participating in farm programs will continue.
- Land retirement programs need to be addressed comprehensively.

## Next Steps: Greening the Farm Bill

The next steps for AFT will be to build upon the findings of the white papers and the recommendations of the ACA working group:

***I. Protect strategic farmland:*** Although the ACA working group did not consider or discuss farmland protection strategies, it is AFT's primary goal and remains our focus as we consider changes for the 1995 Farm Bill. A second working group has been established to identify policy options. Protecting farmland that is of unique value for food production provides critical environmental benefits and a foundation for healthy local economies.

***II. Reduce impacts to environmentally sensitive land:*** Current short-term and long-term land retirement programs should be blended into a comprehensive program that can focus more effectively and efficiently on protecting natural resources (*Environmental Reserve/Rural Land Trust*).

***III. Promote a sustainable agricultural system:*** The ACA working group realized the need and recognized the pressure to broaden the focus of the farm bill to include environmental stewardship (the "greening" of the farm bill). But they also felt caution and more research was needed to make this switch. AFT recommends a continuation of the current farm program (with some modifications) with a transitional option that includes whole-farm resource management, green payments (*Environmental Stewardship Incentives Program*) and maximum farm management flexibility.

*The production of environmental quality benefits is the most important new market opportunity available to American farmers.*

These recommended changes recognize that the production of environmental quality benefits is the most important new market opportunity available to American farmers.

Ideally, farmland should be managed for an optimum balance of soil productivity, farm income and environmental benefits; strategic farmland should be protected by local communities; and farmers and other taxpayers should cooperate to protect environmentally sensitive land for its intrinsic values. Acknowledging and enhancing agriculture's contribution to environmental quality and resource conservation is the first step in achieving this vision. It could be the issue that helps bring the agricultural and environmental communities together. And the stakes are high. As one of the white paper authors points out, "If the conventional agricultural community and the environmental community can work out their differences and strike stable compromises, they will be able collectively to defend a higher overall level of income transfer to agriculture than would otherwise be the case."

## References

American Farmland Trust. 1994. "Incentive-based Approaches for Resource Conservation: Briefing Papers." Agricultural Conservation Alternatives Working Group. February. DeKalb, Ill.

Lynch, S. and K. R. Smith. 1994. "Lean, Mean and Green: Designing Farm Support Programs in a New Era." Henry A. Wallace Institute for Alternative Agriculture, Greenbelt, Md. Preliminary draft, July 1994.

# ACA Project Participants

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# Rankings of Incentive-Base Approaches Considered by the ACA Working Group

At the meeting in February, each ACA working group member was given seven votes, ranked 7, 6, 5, 4, 3, 2 and 1. They were instructed to give the highest ranked vote to the most promising idea. The highest ranked ideas became topics for white papers.

| **Rank** (distribution of votes) | **Votes** (number voting)[1] |
|---|---|
| Green Ticket Certification Program<br>7,7,7,6,6,5,5,5,4,3,3,2 | 60 (12) |
| Green payments (CCI & ESIP)<br>6,6,6,6,5,5,5,4,4,3,3,1 | 54 (12) |
| Water Quality Incentives Program<br>6,5,5,4,4,4,4,4,4,3,2,1 | 46 (12) |
| Integrated Farm Management Program<br>7,7,7,6,5,4,2,1 | 39 (8) |
| SARE Program<br>7,6,6,5,5,5,3,2, | 39 (8) |
| Environmental Reserve/Rural Land Trust<br>7,7,6,3,3,3,3,2,1 | 35 (9) |
| Transferable set asides[2]<br>7,6,3,2,2,2,2 | 24 (7) |
| Revenue assurance<br>7,7,1,1,1 | 17 (5) |
| Transfer of base acres[2]<br>6,6,5 | 17 (3) |
| Research & Demo projects/exp. plots<br>5,4,3,2,1,1 | 16 (6) |
| MAX program<br>4,2,2,2,1,1,1 | 13 (7) |
| Risk sharing to encourage innovative practices<br>7,4 | 11 (2) |

| **Rank** (distribution of votes) | **Votes** (number voting) |
|---|---|
| Targeting farm program payments<br>7 | 7 (1) |
| Marketable permits<br>7 | 7 (1) |
| Know Your Watershed Program<br>3,1 | 4 (2) |
| Formation of grazing and wildlife co-ops<br>4 | 4 (1) |
| Crop insurance (Public/Private program)<br>2,1 | 3 (2) |
| Purchase of CRP land by beginning farmers<br>3 | 3 (1) |
| Targeting option programs | 0 |
| Yield Income Assurance for sustainable ag practices | 0 |
| CRP Alternatives:<br>Reduce rental payments for partial economic use | 0 |
| Transfer cropping rights from CRP to other acres | 0 |
| ACP loans for demonstration equipment | 0 |
| Tax credits for conservation equipment | 0 |
| Farm-A-Syst program | 0 |

[1] Duane Sand, Ray Brownfield and Ron Warfield were not present for the voting process.

[2] Transferrable set-asides and transfer of base acres were combined for one white paper topic.

# Credit Where Credit Is Due: Green Ticket Certification

## Charles Benbrook

*Dr. Charles Benbrook is the principal analyst and president of Benbrook Consulting Services, representing clients in the food, agricultural, public policy, international development, environmental and food safety arenas.*

*Charles Benbrook served from 1984 through 1990 as the executive director of the National Academy of Sciences Board on Agriculture; and from 1981 through 1983 as the staff director of the U.S. House of Representatives subcommittee responsible for food safety, agricultural research, and oversight of the U.S. Department of Agriculture in the U.S. House of Representatives. Before that, he spent two years as an agricultural policy analyst in the Council on Environmental Quality, an office within the Executive Office of the President.*

*During his professional career in Washington, Dr. Benbrook has overseen numerous studies on the food and agricultural sciences; regulatory issues and policy; farm and conservation programs and policies; and foreign agricultural development, trade and sustainability. He has spoken and written on a wide range of science, technology and regulatory policy issues.*

*Dr. Benbrook holds Ph.D. and master's degrees in agricultural economics from the University of Wisconsin-Madison, and a B.A. in economics from Harvard University.*

# Credit Where Credit Is Due: Green Ticket Certification

## Abstract

**Green Ticket Certification could play a modest or major role in the implementation of future farm programs and policies. GTC importance will rise if Congress chooses an incentives-based voluntary approach in rewarding stewardship, uncouples environmental benefit payments from commodity program participation and re-directs a meaningful portion of commodity program expenditures through various forms of "Green Payments." GTC will require specification of a set of environmental and resource conservation performance standards which, if attained, would qualify a farm for certain benefits (higher cost-share rates, interest rate buy-downs, real estate tax breaks, etc).**

**GTC would be a logical next step in the "greening" of farm policy. It would likely be favored by the farm community as long as traditional conservation partners retain control over the process. It is less certain how GTC and Green Payments will fit into the budget; a meaningful program worth administrative costs would require re-direction of 20 percent or so of commodity program funding. Also uncertain is whether and how much environmental improvement such a program might bring about.**

**The advantages of GTC could include: (1) relative ease of implementation, especially if benefits are offered exclusively to producers voluntarily applying for certification and agreeing to abide by specified GTC conditions (adoption of certain practices; attainment of certain performance standards); (2) recognition and financial rewards for farmers committed to high levels of stewardship and environmental protection, so that these producers, long penalized under existing commodity program rules, can compete more effectively for land; and (3) the opportunity to shape the scope and mechanics of a new social contract between farmers and society. Over time, GTC could become a valuable farm asset guaranteeing access to the only accounts in "Bank-USDA" likely to grow in the future.**

**Enormous effort will be needed to craft a GTC process. Initial certification will cost $1,000 to $3,000 per average-sized farm. GTC will be worth its cost only if it is farming system and performance based, if it remains flexible and open to on-farm innovation and if it emphasizes management of biological processes, with the ultimate goal of building soil quality and improving the efficiency of farming systems.**

# Introduction

Since the 1985 Farm Bill, federal payments to farmers have increasingly been made in the name of resource conservation and environmental protection. Today, payments for land enrolled in the Conservation Reserve Program make up 20 percent or more of total USDA payments to farmers in many counties; nearly 100% of commodity program payments are now contingent upon adherence to conservation plans and sodbuster and swampbuster rules.

To gain passage of the 1995 Farm Bill, the political process is likely to require that a greater portion of USDA payments to agriculture move through overtly environmental programs. A range of compliance provisions are likely to be tightened and some new ones may be imposed, perhaps through a GTC process. The extension of the CRP and expansion of the wetland reserve will be key "big ticket" budget items. The most important "new ground" awaiting the Congress is water quality protection. Need for a significant national effort to reduce farm runoff is widely accepted, but there is no consensus on how, or who will pay for needed practices. A water quality focused GTC program could emerge. Complex institutional and administrative issues lie ahead, such as who will oversee and enforce the integrity of GTC?

*Green Ticket Certification must challenge farmers to take conservation to the next level, and then deliver fair and meaningful rewards **only** to those who deliver on the promise to be exemplary stewards.*

To work, GTC must avoid mistakes made in implementing conservation compliance. GTC must challenge farmers to take conservation to the next level, and then deliver fair and meaningful rewards **only** to those who deliver on the promise to be exemplary stewards.

As the farm bill debate unfolds, many different visions of GTC will surface. Consequences, costs and political feasibility will vary greatly. Consensus will emerge leading to legislative language only as the discussion shifts from concepts to practical applications. Congress needs to establish, at the federal level, the basic processes and decision rules that must shape and govern specific applications of GTC. It should resist appeals from constituent groups to address all questions that will arise regarding what might be required of producers, what will they gain and how will they be held accountable. These questions can only be dealt with at the regional, state and local levels; attempts by Congress to predict outcomes or reassure nervous commodity or farm groups or skeptical environmentalists are bound to create several new problems and distortions for each one resolved.

The generic characteristics of GTC that will heighten the chance of success in a specific application are simplicity, flexibility to respond to unique regional problems and changing needs in a given season, fairness and focus on farming systems. GTC should be authorized as a tool that conservation agencies at the federal, state and local levels can deploy voluntarily and selectively when and if a consensus emerges that GTC is an

efficient way to help meet local needs. The possible combinations of conservation needs, practices, benefits and performance standards that could be addressed through GTC are mind-boggling. Congress can steer clear of paralyzing complexity by focusing on process, decision rules and appropriate mechanisms to guarantee participation and accountability down the line.

*GTC **must** be based upon explicit definition of required performance standards and how attainment of them will be monitored or measured - and enforced - at the farm level.*

GTC in a watershed, a region, or for producers of a given crop across the nation **must** be based upon explicit definition of required performance standards and how attainment of them will be monitored or measured -- and enforced -- at the farm level. Standards and enforcement mechanisms need to be creatively selected. The best mechanism will be a simple one that yields generally accurate results through simple, easy to apply, low-cost field-based methods. More complex, rigorous methods can be invoked in special cases when needed to settle disputes or carry out research on GTC program impacts, costs and benefits.

Complex questions and tough politics lie ahead. Addressing water quality will be much more difficult technically and institutionally than reducing erosion. "Green Payments" will no doubt receive much attention. Determining what farmers must do to receive "Green Payments," and whether they are doing it could become known as "Green Ticket Certification."

**Program Roles** GTC could play a number of different roles in administering agricultural policy. Such certification could --

- Qualify farmers for Green Payments (new benefits, to be defined, and/or old benefits re-packaged or enhanced).

- Ensure farmers continued eligibility for existing payments and federal benefits.

- Lessen the paperwork burden imposed on farmers through other programs, and/or trigger a greater sharing of risk, monitoring or liability by government.

The impacts of GTC will depend on the consequences of certification, or lack of it. In this paper, I assume that there will remain a "baseline" set of erosion and environmental protection requirements imposed through compliance-like provisions and other laws; that Congress offers several new environment and conservation programs and payments; and, that some new obligations, paperwork burdens and potential penalties will be authorized.

Further, I assume that the standards and process leading to GTC will be defined in a generic section of the farm bill and encompass erosion control, water quality management, use of integrated pest management and improvement of wildlife and riparian areas. Further, I assume that over time GTC farmers will find it easier and more rewarding than non-GTC

farmers to participate in USDA programs.

## Economic Impacts

GTC will cost money. Its value must be thoughtfully weighed against its costs, since the process of certification, itself, will neither save soil nor improve water quality. It will divert farmer time away from management and government employee time away from on-the-ground assistance. GTC will have value only if the opportunity to gain certification changes behavior, or rewards those already doing an exemplary job so they are more likely to remain in farming and compete for available land.

*GTC will have value only if the opportunity to gain certification changes behavior, or rewards those already doing an exemplary job so they are more likely to remain in farming and compete for available land.*

Erosion control compliance planning has cost more than $1 billion, averaging several thousand dollars per farm. Many plans have already been revised three times. It is too early to judge fairly the value of this investment. The true test of compliance must await $4 corn and wheat and $10 beans. But we know already that it is easy to waste money in meaningless planning and certification. Lessons learned since 1985 must be heeded.

**Farm Level** The additional planning and record-keeping required to attain GTC is likely to cost from several hundred to a few thousand dollars per farm, depending on farm size and complexity. First-time certification would cost significantly more than annual updates and renewals, which need not cost more than $1 per acre. Surely, GTC will not cost more than organic certification, which requires development of a comprehensive farm plan, annual inspections and the tracking of foodstuffs from farm to market. For commercial-scale organic farms, certification costs are from 0.5 percent to 1 percent of sales, plus a small fee ($25 to $100 per farm). It is hard to imagine administrative costs of even a "Cadillac-style" GTC program costing more than half that of organic certification.

Suppose that a farmer hires a local consultant who works for $300 per day to carry the farm through the GTC process. A half-day might be needed for the farmer to provide records of the farm's conservation plan/practices, nutrient management plan and other relevant practices and records. The consultant might need one day to do the application, and half a day to present it and answer questions. Another half a day might be required for a farm inspection visit. If the farmer's time is valued at the same rate as the consultant's, the total cost would be some $900. The total cost to attain GTC would be greater, of course, if the farmer had to develop additional records to gain the certification, carry out monitoring, or if additional practices were required. Costs would be weighed by each farmer against prospective benefits.

If GTC qualified a farmer for, on average, 20 percent higher benefits, a farm receiving regular benefits of $4,500 would regain the full $900 from the 20 percent jump in benefits. Since most full-time farmers are receiving at least 10 times this level of benefits, the added administrative cost of

GTC would not be a major factor. It is also likely that the Congress will include some cost-share funding for Integrated Farm Planning, which could defer all or most of the cost of water quality planning, organic certification, and a GTC process, if authorized.

It remains to be seen how much change GTC might bring about in farming system design and annual management decisions. Many factors will influence such decisions in different regions and applications. Congress and federal agencies can not guarantee success, but can enhance the odds that people of goodwill, local institutions, communities and farmers with a sincere desire to deal with local problems will prevail in the end.

**Local Level Impacts** GTC could play a positive role by showcasing stewardship. If GTC leads to significant changes in farming systems, it could have local-level impacts on the demand for certain inputs and services, especially those needed to more carefully calibrate nutrient management. The process will create a few jobs. The farming systems required to retain GTC will be somewhat more management and information intensive, over time shifting about 10 to 20 percent of cash expenditures from inputs to investments in management, some of which would support people. A row crop farmer spending $80 per acre on inputs might redirect $8 to $16 per acre to information-based services, about twice the fee charged by most crop consultants offering integrated crop management services. A 500-acre farm would generate perhaps $2,000 to $5,000 income for a consultant; 4,000 to 8,000 acres would support a single consultant.

*The tough political call in crafting the 1995 Farm Bill will be the redirection of money -- from whom, to whom and for what.*

**State and Federal Impacts** Again, GTC itself is not likely to significantly alter the level or distribution of benefits under the 1995 Farm Bill. It is an administrative option that could be used to redirect program payments to farmers willing to attain a higher level of stewardship. The tough political call in crafting the 1995 Farm Bill will be the redirection of money -- from whom, to whom and for what. GTC is, in contrast, mechanics.

If a significant portion of federal farm programs become contingent on GTC, or if large sums are moved to green payment channels uncoupled from commodity programs, several impacts could become significant. But again, these will arise from basic decisions by Congress to broaden or change the flow of the current subsidy stream. If Congress decides that water pollution from intensive livestock operations must be remedied, some shift of federal expenditures from predominantly crop to livestock and mixed farms could emerge as necessary. If coastal areas emerge as a high priority, or drinking water recharge areas became most important, regional shifts in the distribution of benefits might result.

**International Competitiveness** Over time, GTC might strengthen the United States' position modestly in international markets. It might enhance the credibility of the U. S. government when it pleads for a higher degree of resource stewardship as a component of sustainable development. GTC-conditioned payments would fall within those acceptable un-

der the General Agreement on Trade and Tariffs, and could move the United States in a positive direction. Within North America, it is conceivable that the environmental performance of farming systems could become a factor in the resolution of trade disputes and tensions.

## Other Impacts

The impacts of a GTC will be determined by what percent of federal farm program payments are conditioned, one way or another, on such certification. The difficulty and cost of attaining certification will also determine whether it's a paper tiger, or just another authorized but largely ignored farm policy provision. GTC is probably not worth doing unless at least 15 percent, and preferably closer to one-third, of total farm subsidies are redirected to certified producers. Farmers with GTC should receive per acre, or per practice payment rates that are meaningful relative to cost, say 20 percent higher than non-GTC farmers; some benefits should be exclusively open to GTC-operations, like property tax relief. What might result?

**Environment** GTC could require both broader and stricter conservation and environmental improvement standards. Compared to a farmer who just meets minimal program and compliance provisions, a GTC farm operation might agree to --

- Reduce erosion to, or below, T-values on **all** land (not just highly erodible land), and attain erosion rates 15 to 30 percent lower than neighboring farms.

- Adhere to a comprehensive nutrient management plan, achieving efficiencies of nutrient use at least 10 percent higher than neighboring farms (i.e. 80 percent, instead of 70 percent efficiency of N-use; limiting manure applications to ensure that neither N nor P is applied in excess).

- Manage field borders, waterways, riparian zones and wetlands to maximize wildlife and aquatic ecosystem benefits.

- Utilize integrated pest management and rotate crops, use cover crops and employ other practices to lessen reliance on pesticides, cutting average pesticide use to one-third of county averages for similar farms.

In setting the "rules" for GTC, Congress might establish a generic goal that a GTC farm should strive to attain a level of conservation, source reduction or environmental enhancement that is 30 percent greater than the change expected through "baseline" compliance. Creative thinking will be needed to translate such a goal into concrete program guidelines, especially when addressing difficult-to-quantify phenomena for which it is difficult to establish a baseline or to determine how to measure change from

*In setting the "rules" for GTC, Congress might establish a generic goal that a CTC farm should strive to attain a level of conservation, source reduction, or environmental enhancement that is 30 percent greater than the change expected through "baseline" compliance.*

one farming system to the next. Congress should acknowledge that such difficulties will arise and provide guidance on how local institutions can manage around such problems.

**Equity, Fairness and Farm Structure** Two potential impacts at the farm level warrant consideration. GTC will probably require rigorous attention to resource limits, some monitoring, good records and a higher level of management. Some smaller and part-time farmers may have a hard time meeting GTC requirements, even if they are doing an excellent job. If larger farms are better able to "work the system," they may come to command an even larger share of subsidies, perhaps further jeopardizing medium-sized farms. Because big farms contribute so much more to a region's environmental quality than small farms, a case could be made for somewhat stricter large-farm GTC standards.

Second, GTC could finally restore a higher degree of fairness to the federal farm subsidy stream by providing economic rewards for those innovative, committed farmers who "over-subscribe" in controlling erosion, improving wildlife or riparian habitat and building the inherent productivity of the soil. As water quality rises in importance as a goal, progress could be judged on a watershed basis, heightening mutual dependence across farms. About 65 percent of land is farmed by tenants; a difference in $5 to $10 per acre in rent would shift a lot of land from one tenant to another. The cost of GTC and the systems required to attain it might make it hard to offer competitive rental rates. Over time, more land might be farmed by those more interested in cutting costs than enhancing environmental quality. For this reason, GTC coupled with meaningful financial rewards could remove a long-standing bias in federal farm policy and would strengthen the capacity of good stewards to bid successfully for rented ground.

**Food Security Impacts** In the near term, GTC would have limited impacts on levels or patterns of production. In the long run, it could increase the diversification of farming enterprises and productive potential, because farmland managed under such systems is likely to build soil quality while making fuller use of marginal areas, whether for forage, livestock or wildlife.

*A major advantage of GTC is the potential for broad political appeal. GTC is a logical next step in the linkage of conservation and commodity policy. It is an extension of concepts put in place in the 1985 Farm Bill, and refined in 1990.*

## Acceptability

A major advantage of GTC is the potential for broad political appeal. GTC is a logical next step in the linkage of conservation and commodity policy. It is an extension of concepts put in place in the 1985 Farm Bill and refined in 1990. Despite the USDA's spotty record in the implementation of compliance, ample progress has been made to justify a broadening of the experiment.

**Farmer Acceptance** Surveys now show that most farmers accept the concept behind compliance. Support is likely to be strong for GTC, unless

the rewards are perceived as modest relative to the cost and/or the process is seen as rigged against farmers.

Some will argue for the targeting of green payments to family farmers and the imposition of what amounts to "unfunded mandates" on large farms. There is an inherent conflict between the social justice agenda favored by the Sustainable Agriculture Working Groups and those wishing to reform farm policy to maximize environmental benefits. Proponents of each agenda will recommend redirecting existing subsidies. Each wheat or corn deficiency payment dollar can be redirected only once, and it will take a strong case and committed political coalition to achieve any re-direction. Mixing social justice and GTC goals may well erode farmer acceptance and support for either.

Farmer acceptance will also be driven by who sets the standards imposed to attain GTC, and who will be responsible for enforcement. Acceptance will be high to the extent farmers believe in the inherent fairness and technical competence of the agencies, institutions and people responsible for carrying out GTC, especially at the local level. Other factors will be key -- freedom to respond to changing conditions; rules that accommodate unpredictable circumstances; encouragement of on-farm innovation as long as performance standards are met or exceeded; a reasonable process to resolve disputes over requirements or circumstances; and penalties that roughly "fit the crime."

**Public Acceptance** The public wants progress, and is increasingly impatient with bickering among special interests. A GTC proposal that is supported by most farm groups and environmental organizations will, in all likelihood, command public acceptance, at least initially. Public willingness to continue providing the same level of financial support to agriculture is uncertain. In general, a credible GTC will surely increase the chances of sustaining existing income transfers.

**Political Acceptance** In theory, GTC could be embraced by Congress as another step along a path begun in 1985. Once the bill starts taking shape, few people will pay attention to the details of a GTC program; acceptance will be governed by the position of a few well-placed groups on both sides of the debate. If there is strong opposition to GTC, the idea will drop by the wayside; if support remains strong and broad-based, it will be included in the farm bill package. It remains to be seen what it will take to gain enough votes to ensure final passage of another omnibus farm bill.

More so than before, the conventional agricultural community needs environmentalists to defend income transfers, and the environmental community needs the agricultural community's support to redirect pure commodity subsidies to continue the CRP, expand the wetland reserve, undertake a major water quality initiative and/or support Green Payments. If these constituencies can work out their differences and strike stable compromises, they will be able collectively to defend a higher overall level of in-

*If the conventional agricultural community and the environmental community can work out their differences and strike stable compromises, they will be able collectively to defend a higher overall level of income transfer to agriculture than would otherwise be the case.*

come transfer to agriculture than would otherwise be the case. The prospect of mutual gain will need to be credible, perhaps even compelling, to overcome mutual distrust and hold a consensus together in today's volatile political environment.

## Ease of Implementation

GTC is one of several ways to build a higher degree of environmental conditionality into the flow of federal dollars to farmers. It is likely to entail the same sorts of practices, records and enforcement efforts as other alternatives. What about the comparative ease of GTC?

**Agency Roles** GTC could be among the simplest options for agencies to implement because it is voluntary. The farmer would need to apply and make the case that GTC is justified. In response to the application, the implementing agency could make explicit the performance standards that will be used to judge and enforce compliance. As a consensual agreement, there is likely to be less bickering over fairness and fewer political attempts to end-run the rules. The tendency of government to excessively complicate the process in an effort to appease political undercurrents should be carefully monitored and, when necessary, resisted.

**Clarity of Rules** Again, GTC should be relatively easy to structure and administer. The challenge will be in defining what must be done to attain GTC and in customizing such requirements to the unique resource endowments and systems across the rural landscape. The toughest challenge will be deciding how to set goals that will challenge yet remain acceptable to farmers. Enforcement of GTC plans and requirements may pose a few additional technical burdens, but will likely be accomplished with the same tools and concepts used for other purposes.

*The ability to match GTC requirements to unique farming needs and capabilities will be a critical challenge.*

**Program Flexibility at Local Level** The ability to match GTC requirements to unique farming needs and capabilities will be a critical challenge. Cost to farmers and effectiveness to society will be a function of flexibility. An overly rigid program will lock some farmers into environmentally damaging and/or costly actions, and will raise the benefits per acre needed to get producers interested in the program. Lax rules and excessive flexibility will undermine GTC's reward structure and would quickly erode environmental support.

**Timeliness of Impact** A GTC program could be developed and implemented more quickly than many other approaches because it is a straightforward new "contract" between producers and society. Much of the resistance and difficulty in implementing the 1985 compliance provisions arose because existing benefits were placed in jeopardy. But GTC could be coupled with new benefits, in effect restructuring the social contract between farmers and society. Just as the case with the CRP in 1986, USDA can move quickly if its actions govern whether and when farmers will gain access to appropriated federal dollars.

# Conservation Credit Initiative

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# Conservation Credit Initiative

## Abstract

**The Conservation Credit Initiative offers property tax credits to farmers who voluntarily agree to apply approved conservation plans. When land is enrolled in the program, farmers go through a process of planning and implementation to reach conservation goals on their land. Once these goals are met, a property tax credit is issued by the county government.**

**Farmers sign up with their county on an annual basis by filling out a one page application. Producers work with county officials to choose conservation practices that will best suit the needs of their operations. The farmers themselves are fully responsible for implementing the plan and paying any costs associated with the adoption of required practices. In order to receive the tax credit, all cropland on enrolled farms must comply with state and federal soil loss standards.**

**On average, participating farmers receive a property tax credit of about $5 per acre. Program advocates claim that the payment is more of a psychological incentive than a financial one. Based on the popularity of the program where it has been offered in Wisconsin pilot counties, CCI offers enough of an incentive to draw significant farmer participation. The modest incentives given to participating farmers, coupled with administrative costs totaling only about 3 percent of the program budget, help keep the cost of implementing CCI low.**

**This program has been successfully implemented on a pilot basis in Pepin and sections of 10 other central Wisconsin counties. The pilot projects, one of which began in 1984 and the other in 1989, have received strong personal support from participating farmers, some of whom had never participated in other government conservation programs.**

# Introduction

The Conservation Credit Initiative is a voluntary soil erosion control program that rewards farmers who maintain sound conservation practices on their agricultural land. CCI has been tested in two Wisconsin pilot programs and has reduced soil erosion. Currently, plans are underway to broaden the scope of CCI to include a Water Quality Initiative component in one of Wisconsin's pilot counties.

# How CCI Works

*Under CCI, farmers voluntarily commit themselves to applying a conservation plan geared to meet specific needs of the land.*

The basic idea behind CCI is that farmers should be rewarded for voluntarily protecting natural resources. This program offers incentives to farmers who take a proactive stewardship approach, instead of merely addressing problems after they have occurred. Under CCI, farmers voluntarily enroll in the program and commit themselves to applying a conservation plan geared to meet specific needs of the land. Farmers must enroll all of their cropland in the program in order to be eligible for participation.

The plans are individually designed to reduce soil erosion to tolerable soil loss levels ("T"). Farmers themselves are responsible for any costs associated with implementing their plans. Once the goals of the conservation plan are met on all of a farmer's land, tax credits or vouchers are issued that have ranged from $3 to $9.50 per enrolled acre.

Farmers in Wisconsin file applications with their county Land Conservation Committee. It is the responsibility of this committee to either approve or reject applications. LCC personnel are also responsible for providing technical assistance in the planning and installation of conservation practices listed in CCI applications. The personnel cost of such assistance is shared with USDA Soil Conservation Service. There is no charge to the farmer for this help.

*Once the goals of the conservation plan are met on all of a farmer's land, tax credits or vouchers are issued that have ranged from $3 to $9.50 per enrolled acre.*

Participating farmers complete and submit new applications each year. Conservation provisions in the plan are evaluated at the time of application to allow for changing conditions from one year to the next. If, during the agreement period, the land is sold, the new owner can assume the agreement, as long as he or she promises to adhere to the conservation provisions detailed in the application.

Because new applications must be submitted every year, there was initial concern that farmers would go in and out of the program from year to year, depending on commodity prices. This concern was alleviated by requiring a farmer who drops out of the program to wait three to five years before being re-admitted.

Currently, administrators of the Central Sands pilot project are doing spot checks on all participating farms. Since this is impractical for a long-term, large-scale project, the plan would probably require that all participants be checked in their first year of participation, with only a certain percentage spot-checked each year thereafter.

The CCI pilot program was in effect for seven years in Pepin County, Wis., from 1984 to 1991. The second pilot program started in the Central Sands area in 1989 and is still in effect. Currently, plans are underway to re-establish the program in Pepin County. The program will expand to include protecting water quality, in addition to preventing soil erosion. Under the new program, all participating Pepin County farmers will be required to have soil erosion, nutrient and pest management plans. In addition, farmers with excess manure must have contracts with other farmers allowing them to apply manure to their fields. Another part of the program will provide for free technical assistance in the use of the Farm*A*Syst[1] water quality evaluation system.

*Shared participation among different levels of government is an integral component of CCI's basic philosophy.*

With the addition of water quality requirements, the Pepin County program plans to use a graduated credit system, partly in order to encourage farmer participation in targeted watersheds. The proposed incentive levels will start at $2 per acre for compliance with the soil erosion component of the plan. An additional $4 per acre will be available once the nutrient management plan is carried out. Another $2 per acre is offered for perennial streambank management and $1 for upland intermittent stream management. In addition, when 75 percent of a watershed is protected, all enrolled farmers will receive a $0.25 bonus per acre. Another $0.25 bonus will be given once 85 percent of the watershed is protected. With this system, a maximum total payment of $9.50 per acre will be possible (Plummer, 1994, p.2).

Funding for the Conservation Credit Initiative will be provided cooperatively by local, state and federal governments. In the case of Pepin's Water Quality program, the Land Conservation Department, SCS and the University of Wisconsin Extension will supply technical assistance for the program. County, state and federal governments will each be responsible for contributing one-third of the cost for the conservation credits (Plummer, 1994, p.9).

This type of shared participation among different levels of government is an integral component of CCI's basic philosophy. The program is administered at the local level and a separate team made up of federal, state and local representatives conducts an annual audit of operations and a program evaluation, as well as verifying compliance with the standards established by funding agencies. Annual evaluation results are shared with the local conservation partnership responsible for program administration in order to promote an ongoing quality improvement process.

The local conservation partnership that administers the operation of CCI

is made up of the LCC, USDA-SCS, the Wisconsin Department of Natural Resources and other advisory groups, such as grassroots environmental organizations, conservation clubs and interested representatives from private industry. This allows CCI to address local conservation needs and the regional differences among farm enterprises.

*Vouchers for agricultural services or goods could be used as incentives instead of tax credits in states with low property taxes.*

As with any program, CCI has provisions for dealing with violations stemming from non-compliance and appeals of violation rulings. Information that a violation has occurred is reported to the Soil and Water Conservation District, LCC, SCS or other cooperative groups. The SWCD or LCC is required to determine if the violation has, in fact, taken place, and if termination of the agreement is warranted. If a report and notice of findings are filed, and a violation is verified, the participating farmer has the right to an appeal. The appeal takes the form of a hearing, at which a non-SWCD/LCC hearing officer must preside. It is suggested that a county attorney serve this function.

Only after all the provisions in a conservation plan have been successfully implemented is a credit issued. Participating farmers are required to self-certify that the provisions of their applications have been met. In Pepin County, once the terms of a conservation plan were met, a property tax credit of $3 per acre appeared directly on a farmer's tax bill. This system had a strong psychological impact on participating farmers, as it provided a tangible, if financially modest, reward for responsible conservation behavior. Each year, the county reimbursed lost revenues to each township to make up for these credits. The funds used by the county were authorized under the Soil and Water Conservation Act of 1977 and provided by SCS (LCC/SCS, 1993, pp 1-2).

When the new CCI program starts up again in Pepin County, a voucher system will probably replace the direct property tax credit. The voucher may be used for any number of things, from paying for services provided by private agricultural consultants to buying goods at the local co-op. Part of the work involved in the local planning for CCI will be identifying and soliciting the help of local agricultural service providers interested in accepting vouchers in exchange for their goods or services. The voucher system may be particularly useful as an incentive in states where property taxes are lower than in Wisconsin.

The CCI program is very flexible, allowing it to be integrated easily into other conservation programs. In addition, the program encourages an ongoing maintenance philosophy, instead of merely asking farmers to commit their land for one, five, or ten years.

## Program Implementation

*During the time the program was in place, average annual cropland soil loss dropped by 72 percent. In addition, participation exceeded that in state and federal conservation programs.*

The Pepin County, Wis., pilot project was very successful in reducing soil erosion on agricultural land at a low cost. During the time the program was in place, cropland whose erosion was less than "T" went from 49 percent up to 86 percent, and average annual cropland soil loss dropped by 72 percent (Griswold, 1994, p.19). These figures are based on LCC and SCS estimates of annual soil losses (tons/acre/year). In addition, participation in this voluntary program exceeded participation in state and federal conservation programs. A total of 193 Pepin County farmers participated in the first five years of the program (Griswold, 1991, p. 21-22). This represents just over 73 percent of the County's eligible landowners. In contrast, only 33 percent of eligible county landowners participated in Wisconsin's Farmland Preservation Program, another voluntary program that uses lowered property taxes as an incentive to apply conservation practices to farmland (Griswold, 1991, p.48).

The cost of this program in Pepin County was found to be exceptionally low, with administrative costs accounting for only about 3 percent of the total program budget. The program costs expressed below are in terms of hours, rather than dollars. This way, Pepin's results can be easily translated into meaningful cost estimates for different parts of the country.

In order to provide administrative services to 193 participating landowners for the first five years of this pilot program, Pepin County required 1,180 hours of work. These administrative hours were used for such purposes as farmer sign-up, farmer certification, and information and education. Nearly half of these administrative hours were spent in the first year of the program. The second year required only 215 hours for administration. By the fourth year, administrative time was down to 172 hours. Most of the decrease in time requirements over the years came from farmer sign-up. Sign-up decreased from 187 hours in year one to 10 hours by year three of the program (RCGSRCDA, 1993, p.10).

Technical assistance for CCI in Pepin County required a total of 3,679 hours for the entire first five years of the program, with work hours divided between the LCC and SCS. Once again, the time requirements were highest for the first year of the program, going from 2,681 hours in 1984 for planning, installation and spot-checking, to 255 hours in 1988. Planning rates for CCI were 12 acres per hour, significantly higher then the previous field office rate of four acres per hour for conservation planning (RCGSRCDA, 1993, p.12). In general, time requirements for technical assistance were much lower than anticipated. It should be noted, however, that water quality plans may require greater time requirements for technical assistance because of the variety of management practices that will need to be used.

In terms of actual incentive payments, nearly $360,000 was paid in land-

owner incentives during the first five years of the program. This represents an average annual payment of $373 per participant (RCGSRCDA, 1993).

The second Wisconsin pilot project was conducted in the Central Sands area of the state. Unlike the farmland in Pepin County, which consists of many 200-acre dairy farms that have soil erosion problems on rolling land, the Central Sands region contains many produce farms in excess of 1,000 acres that have sandy soil and trouble with wind erosion. The pilot project in the Central Sands area started in 1989 and consists of three components: CCI, conservation tillage demonstrations, and information and educational programming.

The Central Sands' pilot project enrollment increased from 1,232 acres in its first year to 9,387 acres by 1992. In addition, no participating grower has yet dropped out of the program. The program's success is illustrated by the fact that an estimated 40,000 tons of soil per year have been saved by the conservation practices implemented under CCI in the Central Sands region (Central Sands Wind Erosion Control Project Fact Sheet, 1993).

*An estimated 40,000 tons of soil per year have been saved by the conservation practices implemented under CCI in the Central Sands region.*

The two Wisconsin CCI pilot programs have reduced erosion at a low cost. Soil erosion goals were successfully met in two regions with very different agricultural systems and soil conditions.

# Economic Impacts of CCI

## Federal and State Level

Because the cost of CCI is so low compared to that of other incentive-based conservation programs, expenditures at all levels of government should be reduced. Funding for CCI goes directly to local governments, thereby increasing program efficiency and ensuring that costs stay low. This granting of funds directly to local governments administering the program should serve to reduce manpower needs at the state and federal levels, further lowering the final cost of this program.

## Local Level

Program implementation in Wisconsin has shown no negative effects on the local economy as a result of CCI. Any property tax credits or other tax loss to the local government have been reimbursed from the program's funding. Therefore, government units reliant on local revenue, like school districts, do not suffer as a result of the program. It should be noted, however, that the new pilot program starting in Pepin County will receive one-third of its conservation credit funding from the local government. It is still unclear what the impacts on the county budget will be as a result.

This program is very cost effective and should not present the local admin-

istering offices with significant burdens in servicing time or costs. The average annual cost for financial incentives in Pepin County was only $373 per participant. The administrative time required by the project amounted to an average of 1.23 hours/participant/year and technical assistance required 3.81 hours/participant/year (RCGSRRCDA, 1993, p. 13).

Finally, the program may produce additional economic benefits for agriculture-related industries in a community. One of the proposed forms the financial incentive could take would be a credit for local services, like agricultural consulting. This may increase business for private companies wishing to become involved in CCI.

## Farm Level

*CCI is not a cost-share program. Farmers are responsible for all costs associated with implementing their plans, and these plans must be implemented before receiving any financial incentives.*

CCI is not a cost-share program. Farmers are responsible for all costs associated with implementing their plans, and these plans must be implemented before receiving any financial incentives. While this may seem, on the surface, to be a great financial burden on farmers, it does not appear to be a disincentive to program participation.

Because they have to pay for implementing practices themselves, many farmers have adopted conservation practices that cost less to install. For example, conservation tillage is much more prevalent in CCI plans than any practices that require the construction of permanent structures, such as terraces. This desire to devise cost-effective conservation plans has led farmers in Wisconsin to experiment with innovations on their land. For example, some producers have started raising potatoes with crop residue, a practice that had never been tried previously.

Part of CCI's operating philosophy is that it places no restrictions on participation in other farm programs. Farmers are free to take advantage of any other programs for which they are qualified. Local partnerships keep track of programs that farmers are involved in to avoid duplicating services. Because there is no prohibition on participating in CCI in conjunction with other programs, adding CCI to the list of available conservation programs should have no negative effect on farmers' program payment income.

Finally, there was some initial concern that farmers would be hurt by a decrease in their crop production as a result of implementing conservation practices. This turned out to be minimal. For example, the Central Sands potato producers experienced a slight drop in production levels during the first year of program implementation. Within two to three years, however, production was back up to previous levels. In some cases, production had increased.

# Other Important Impacts of CCI

## Environmental Impacts

CCI has proven itself to be environmentally sound in two pilot programs. Soil erosion rates have dropped dramatically, and it is hoped groundwater pollution prevention will be just as successful. Annual review of the plans has made the program more responsive to environmental needs. For example, harsh winter weather conditions can kill alfalfa in a farmer's rotation, making quick revisions necessary. Program changes are identified at the annual review and the appropriate plan alterations made. The ability to modify plans regularly, based on changing regional conditions, is another advantage of local administration of this program.

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## Equity Impacts

This program should not result in discrimination against any farmers based on the size of their farms. The base incentive rate per acre is the same whether a farm is 40 acres or 4,000 acres. The farmer who implements a plan on a larger farm gets a larger total tax credit, but that farmer has a larger tax bill and may have done more work to get the practices fully implemented.

# Acceptability of CCI

## Farmer Acceptance

Farmers who have participated in the Wisconsin pilot programs have been very vocal in their support for CCI. Although voluntary, participation rates have been higher than those for other government conservation programs. It has taken a while for some farmers to adapt to conservation tillage, especially in the Central Sands region, but they are beginning to see their efforts rewarded.

Further proof of the popularity of CCI can be found in the small number of program violators. Few people have been removed from the program due to violations in plan provisions, and several who were found in violation chose to work with their local conservationists to get back into compliance.

## Public Acceptance

Public acceptance of CCI has been good. Residents of the Wisconsin pilot counties acknowledge the benefits that reduced soil erosion holds for not only farmers, but the general public as well. In addition, since property tax discounts are completely reimbursed to the county by program funding, the public does not experience a drop in its tax base.

### Political Acceptance

Political acceptability may be difficult at the state and federal levels because of the control CCI puts in the hands of local governments. One of the advantages of CCI is that it could reduce some of the bureaucracy currently in place for implementing conservation programs. Those whose jobs could be eliminated will probably not be especially supportive of the program.

*The fact that more farmers participate in CCI than in other programs indicates that more farmers would be reducing erosion to "T" if CCI were added to the current battery of conservation program alternatives available to farmers.*

CCI may be acceptable to legislators who feel that the goals of programs such as conservation compliance are important. CCI requires that participating farmers reduce their erosion levels to at least match those of federal and state conservation programs. The fact that more farmers participate in CCI than in other programs indicates that more farmers would be reducing erosion to "T" if CCI were added to the current battery of conservation program alternatives available to farmers.

## Ease of Implementation of CCI

### Implementability by Assigned Agencies

The local offices responsible for farmer sign-up and certification required significantly more time to accomplish these tasks during the first year of the program. This time requirement decreased significantly by the second year, demonstrating the program was easy to implement once procedures and regulations had become familiar.

### Coherence of Program Regulations

One of the advantages of CCI is its simplicity. This program requires a one-page application that farmers complete and submit each year. Farmers self-certify that they have achieved the goals set forth in their plans in order to get their tax credit or voucher, and a certain percentage of these farmers are spot-checked each year. A study of CCI participants found 100 percent felt CCI was easier to understand than cost-share programs, and 95 percent thought its program obligations were clearer than those of Wisconsin's Farmland Preservation Program (Griswold, 1991).

### Timeliness of Desired Program Effects

The two pilot programs in Wisconsin have required farmers to reduce their soil erosion to "T" in the first year their plans are in place to qualify for the tax credits. Consequently, CCI's results have been almost immediate.

# Other Considerations

## Tax Credit Concerns

One potential concern with CCI is that tax credits may not be compatible with state constitutions across the country. For example, Wisconsin's state constitution contains a uniformity clause that requires comparable land in the state to be appraised and taxed at comparable rates. In other words, Wisconsin has no provision for differential taxation. The CCI pilot programs were able to provide tax credits to enrolled farmers because the programs were operating on a trial basis. For this reason, the voucher system will be used in lieu of property tax credits when the program begins again in Pepin County.

*The results of CCI in Wisconsin demonstrate that voluntary green payments can be more effective than regulations in protecting natural resources.*

However, most states do have some provision for differential taxation. Such provisions often allow farmers to pay property taxes on their land based on the land's use value, rather than the actual value of the property. This form of differential taxation is especially valuable to farmers who farm land near cities because such land has development potential that would otherwise drive up its property value and result in higher property taxes.

Despite Wisconsin's uniformity clause, it may still be possible to use a tax rebate as a conservation incentive -- as long as the rebate recipients were initially appraised and taxed the same as everyone else. On the other hand, it is quite possible that using a property tax credit as the incentive for CCI may be problematic due to this clause. There do not appear to be any such potential restrictions on the use of a voucher system, however, and this system may be as effective in encouraging good conservation behavior.

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## Endnotes

[1] Farm*A*Syst is a voluntary educational program geared toward protecting rural water quality. Farmers who participate conduct a self-evaluation using a checklist to identify farmstead hazards that might pose a threat to ground and surface water quality. Following the evaluation, farmers develop an individualized plan to protect water quality with the help of Farm*A*Syst publications. The program has been tried on a limited basis in a number of states and is supported by EPA, USDA Extension and SCS. Technical assistance is available to interested states through a program run by the University of Wisconsin.

# Environmental Stewardship Incentives Program

## Bryan Petrucci

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# Environmental Stewardship Incentives Program

## Abstract

**The Environmental Stewardship Incentives Program is a conceptual "green payments" program that would provide monetary rewards to agricultural producers who provide environmental benefits.**

**Farmers would receive bonuses in the form of direct cash payments or higher deficiency payments for the adoption of farm plans developed in cooperation with certified "environmental stewards." These plans would have multiple environmental objectives, increasing in complexity with a corresponding monetary benefit. The program would be administered jointly by the Soil Conservation Service and the Agricultural Stabilization and Conservation Service.**

**First proposed by the Illinois Farm Bureau and the Illinois Corn Growers as an incentive-based approach to increase crop residue management, ESIP has taken on a somewhat broader scope. IFB and ICGA may also eventually present separate ESIP proposals developed through their own policy development processes.**

## Background

The Environmental Stewardship Incentives Program concept was first developed by a subcommittee of the Illinois Corn Growers Association in 1992/93. At its annual meeting in December 1993, the Illinois Farm Bureau adopted a resolution supporting ESIP as part of a proposed program using a two-tiered price support structure for future USDA farm programs. Known as START (Security for Tomorrow from Agricultural Resource and Technology), enrolled producers would be eligible for: a) deficiency payments at a basic target level in return for compliance with the environmental requirements of the 1990 Food, Agriculture, Conservation and Trade Act; and b) ESIP- additional incentives for meeting stewardship requirements that enhance water/air quality and wildlife habitat and reduced soil erosion to levels at or below "T."

A presentation on ESIP was made to the Board of Directors of the American Farmland Trust by a group of farmers representing the Illinois Corn Growers Association at the AFT quarterly board meeting in May 1993. In March 1994, AFT held a one-day session with a group of Illinois farmers from ICGA and IFB to discuss their ideas for ESIP and document how the program might work. Most of these producers had been involved in the development of the original ESIP proposal. The following description of ESIP is based largely on input from the farmers who participated in this session. A number of changes have been made by AFT staff since the March 1994 meeting in an attempt to add detail to the ESIP proposal for the purpose of policy analysis.

The Illinois Farm Bureau is also currently in the process of developing their own version of ESIP as a component of the START initiative. When they have completed their analysis and developed START more fully, there could be significant differences between the ESIP proposal presented in this paper and the ESIP concept as supported by IFB. Although there may be similarities in the two versions, AFT makes no claims that either the Illinois Corn Growers Association or the Illinois Farm Bureau support the ESIP proposal as described in this document.

## Primary Objectives of ESIP

The program would support multiple environmental objectives in a comprehensive, integrated fashion. Stated goals of the program include (but are not limited to) improving soil and water quality, improving wildlife habitat, maintaining long-term soil productivity and protecting air quality.

*The goals of ESIP include improving soil and water quality, improving wildlife habitat, maintaining long-term soil productivity and protecting air quality.*

## Green Payments and ESIP

ESIP would provide incentive (green) payments for agricultural producers and landowners who demonstrate a commitment to protect natural resources. Using IFB's two-tiered payment structure, farm programs would still provide a base-level of support through deficiency payments calculated on a target prices established by USDA. Beyond these base-level payments, producers would be eligible to receive additional support only through the adoption and implementation of ESIP plans that provide environmental benefits.

*ESIP would be a totally separate, add-on program to the current system of deficiency payments. It would be incentive-driven and voluntary.*

ESIP would be a totally separate, add-on program to the current system of deficiency payments. It would be incentive-driven and voluntary. If they chose to do so, producers could participate at the base-payment level (in return for meeting current conservation compliance standards) without enrolling in ESIP. Alternatively, farmers might decide to participate in ESIP, implement integrated farm management plans and receive incentive payments without accepting base payments. Most producers, however, would probably elect to participate in both programs and maximize their program benefits. ESIP would not preclude producers from receiving cost share or other special incentive payments (ACP, WQIP, etc.) if those funds were to be used for the implementation of best management practices and structural practices identified in ESIP plans.

In the future, farm programs (including direct payments to producers) will likely be the target of significant budget cuts. It is also likely that deficiency payments will be reduced. All producers will be forced to adjust to lower payment levels. If this happens, it is possible that through ESIP, many farmers could receive the same, or perhaps an even greater amount, in total USDA support. In effect, ESIP would be a mechanism that would allow the government to direct benefits toward farmers who could produce a new commodity important to both rural and urban residents, that only American agricultural producers could supply. That commodity would be environmental quality.

## ESIP Participation Levels

ESIP would have three levels of participation, each with increasing incentives:

- **Level I** (the lowest bonus payment level) would be for the adoption of limited Best Management Practices that correspond to basic management plans. Continuous crop residue management with soil losses at or below "T" values, in conjunction with nutrient and pesticide management components, would be the minimal requirements for participation at Level I.
- **Level II** would provide a higher level of incentive payments for producers who agree to adopt and apply **integrated** farm plans.

A Level II plan would include components such as an erosion control plan, a pest management plan, a nutrient management plan and an overall water quality plan. These plans would require 1) the use of integrated pest management strategies that seek to minimize the use of chemicals while providing adequate crop protection, 2) an application plan for all fertilizers and livestock wastes based on agronomic rates and soil productivity indices, and 3) an integrated farmstead and field assessment to identify and correct all existing and potential hazards to ground and surface water quality.

- **Level III** (the highest payment level) would include all the components of a Level II plan with some additional elements. Possible requirements of a Level III plan might be a wildlife/ biodiversity component, an environmentally sensitive lands component, an air quality protection component, etc. This would depend on local resource concerns. To obtain a Level III payment, a producer would have to demonstrate an exceptionally strong commitment to achieving environmental goals and have the experience to apply a highly integrated, comprehensive management plan.

Some producers expressed a preference for direct payments tied to a per-acre enrollment. These payments would be made on an annual basis, after the adoption of certified farm plans, with one to three years allowed for actual implementation. Although ideas about payment levels varied (suggestions ranged from $2/acre to $10/acre), there was some consensus that the best way to establish a per-acre payment rate would be through a competitive bidding process. Producers would place bids with a dollar value based on the complexity and expense of applying the elements of their individual plans. Bids would be prioritized for funding using an environmental benefits index. Caps or guidelines established by USDA or state conservation agencies could help producers formulate competitive bids.

Another way to provide incentives to implement ESIP plans would be through an increase in deficiency payments. Target price levels would be adjusted up as ESIP plans became more complex. Participants would receive a per-bushel bonus in addition to base level deficiency payments as they adopt and implement ESIP plans. The amount of this bonus would vary regionally, and depend on 1) the total amount of funding available for redistribution in regional "pools" and 2) local or regional performance standards based on resource concerns. Initial estimates for ESIP bonuses were in the $.04 - $.12/bushel range. This option could work extremely well for producers with established crop bases who are currently enrolled in USDA farm programs. If ESIP were applied with the option of receiving either a per-acre payment or a deficiency bonus, it would be highly flexible and could work well for producers of both program and non-program crops.

*If ESIP were applied with the option of receiving either a per-acre payment or a deficiency bonus, it would be highly flexible and could work well for producers of both program and non-program crops.*

ESIP incentives could also be applied through "risk-share." Producers in

ESIP could be made eligible for higher levels of "crop insurance" without paying extra premiums. (Note: this is a popular option for reform of the crop insurance program). By using this option, much of the risk involved in the use of alternative cropping practices required by ESIP plans could be effectively addressed.

## Regional and Local Applications/ Oversight/Administration

ESIP would need to have enough flexibility so it could be adapted to address regional concerns. Overall planning objectives and allowable BMPs could be developed on a regional basis. However, entities closer to home should be empowered to choose plans and practices best suited to meet locally identified resource concerns. Plans and BMPs may and should look different from region to region and watershed to watershed. BMPs need to utilize the best technology available to solve environmental problems.

*ESIP producers could possibly implement a "cafeteria" type plan that would allow individuals to "pick and choose" from a number of management options in order to meet performance goals.*

The development of individual plans should also be a flexible process that allows for many options. One recommendation was to implement a "cafeteria" type plan that would allow individuals to "pick and choose" from a number of management options in order to meet performance goals.

Another recommendation was that a certification program be established to license environmental stewards. Environmental stewards could be farmers, private consultants, government employees or anyone who had passed a state certified examination designed for that purpose. These individuals would have the authority to develop plans with farmers for participation in ESIP. Environmental stewards would also review existing plans and certify implementation. Approved plans would be filed with the agency administering the program (probably the Natural Resources Conservation Service Service). A certain number would be spot-checked each year by the Natural Resources Conservation Service Service to ensure compliance with listed BMPs. It would be the responsibility of the NRCS to work with licensed environmental stewards to ensure that plans are adequate and that BMPs have been implemented.

National and regional program administration should be done through an existing agency experienced in working with agricultural producers. A partnership between the new Natural Resources Conservation Service Service and Farm Services Administration might be the most appropriate administrative arrangement. An alternative to this arrangement would be a local entity. However, state and local conservation agencies do not consistently have the technical expertise to administer ESIP effectively. Soil and Water Conservation Districts could be a possible candidate, but only with significant staff training and broader community representation on their boards of directors.

## Qualifications to Participate

Theoretically, any farm, regardless of participation in farm support programs, should be eligible for ESIP incentives, although this may not be possible due to budget constraints. Particular emphasis should be placed on making sure that farmers and landowners who have already established qualifying BMPs are not penalized for their stewardship efforts by being excluded from benefits. This has been one of the biggest criticisms of conservation programs like the Conservation Reserve Program and the Agricultural Conservation Program. Under ESIP, the best stewards and resource managers would easily qualify for the lowest incentive level, with many eligible to receive Level II or III payments through certification.

## Funding Issues

Viewpoints on how to fund ESIP are wide-ranging. The Illinois Farm Bureau promotes ESIP as an incentive payment that producers would receive in addition to deficiency payments now funded at current levels. IFB believes that farm programs are a good buy for the American taxpayer, with food security as the primary benefit. Applied in this way, ESIP would require an expanded budget.

AFT views ESIP as a way for good stewards to get a bigger share of the shrinking farm program pie. If budget constraints require all producers to take a cut in deficiency payments, and a certain percentage of the amount cut were redirected to ESIP, the program could produce significant environmental benefits under budget neutral conditions.

*If budget constraints require all producers to take a cut in deficiency payments, and a certain percentage of the amount cut were redirected to ESIP, the program could produce significant environmental benefits under budget neutral conditions.*

Illinois producers felt that it might be acceptable to fund ESIP by redirecting a portion of the dollars that now go to bushel-based farm program payments only if ESIP targeted those producers who now receive those payments. In addition, if and when additional funds become available from other program sources (ie. EPA water quality funds), then ESIP could be broadened to any or all producers of food and fiber throughout the nation. These other growers would become eligible for ESIP incentives, but would not receive base-level support payments reserved for commodity crops.

There was also some consensus that if program funds were especially limited, or if it was necessary to implement the program on a pilot basis, priority for enrollment should be given to targeted areas with demonstrated environmental problems. Also, in an effort to make the best use of funds, special consideration should be given to project areas with other funding that could be used to match or supplement ESIP funds.

# WQIP: As Environmental Policy -- An Assessment for the 1995 Farm Bill

**Steven E. Kraft and Christopher Lant**

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# WQIP: As Environmental Policy -- An Assessment for the 1995 Farm Bill

## Abstract

**Title XIV of the Food, Agriculture, Conservation and Trade Act of 1990 authorized the Water Quality Incentives Program (Section 1238). This program, along with other conservation policies, is part of USDA's effort to enhance water quality through the source reduction of agricultural pollutants. Through WQIP, farmers who agree to work with the Soil Conservation Service in the development of multi-year water quality protection plans and who implemented the plans would be eligible to receive a per-acre incentive payment up to $3,500 per year for a three-to five-year period. Additionally, the cooperating farmer would be eligible for technical assistance, and if the plan protected wetlands or wildlife habitat, cost-sharing would be provided by USDA.**

**The plans would focus on cost-effective changes to production practices that would reduce the amount of fertilizer and other chemicals applied without taking land out of production or reducing profitability. Cooperating farmers would develop plans comprised of pollution abatement practices to be used on their farms. While the intent of Congress was for WQIP to be a program in its own right, it has been administered by USDA as part of the Agricultural Conservation Program. Given minimal funding, the program has been offered to farmers in a limited number of targeted hydrologic units (watersheds).**

**WQIP holds promise as being an effective program to deal with nonpoint source pollution of surface and groundwater. However, survey data indicate that most farmers who would be eligible for the program are not interested in it and those farmers interested in it require incentive payments greater than those currently offered. Consequently, WQIP faces a major challenge of farmer acceptance. Furthermore, for environmental benefits to be realized, a number of changes in WQIP as currently administered should be considered. Adequate funding must be provided to support SCS in developing WQIP plans, providing technical assistance as the plans are implemented and monitoring the plans after they are applied. SCS will need resources to cope with plan revisions on a periodic basis. Adequate funding must be made available so that farmers in critical water quality areas can acquire plans and receive incentive payments for plan implementation. To date, funding has been inadequate for WQIP to have a major impact on water quality. Given the nature of some of the changes farmers might be required to make, decreasing incentive payments over a longer period of time should be considered. Furthermore, to gain the potential environmental benefits of WQIP, it could be shifted from a voluntary program to a cross-compliance program similar to conservation com-**

**pliance. In this case, the incentive payments would help absorb some of the risk associated with the adoption of new, required best management practices to enhance water quality. Finally, provision should be made for farm and environmental groups to have formal access to the process of monitoring plan development, implementation and enforcement (e.g., rules of standing for citizen participation as formal interveners).**

## Introduction

The conservation policies authorized by the 1985 Food Security Act (PL 99-198) and implemented by the USDA, such as the Conservation Reserve Program and conservation compliance, focus largely upon conserving soil rather than controlling the nonpoint source pollution of aquifers and waterways. While the Food, Agriculture, Conservation and Trade Act of 1990 (FACTA) (PL 101-624) authorized new programs to address water quality issues (e.g., the Agricultural Water Quality Incentives Program, and the Integrated Farm Management Program), due to lack of appropriations for WQIP and delay in the writing of implementation rules, these programs have been implemented on a very limited basis (U.S. House of Representatives, 1992). However, during the debate surrounding FACTA and in the subsequent report of the conference committee, WQIP was held as the "centerpiece of the farm bill's [nonpoint]source reduction mandate" (Marks and Ward, 1992).

*During the debate on the 1990 Farm Bill, WQIP was held as the "centerpiece of the farm bill's (nonpoint) source reduction mandate."*

## The Water Quality Incentives Program (WQIP)

Along with an environmentally expanded Conservation Reserve Program (Agricultural Resources Conservation Program), the Integrated Farm Management Program Option, the Wetland Reserve Program and continued support for conservation compliance, Title XIV of the Food, Agriculture, Conservation and Trade Act of 1990 authorized WQIP (Section 1238). These programs are the basis of USDA's effort to enhance water quality through the source reduction of agricultural pollutants (U.S. House of Representatives, 1990a):

> The policy of Congress is that water quality protection, including source reduction of agricultural pollutants, henceforth shall be an important goal of the programs and policies of the Department of Agriculture. Furthermore, agricultural producers in environmentally sensitive areas **should** request assistance to develop and implement on-farm water quality protection plans in order to assist in compliance with State and Federal environmental laws to enhance the environment. (Public Law 101-624, Sec 1238, emphasis added).

Through WQIP, farmers who agreed to work with the Soil Conservation Service in the development of multi-year water quality protection plans and who implemented the plans would be eligible to receive a per-acre incentive payment up to $3,500 per year for a three-to five-year period.

Additionally, the cooperating farmer would be eligible for technical assistance and, if the plan protected wetlands or wildlife habitat, cost-sharing would be provided by USDA. The plans would focus on cost-effective changes to production practices that would achieve source reductions in fertilizer and other chemicals applied without taking land out of production or reducing profitability. Cooperating farmers would develop plans comprised of pollution abatement practices to be used on their farms. Through the language of FACTA and the Conference Report, the intent of Congress is clear. To the maximum extent possible, USDA policy to protect and improve water quality should be achieved by minimizing the generation, emissions or discharge of agricultural pollutants or waste through the **modification of agricultural production systems and practices** based on agronomically and economically viable farm plans.

*As currently developed, WQIP conforms with USDA's approach of using "research, demonstration, information and education, one-on-one assistance, and incentive programs [within a voluntary framework] to encourage farmers to try new ideas..."*

Through its authorization language, Congress directed the secretary of agriculture to give "priority to lands on which agricultural production has been determined to contribute to, or creates, the potential for failure to meet applicable water quality standards or the goals and requirements of Federal or State laws governing surface and ground water quality..." (PL 101-624, Sec. 1238C.) Based on the record of Congress, its intent was for 10 million acres to be enrolled in WQIP by December 1995 (U.S. House of Representatives, 1990b).

While the intent of Congress was for WQIP to be a program in its own right, Congress was not willing to fund a separate program. Consequently, WQIP has been administered by the USDA as part of the Agricultural Conservation Program (ACP) (U.S. ASCS, 1993a). Given minimal funding, the program was offered to farmers in a limited number of targeted hydrologic units (watersheds) (Richards, 1992). Through ACP, states make applications for WQIP dollars to be allocated to project areas. However, WQIP plans may be written for and implemented on only a portion of the total acres in the project area. In fiscal year 1992, the program received $6.8 million for plans on approximately 55,000 acres. Incentive payments on enrolled land averaged $20 - $21 per acre for the three-year life of WQIP agreements (U.S. ASCS, 1993b). In fiscal year 1993, WQIP was funded for $15 million (U.S., 1992), and 106 areas were selected for WQIP projects (U.S. ASCS, 1993b). In fiscal year 1994, $18.5 million was allocated (Denley, 1993), and 71 areas were selected for WQIP projects (U.S. ASCS, 1994).

During the House of Representative's 1992 hearings on the USDA's water quality programs, annual figures of $50 to $70 million were suggested as being necessary to fund the program to a level adequate to meet the goals of the WQIP. In response to questions from Congressman English, Chief Richards of the SCS stated that "I think we would find this would be a popular program and a good use of those funds if those funds were available." (Richards, 1992, p.23).

As currently developed, WQIP conforms with the USDA's approach to conservation of using "research, demonstration, information and education,

one-on-one assistance, and incentive programs [within a voluntary framework] to encourage farmers to try new ideas..." (Richards, 1992, p.67). Both representatives of the agricultural community and the environmental community see WQIP as a major tool in reducing the negative environmental effects of agriculture (U.S. House of Representatives, 1992).

# Economic and Political Feasibility of WQIP

## Farm Level

At the farm level, WQIP entails a number of economic impacts. The nature and extent of these impacts is greatly determined by the pre-WQIP production techniques used by the farm operator and the production practices that the farmer adopts as a result of the WQIP management plan.

Using profit maximization as a goal, data from a number of studies in the Midwest indicate that farmers frequently apply more chemical inputs (nutrients and pesticides) than necessary to achieve either technical or allocative efficiency (Koenigstein et al., 1990; Chew, 1992; Contant et al., 1993; Hornbaker et al., 1993). These studies suggest that farm profitability can be increased through a reduction in the amount of chemical inputs used by the farm operator. Consequently, if WQIP planning is directed toward integrated crop management systems (a crop "system that promotes the efficient use of pesticides in an environmentally sound and efficient manner" [U.S. ASCS, 1993a]), such changes in crop management practices could well improve water quality and enhance farm profitability.

In addition, many of the practices currently being used in developing WQIP plans parallel production practices used in planning for conservation compliance (e.g., cropping sequences, residue management, etc). Based on survey research on a national and regional level, 75 percent of the farmers report that such practices will not adversely affect farm profitability (Esseks and Kraft, 1993; 1994).

*The adoption of new production practices or changes in rotations frequently increase the farmer's exposure to potential losses as new practices are learned.*

Assuming the financial impacts of production practices that protect water quality are small or nonexistent (see Esseks and Kraft, 1993; 1994), the farmer still has to cope with the time period during which he or she learns how to use the practices and incorporates them into the farming operation. Consequently, the adoption of new production practices or changes in rotations frequently increase the farmer's exposure to potential losses as new practices are learned or as financial obligations are assumed to acquire new equipment or structures. Therefore, incentive payments or cost-sharing might be necessary to help farmers deal with production changes, perceived increases in production risk and the time period needed to adjust their business operations. Given these findings and the use of incentive payments to help farmers through the adoption process, the farm level economic impacts of WQIP should, in most cases, be positive or at

least neutral.

## Local Level

The extent of local economic impacts will be determined by how the use of WQIP plans affects the amount and composition of inputs purchased by farmers and the amount and mix of products produced and marketed by the agricultural community. Given the research cited above, some WQIP plans could result in a reduction in the amount and a change in the type of agricultural chemicals purchased by farmers. Given the direct and indirect economic effects (see Miller and Blair, 1985) on a regional economy of changes in the level and composition of agricultural inputs, we expect that WQIP might result in a slight reduction in the overall level of economic activity. However, this reduction would be small and variable across regions of the country (see Dicks et al., 1990 and Beck et al., 1993 on the impact of the CRP). It would also be partially or totally offset by increases in the purchases of other types of inputs used in some of the practices included in WQIP plans (e.g., equipment, seed, fencing, etc).

Given recent experience with conservation compliance, we anticipate that implementation of WQIP would entail large inputs of time by SCS personnel. WQIP would thus result in expanded employment opportunities at the local level in terms of program monitoring and the development and application of farm plans. In addition to public employees, WQIP and its associated planning activities could well provide employment for private crop consultants and individuals providing pest-scouting and soil testing services on a fee-for-service basis in the development and application of WQIP plans.

Farm management is a dynamic process in which managers respond to an environment that is changing economically, technologically and ecologically. Consequently, farmers involved in WQIP and, by extension, total resource management, will have to periodically (e.g., annually) adjust their plans. Due to this process, as well as the potential introduction of new biotechnologies, we predict that, increasingly, farmers will work closely with consultants. The expansion in the provision of services by governmental employees or crop/management consultants at the local level will have positive effects on the local economy.

*Depending on how WQIP is administered and how WQIP plans are approved, there could be an increase in demand for the services provided by personnel of Soil and Water Conservation Districts and the Cooperative Extension Service.*

## State and Federal Levels

Given the preceding, we expect very little either negative or positive economic effects at the state level. There are some possible exceptions. Depending on how WQIP is administered and how WQIP plans are approved, there could be an increase in demand for the services provided by personnel of Soil and Water Conservation Districts and the Cooperative Extension Service. Given that CES is increasingly funded by state dollars, and if the SWCDs are funded with state monies, then WQIP could have a nega-

tive effect on state budgets or the range of services or clienteles that CES and SWCD provide or serve.

From a macroeconomic perspective, we expect that the economic effects of WQIP on the agricultural economy will be minimal. There may be some reduction in demand for certain agricultural chemicals accompanied by a shift to more environmentally benign ones. However, at the federal level, WQIP involves a number of costs. First, there is the cost of providing adequate incentive payments for an appropriate period of time and over enough acres to obtain desired water quality effects. Earlier, former SCS Chief Richards indicated that $50 to $70 million per year would be necessary to support the incentive payments over a minimum number of acres. (Note: Assuming all of the funds are used to provide incentive payments, and given the current incentive payment of $21 per acre per year along with funding of $50 million dollars, 2.3 million acres could be covered.)

Realistically, the period of time over which incentive payments are made must be long enough for the farmer to shift "permanently" from his traditional form of production to a new form of production. Currently, many of the WQIP practices are for just one year; however, if necessary, these practices can qualify for support for three consecutive years. If the program were adjusted to reflect a goal of permanently shifting a farmer's production techniques, then WQIP practices of a longer duration (e.g., three to five or more years) with accompanying incentive payments would be required with a larger budgetary need. One alternative would be to consider longer duration WQIP practices that have associated with them a schedule of decreasing incentive payments.

A second federal expense is the cost of providing personnel and technical resources through SCS to facilitate the planning process with the farm operators and to provide technical assistance as plans are implemented at the field level. Also, resources will be required to monitor WQIP practices after they are installed as well as to collect the data necessary to assess the environmental effects of the program. These personnel requirements challenge the present plan of reducing the size of the USDA.

*Given the continuing workload related to the implementation of FACTA, it is unlikely that SCS will have adequate resources to also carry out the implementation of WQIP.*

Given the continuing workload related to the implementation of FACTA, it is unlikely that SCS will have adequate resources to also carry out the implementation of WQIP. Additionally, SCS will have to provide its field staff with training and the infrastructure necessary to support changing management systems on farms. While all farmers with highly erodible land should have conservation compliance plans fully implemented by January 1, 1995, those plans represent a continual workload for SCS. The plans will have to be monitored for implementation and, given the annual nature of many of the practices in the plans and changes in the agricultural/policy environment, farmers will be requesting SCS assistance in altering existing compliance plans.

A third potential cost at the federal level is the provision of incentive mon-

ies to aid farmers in the adoption of WQIP practices. Under current legislation, cost-sharing is permitted only for practices that provide protection to wetlands or wildlife habitat. A possible scenario is the expansion of WQIP to cover cost-sharing of other WQIP practices.

## International Competitiveness

Very limited.

## Environmental Impacts

*A fully implemented WQIP should have positive effects on the reduction of chemical and nutrient loadings of streams. The effect over time should be an enhancement of water quality.*

Based on the research reviewed above, a fully implemented WQIP should have positive effects on the reduction of chemical and nutrient loadings of streams. Based on data contained in the Second RCA Appraisal (U.S. Dept. of Agriculture, 1989), agriculture contributes 94 percent of the pesticides, 85 percent of the phosphorus, 90 percent of the biological oxygen demand and 60 percent of the suspended solids that constitute the nonpoint source pollution loadings in the country. Consequently, if WQIP is administered so that chemicals and nutrients are used more efficiently, there should be a reduction over time in these loadings. Additionally, while the data are not as complete, there should be a reduction in chemical and nutrient use in aquifer recharge areas, areas that should be targeted along with critical watersheds. The effect over time should be an enhancement of water quality.

Finally, WQIP plans and practices should complement the planning activities under conservation compliance. Indeed, WQIP could well be placed within the cross-compliance framework that informs conservation compliance. Together, these activities should have the effect of reducing the level of soil erosion and the resulting problems of sedimentation. Clark et al. (1985) estimated the cost of water erosion to be between $3.2 to $13.0 billion annually.

## Timeliness of Desired Effects

However, these improvements in water quality would not take place immediately due to the time scale at which relevant environmental processes operate. For surface water, runoff occurs rapidly and dissolved agricultural chemicals generally can reach the sea in the same year they are applied. In fact, atrazine has already been detected in the Western Atlantic delivered during the 1993 floods in the Midwest (Goolsby et al., 1994). For less soluble chemicals such as phosphorus, however, transport occurs through movement of sediments rather than water and can thus take decades to centuries to move downstream from a field through the bed loads of streams (Knox, 1987), unless they are carried a considerable distance as suspended loads during flood events. Thus, for insoluble agricultural chemicals, the impact of changes in farming practices on water quality is considerably delayed and difficult to detect (Davie and Lant, 1994).

The effects of changes in farming practices on groundwater quality are similarly delayed due to the slow rate of water movement in most aquifers. Improvements in water quality due to the WQIP could occur in a matter of years in karst (limestone) areas and in areas with shallow, unconfined aquifers underlying permeable soils. But deeper and nonkarst, unconfined aquifers will generally take decades to centuries, depending on location, to demonstrate a measurable improvement in water quality. These facts point out that if the WQIP is implemented on only a short-term basis (e.g., nonrenewable, three- to five-year contracts), improvements in water quality will be detectable only for dissolved chemicals in surface water, even if alterations in farming practices are performed effectively. WQIP must be seen as a program to which long-term commitments are made with the expectation that water quality improvements will be gradual and incremental over time (see Salamon, 1979).

While the WQIP as presently constituted is voluntary, it places an implicit planning and implementation burden on farm operators with water quality sensitive lands. If the public continues to demand that agriculture be more environmentally benign (Americans for the Environment, 1989; Dunlap, 1991), these farmers will increasingly find their activities and their farm operations under public scrutiny.

Additionally, under WQIP, resources will be made available only to farm operators of land on which agricultural production has been determined to contribute to, or creates, the potential for failure in meeting applicable water quality standards or the goals and requirements of federal or state laws governing surface and groundwater quality. Consequently, not all farmers will be eligible for incentives, technical assistance or cost-sharing through WQIP. However, this does permit the targeting of limited resources on those lands that are contributing the most to water quality problems.

## Food security

None.

## Farmer Acceptance

Few studies are available of farmers' willingness to participate in the WQIP. One survey of 770 farmers with water quality sensitive lands in 10 Midwestern counties had 562 farmers who responded to questions about the WQIP (Lant and Kraft, 1993; Kraft et al., 1994). Only 17.5 percent were interested in participating in the program, 44.2 percent were not interested in participating, 27.8 percent indicated that "maybe" they would participate, and 9.9 percent were unsure. Of the farmers indicating they were interested in the WQIP or that they might participate, 23 percent were willing to accept a per-acre incentive payment of $30 or less.

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Logistic regression analysis of factors affecting farmers' willingness or unwillingness to participate indicated the following statistically significant factors: (a) Farmers with a negative attitude toward governmental involvement with wetland regulations were less likely to want to participate in WQIP; (b) Farmers with more education were more likely to want to participate; (c) Farmers who were operators were more likely to participate than were owners; (d) Farmers having more contact with SCS during the year preceding the survey were more likely to want to participate in WQIP; and (e) Farmers deriving a large percentage of their gross farm sales from specialty crops were more likely to want to participate in the program. These results, in conjunction with other survey results (Esseks and Kraft 1993; 1994), suggest that generally, the more experience farmers have had working with SCS on farm-level planning for soil conservation (e.g., conservation compliance), the more willing they are to consider planning other conservation aspects of their farms. One of the challenges for implementing WQIP is how to use farmers' past positive experiences with SCS to overcome the general lack of enthusiasm for WQIP on the part of the surveyed farmers.

## Public Acceptance

*Given the lack of appropriations for WQIP and the belief of environmental groups that WQIP would be a key environmental provision of FACTA, it is questionable that they will support WQIP again without assurance that the program will be fully funded and that adequate support will be provided at the agency level to fully implement the program as intended.*

We predict that acceptance among members of the general public for the program would be rather high. WQIP is pro-environment with very little apparent cost to food and fiber. Given environmental initiatives with other industries, WQIP appears to be reasonable in terms of what it asks of farmers and the assistance provided to help farmers adjust their operations. Additionally, the program has the aspect of targeting limited federal funds on those lands that have been identified as having high water quality impacts. However, by paying farmers not to pollute, WQIP implicitly provides farmers with a right to pollute (Bromley, 1978).

Given the lack of previous support for WQIP in terms of appropriations and the belief on the part of environmental groups that WQIP would be a key environmental provision of FACTA, it is questionable that they will support WQIP again without assurance that the program will be fully funded and that adequate support will be provided at the agency level to fully implement the program as intended (Cook et al., 1992; Marks and Ward, 1992). One proposal would be to grant environmental and farm groups formal access to the process of monitoring plan development, implementation and enforcement. That is, rules of standing for citizen participation as formal interveners in agency proceedings and as petitioners in judicial review could be effective mechanisms in overcoming the past experiences with WQIP (see Sabatier and Mazmanian, 1981).

Support from farm/commodity groups will probably be mixed. On the one hand they might object to the notion of targeting and the suggestion underlying WQIP that farmers have been lax in their decisions to use chemicals and nutrients; however, the program is nonregulatory and, as pres-

ently designed, does not encompass cross compliance.

## Political Acceptance

FACTA and the debate surrounding the implementation of the existing WQIP underscores the need to provide adequate funding if the program is going to have a large impact in significantly changing use of chemicals and nutrients. Adequate funding must be large enough to provide 1) incentive payments for a long enough period of time to support adoption of new practices and 2) SCS and the other planning agencies sufficient funds to support WQIP planning and implementation processes. Consequently, political acceptability is directly tied to the willingness of Congress to appropriate adequate funding to fully implement the program.

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Congress will have to come up with new money or it will have to shift money from existing budget lines to WQIP. One potential source of new money would be funds released from expiring CRP contracts. However, under current budget agreements, CRP funds released by expiring CRP contracts are lost to the USDA budget. Consequently, access to CRP funds would have to be authorized by Congress. While some of these funds may be and should be used to extend CRP contracts on environmentally sensitive land, a portion of the funds could be directed to fund WQIP at an adequate level. WQIP could also be funded by "green taxes" levied on agricultural chemicals and nutrients. Another source of funds would be a redirection and targeting of existing ACP funds. While these funds have traditionally been distributed to counties to be allocated based on criteria developed by an interagency committee of USDA and state/local personnel, USDA could be directed to allocate at least 75 percent of available ACP funds to water quality priority areas with the funds to be spent on WQIP plans developed through WQIP planning activities. Given that WQIP will be targeted to agricultural areas that pose major water quality problems, the reallocation and expenditure of funds in light of environmental benefits should be politically defensible. For example, the federal government invested $56 billion in municipal sewage treatment from 1972 to 1989, with total federal, state and local expenditures of more than $128 billion (Adler et al., 1993). The ratio of investment in point source to nonpoint source controls has increased from 15:1 in 1972 to an estimated 53:1 through 1995 despite estimates that "runoff pollution causes at least half of our serious water pollution problems" (Adler et al., 1993, p.110) and that agriculture is responsible for 72 percent of impaired river miles (Environmental Protection Agency, 1994b).

Empirical research shows that the price elasticity of demand for many agricultural inputs (e.g., nutrients) is very inelastic (Larson and Vroomen, 1991; Nehring et al., 1992; Denbaly and Vroomen, 1993;). This suggests that green taxes and other policies designed to increase the cost of inputs and hence reduce their use would have the effect of raising revenue, but cause little reduction in the use of agricultural chemicals. If that is the

case, programs such as WQIP, regulation or cross compliance are the only options for addressing the interface between agricultural production and the maintenance and improvement of water quality. Given these alternatives, WQIP is politically more acceptable than regulation to the farm community.

## For Agencies

Assuming that SCS becomes the lead agency in implementing WQIP and that the agency is given adequate time to develop a clear set of decision rules, SCS will require additional resources if it is to continue with its current workload and also assume implementation of WQIP. While SCS has a presence in most agricultural counties, staff resources have been stretched to the limits in dealing with existing programs such as conservation compliance, the Wetland Reserve and the new role SCS has been given regarding wetlands (Environmental Protection Agency, 1994a).

SCS does have a proven approach for working with farmers and engaging them in effective conservation planning within a voluntary framework. However, SCS will have to work to overcome the limitations of that framework. The limitations derive from the agency traditionally working with only a subset of farmers: those recognizing they have conservation problems and having a desire to seek SCS assistance. For SCS to implement WQIP, it will have to develop strategies to deliver WQIP planning to a diverse clientele (see Kraft et al., 1989). Furthermore, WQIP plans are very management intensive, covering many aspects of the farm operation. Consequently, SCS field personnel might require highly specialized education and training.

*WQIP is more than just conservation planning as traditionally practiced by SCS. WQIP embodies an integrated approach to resource management given the natural resource base of the farm, the goals of the farm operator, and the constraints of the farm business.*

WQIP is more than just conservation planning as traditionally practiced by SCS. WQIP embodies an integrated approach to resource management given the natural resource base of the farm, the goals of the farm operator, and the constraints of the farm business. Consequently, WQIP will interject SCS personnel and their planning activities directly into the management of the farm. As a result, SCS personnel might require extensive training in the area of planning for farm management, not just conservation. Alternatively, clear cut interagency guidelines will have to be developed between SCS and CES if CES provides the management component to WQIP plans.

## Clarity of Regulations/ Flexibility at Local Level

WQIP will require locally based plans reflecting the on-farm constraints placed on the farmer and the landscape involved. WQIP planning will require a set of extensive structural and nonstructural practices and public and private expertise to develop dynamic plans that will be acceptable to farmers who do not want governmental involvement in their farm operations. Consequently, the enabling legislation and the subsequent rules

must be clear regarding the roles of the agencies involved, the responsibilities of farm operators and landowners and the consequences of nonimplementation.

*The inherent complexity of WQIP plans could well work against the efficient implementation of the program and the realization of its goals.*

Given the nature of nonpoint-source pollution and how agricultural production practices directly and indirectly impact water quality, WQIP plans could be complex, incorporating a number of separate practices applied over a large proportion of the acreage farmed by an operator. This will present challenges in terms of plan development, plan implementation and the monitoring of WQIP's effectiveness. This inherent complexity could well work against the efficient implementation of the program and the realization of its goals.

As complexity increases along with the demands placed on the farmers to acquire new knowledge, successful plan implementation will be realized less rapidly and will require more technical assistance during implementation. Consequently, WQIP might have to become a process of phased planning (e.g., where a whole plan is developed that is implemented in successive phases so as not to overwhelm the farmer's capacity to adopt change). Such an approach might delay the realization of program benefits; however, the actual extent of effective planning might be greater.

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# Integrated Farm Management 1990 Farm Bill Option

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# Integrated Farm Management 1990 Farm Bill Option

## Abstract

**The integrated farm management program was an option added in the 1990 Farm Bill. The purpose of the program was to offset biases in the Feedgrain Program and encourage farmers to plant resource conserving crops.**

**In general, under the IFM program farmers would plant 20 percent of their commodity program base to an approved resource-conserving crop. The crop could be harvested and marketed and the farmer would receive deficiency payments and maintain base acre histories just as if they had planted the program crop. The plan under IFM had to be approved by SCS.**

**The 1990 law set a limit of five million acres to enter the IFM in any given year. In the five-year life of the bill the maximum acres that could be entered was 25 million.**

**Through the first three years, total sign up was 215,247 base acres. Almost one-half of the total acres enrolled came from just two states, Texas and Alabama. Seventeen states do not have any acres enrolled in the IFM program. Another 10 states have less than 1,000 acres. Several changes have been proposed for the IFM program starting in 1994. It is not known what impact these changes will have on participation.**

**It is not possible to estimate the national economic or environmental impact given the low enrollment numbers. Determining why participation has been so low could help in the design of future programs.**

**There are several possible reasons for the low participation. Farmers who could use a resource-conserving crop may already have a base to reflect this rotation. The myriad of programs and options meant it was more difficult to evaluate all of the possible outcomes. There may have been institutional and farmer lack of knowledge and understanding of the program. Farmers are unlikely to change cropping patterns simply for program benefits. Finally, farmers are unwilling to make major changes for marginal benefits.**

# Introduction

The 1990 Farm Bill contained several changes designed to either reduce government costs or to offset commodity program biases. One of the changes presented in 1990 was the integrated farm management option.

As noted in the U.S. Senate report on the 1990 Food, Agriculture, Conservation and Trade Act of 1990 (FACTA), "commodity programs influence output mix and input use patterns through both their selectivity and their structure" (U.S. Senate, 1990). The report also went on to discuss farmers who "use management practices and crop rotation systems to conserve resources..." pointing out "these farmers tend to receive substantially fewer farm program benefits, a significant disincentive for the adoption of resource conserving management practices" (U.S. Senate, 1991, p. 227).

*Farmers who use management practices and crop rotation systems to conserve resources tend to receive substantially fewer farm program benefits, a significant disincentive for the adoption of resource conserving management practices.*

The IFM program was designed to try to remove disincentives to crop rotations by enabling farmers to receive deficiency payments even if the commodity program crop was not planted.

## How IFM Works:

Current commodity programs influence output mix in two basic ways. The first area is with respect to price. Commodity programs set a target price for each of the commodities. The target price for each commodity is established by law. For example, the target price for corn is $2.75 for the life of the 1990 Farm Bill. Farmers are paid the difference between the target price and the market price. This difference is called the deficiency payment rate.

A target price rather than a market price introduces biases in the crop selection in several ways. The target price is fixed. Therefore, at least one risk aspect to agricultural production has been removed. Price certainty simplifies planning. For most commodities, the target price has been set above the market price. The higher price significantly influences the cost/production/income relationships that might have existed with market conditions. Research in Iowa has shown how this bias can influence the most profitable rotation (Duffy and Chase, 1988).

The second disincentive resulting from current commodity programs concerns base acres. Farmers have base acres for each of the program commodities they grow. The base for any particular year is the average planted or considered planted to a given commodity for the last five years after removing the high and low years.

Base acres are important because the total deficiency payment received is determined by the base acres (after adjustments for set-aside and flex acres) times the program yield times the deficiency payment rate. The program yield for farmers has been constant for a number of years. Base

acres can change depending on the amount of the commodity planted or considered planted each year.

The base bias in commodity programs is caused by farmers' desire to keep base acres as high as possible to maximize program payments. If they shift out of the commodity crop, base is reduced and so are the payments.

*In the broadest sense, the IFM option says if farmers devote at least 20 percent of their base acres to a resource conserving crop, they will still be eligible for the deficiency payment they could have earned plus they will not lose base acre histories.*

In the broadest sense, the IFM option says if farmers devote at least 20 percent of their base acres to a resource conserving crop, they will still be eligible for the deficiency payment they could have earned plus they will not lose base acre histories. In other words, under IFM, if the farmer's plan is approved, the 20 percent devoted to RCC will be treated as if it were planted to the program crop for purposes of calculating deficiency payments. In addition, the IFM option allowed farmers haying and grazing on half the set-aside acres if they planted a RCC.

Farmers who enroll in IFM must have a plan that reduces soil erosion, improves soil fertility and protects surface and groundwater. This plan has to be approved by the Soil Conservation Service. In addition, the IFM contract had to be for at least three years. There was an option for a four- or five-year plan.[1]

## 1994 Modifications

Several changes were made in the IFM program in 1994. These changes were designed to make the program more attractive. Among the most notable changes are the following:

- Farmers may enroll one or more of their crop bases rather than having to enroll 20 percent of their total farm base acres.
- Farmers will now be accepted into the program during the regular sign-up period (in the past, farmers had to wait a month or more after the sign-up to receive confirmation).
- The IFM program can now be used in conjunction with the other special 0/50/85/92 programs.
- IFM participants are eligible to receive disaster payments on RCC acreage.
- Multi-year cash leases are no longer necessary, and existing legume stands are eligible as RCC with SCS approval.
- Industrial and experimental crops are eligible, as is harvesting cover crops for seed.

These and other changes were made to make the IFM option more attractive and participation easier. The changes also show that the IFM program is fluid and that USDA will make changes to improve participation as needed.

## Impact of IFM

The 1990 Farm Bill allowed up to five million new base acres per year to enter the IFM program. The law capped the total acres at 25 million over the life of the bill.

Enrollment to date has lagged behind expectations and the maximum established. For the first three years of the IFM program, 1991-1993, sign-ups were 55,766, 40,273.5 and 199,207.3 acres respectively. A total of 215,247 crop bases acres have been enrolled nationwide over the first three years.

With respect to the maximum allowable, the current total sign-up represents just over 1 percent of what would have been allowed. The first year sign-up was 1 percent, the second year less than 1 percent and the third year was 2 percent of what was possible.

*Participation in the IFM program has been dismal. Despite intense efforts, current total sign-up represents only one percent of what would have been allowed.*

The top five states for base acres enrolled in IFM are Texas, Arkansas, Kansas, Minnesota and Oregon. These states had 65,503, 32,657, 18,447, 18,133 and 10,801 base acres, respectively. The top five states have 68 percent of all IFM acres thus far and the top two states have 46 percent. Seventeen states report no IFM acres. An additional 10 states report less than 1,000 base acres in IFM through the first three sign-up years.

Enrollment in IFM did almost triple from approximately 40,000 in 1992 to 119,207 in 1993. This was an increase of almost 79,000 acres in one year. However, 95 percent (75,000 acres) came from just two states, Arkansas and Texas. Texas alone accounts for more than two-thirds of the national increase. For all states from 1992 to 1993, 49 percent showed no change in the acres enrolled in IFM, 22 percent showed a decrease and 29 percent showed an increase. The impact of the 1994 modifications is not known at this time. However, it is unlikely that the changes will cause enrollment to reach anywhere near the allowable acres to be enrolled.

The IFM program represented the work of many individuals. Its inclusion in the 1990 Farm Bill resulted from lobbying efforts by many individuals and groups. In spite of this intense effort, usage of the program is not what was desired. Just over 1 percent of the allowable acres have been entered, and less than 2 percent of the target acres and considerably less than 1 percent of the total crop acreage base eligible have been enrolled.

Due to the low usage of IFM, it is not statistically meaningful to estimate national economic or environmental impacts. This is not to say there are not impacts at the individual farm or local level. The available data does not allow such micro-level analyses.

One has to ask why participation has been so low. This is especially true given the objectives of the option to remove commodity program biases.

## Reasons for Non-Acceptance

There are many reasons why enrollment has been low in the IFM program. This section will try to identify some of the more salient factors. Some of the concerns or problems may have been addressed by the 1994 program modifications. However, as noted, it is doubtful these changes alone will significantly increase enrollment in the program.

*Those who had a use for a resource conserving crop probably already had a base acreage that reflected their rotations.*

One of the reasons for low participation in IFM is that those who have a use for RCC, especially alfalfa or mixed hays, already have a base acreage that reflects their rotation. In other words, the crop bases reflect the amount planted or considered planted to commodity program crops. It is true that IFM provides provisions for harvesting acreage reduction program acres and that this would be a possible attraction for farmers with an established rotation. However, this benefit is offset by many factors, not the least of which is that in many years farmers are allowed to hay and graze ARP land anyway.

Another factor that contributed to the lack of participation in IFM is a lack of understanding of the program. Coupled with this is the complexity of the program. It takes a lot more paperwork to keep track of which acres are which to maximize IFM benefits. For example, you can plant oats as a nurse crop, harvest the oats and then cut the hay, but the following year the land has to be classified as something else in order to hay or graze it during the five principal growing months. The change in 1994 to allow established legumes as RCC will help correct this. But the point is the programs are complicated enough. Why should a farmer add to his/her paperwork burden if major advantages are not readily apparent?

Some people also feel there was not enough institutional support for the program. Farmers were not made aware of the program, and this resulted in low participation.

Another drawback to the IFM program is the lack of markets. Hay markets are not well-established in many parts of the country. Even in areas with markets, the farmers may not be familiar with them.

An additional reason for nonparticipation in IFM may be due to farmers not having the right equipment to plant, harvest or handle a RCC. Farmers may also lack the technical and managerial skills for the RCC.

A final reason for nonparticipation is the triple base or unpaid flex provision added in the 1990 Farm Bill. Farmers have an additional 15 percent of their base to plant to other crops and not be penalized. This could have been enough for those who wanted to experiment or who had only a few acres. Similarly, the 0/92 program may have been viewed in the same light, although the 1994 changes may help with this program feature.

In summary, farmers just didn't see the benefit for the additional time and effort required (see Appendix). Many farmers were already having to adjust and farm by an SCS-approved plan through conservation compliance. Those with a use for the legumes already had a rotation established and the added benefits were not perceived to be worth the cost.

## Conclusions and Recommendations

Although the idea behind the initial IFM program was sound, the implementation of this particular program and the economics surrounding the current crop selection decisions did not encourage participation. Although it was called the IFM program, it was not a truly integrated program. A better name may have been the rotation selection program.

*Although it was called the **Integrated Farm Management Program,** it was not a truly integrated program. A better name may have been the **Rotation Selection Program.***

Perhaps the biggest failure of the program was an overestimation of the impact of deficiency payments and base histories themselves. Most farmers grow what they are familiar with and have the management skills, necessary equipment and existing markets to handle. Farmers who need legumes in their operation already have rotations established. They are not likely to use subsidies to plant more. In states like Iowa, IFM would have been far more successful if soybeans had been allowed. Of course this would have raised other issues, but the point is farmers would be more willing to shift to crops they were familiar with and knew how to market.

My recommendation would be to totally change the IFM program. Although we do not know for certain, it appears unlikely, even with the 1994 changes, that the current IFM program will have even minimal impact.

The new IFM should be a truly integrated farm management plan where all aspects, including the juxtaposition of the farm on the surrounding landscape, are considered. The IFM plan should help with the farm's crop selection, pest management plan and nutrient management. All available techniques (including chemicals, cultural, biological and mechanical) and all available resources (including human, capital and physical) should be utilized.

Under this IFM program, farmers could be paid for doing something positive. Also, farmers who have been practicing good stewardship practices would be eligible for benefits whereas in past programs they have been excluded. Payments would not be tied to a particular commodity (one of the negative features of current IFM program is that payments are still tied to a certain commodity).

In summary, if the IFM program is to be successful in the next farm bill, it must change substantially. It must integrate crops, livestock, people, the

*If the IFM program is to be successful in the next farm bill, it must change substantially. It must integrate crops, livestock, people, the environment and the budget. In addition, the program must allow for many different kinds of farms and farm plans and not rely on a single prescription.*

environment and the budget. In addition, the program must allow for many different kinds of farmers and farm plans and not rely on a single prescription.

## IFM: An Alternative Approach

The following are some general thoughts on how a revised IFM program could work. It is important to remember that IFM has several distinctive characteristics. IFM is a process, not a given set of practices. IFM is also individualized and site specific. As such, an IFM program should seek to combine both demonstration and education elements.

In the IFM program, an individual or team of individuals would work with a cluster of farm families in a few counties per state. The IFM professional would work with the farmer to develop a farm plan consistent with the goals and resources of the farm. The farm plan would include cropping patterns, animals (if present), pest management, nutrient management, environmental impacts and aesthetic impacts.

In addition to working out the plan, the IFM program would provide scouting for pests and soil sampling. This information would help determine the short run course of action that would be environmentally sound and the most profitable. Trade-offs would be identified to the farmer, who would then decide which course to take.

The program would work with individual farmers for only three years. The cluster of farmers in the program would be rotated around the state. In the first year, all farmers in the cluster would be worked with intensively. During the second and third year, consulting would be less intensive so that the professionals could move to a new cluster. After the program was running, there would be different clusters of farmers at different stages in the program around the entire state.

Clusters of farmers would include six or seven farmers per location. Participating farmers would not be charged in the first year and charged nominally in the second and third year. In exchange for their participation, farmers would be required to share their experiences with other farmers in their area.

The idea behind this approach is to introduce farmers to environmental and economic planning. By working with small groups or clusters, targeted farms can then serve as demonstrations on how to achieve truly integrated farm management.

# Appendix

## Examples of How the Current IFM Program Works

| Assumptions: | Yield/Ac. | Nonland Cost/Ac. |
|---|---|---|
| Continuous corn: | 120 | $214 |
| Rotated corn: | 135 | $197 |
| Soybeans: | 45 | $139 |
| Oats/alfalfa | 80 (2.5T) | $179 |
| Alfalfa | 4T | $176 |

Example: 100 Ac., 5% acreage reduction (ARP), 15% Unpaid Flex; Corn $2.35, Deficiency Payment $.40, Soybeans $6, Oats $1.60, Alfalfa $70/ton.
Base yield equals actual yield.

**1) Continuous corn; 100 Ac. Base**

| | |
|---|---|
| 80 acres paid: | |
| (120 x $2.35) + (120 x .40) - 214 = $330 - 214 = $116 x 80 | $9,280 |
| 15 acres not paid: | |
| (120 x 2.35) - 214 = 282 - 214 = 68 x 15 | 1,020 |
| 5 acres ARP @ $20/acre maintenance | -100 |
| | $10,200 |

**With IFM**

| | |
|---|---|
| 60 acres continuous corn paid: | |
| (120 x 2.35) + (120 x .40) - 214 = $330 - 214 = $116 x 60 | $6,960 |
| 15 acres continuous corn unpaid: | |
| (120 x 2.35) - 214 = $282 - 214 = $68 x 15 | 1,020 |
| 20 acres oats/alfalfa: | |
| (80 x 1.60) + (2.5 x 70) + (120 x .40) - 179 = $351 - 179 = $172 x 20 | 2,580 |
| | $10,560 |

Net Gain = $1220

**2) Corn/soybeans; 50 Ac. base**

| | |
|---|---|
| 50 acres soybeans: | |
| (45 x 6.00) - 139 = $270 - 139 = $131 x 50 | $6,550 |
| 40 acres rotated corn, paid: | |
| (135 x 2.35) + (135 x .40) - 197 = $371.25 - 197 = $174.25 x 40 | 6,970 |
| 7.5 acres rotated corn, unpaid: | |
| (135 x 2.35) - 197 = $317.25 - 197 = $120.25 x 7.5 | 902 |
| 2.5 acres ARP x $20.00/ac maintenance | -50 |
| | $14,372 |

**With IFM**

| | |
|---|---|
| 50 acres soybeans: | |
| (45 x 6.00) - 139 = 270 - 139 = $131 x 50 | $6,550 |
| 30 acres rotated corn, paid: | |
| (135 x 2.35) + (135 x .40) - 197 = $371.25 - 197 = $174.25 x 30 | 5,228 |
| 7.5 acres rotated corn, unpaid: | |
| (135 x 2.35) - 197 = $317.25 - 197 = $120.25 x 7.5 | 902 |
| 10 acres oats/alfalfa: | |
| (80 x 1.60) + (2.5 x 70) + (135 x .40) - 179 = $357 - 179 = 178 x 10 | 1,780 |
| | $14,460 |

Net Gain = $88

In these two examples, the IFM program would improve net income by $3.60 and $.88 per acre. This assumes that, for IFM, the value of the set-aside that could be hayed or grazed is equal to its cost. It also assumes that the farmer would get a 2.5 ton yield from one cutting in the establishment year. This represents a very generous assumption.

These two examples show that if farmers had the equipment they could be slightly better off. However, if they did not have the equipment, the profit advantages would most likely disappear if custom operations were used.

There are many other alternative rotations that could be examined. See Williams and Diebel or Center for Rural Affairs for other examples (Williams and Diebel, 1992; SAWG, 1992).

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## Endnotes

[1] For more complete information on the IFM program see "Sustainable Options Guide" by the Sustainable Agricultural Working Group (SAWG, 1992). This guide is available through the Center for Rural Affairs, Walthill, Neb. In addition, Section 3 of the ASCS Technical Guide covers the rules and regulations initially put forward for the IFM program (USDA ASCS, 1991).

# Federal Policies to Fully Support Sustainable Agriculture Research and Education

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# Federal Policies to Fully Support Sustainable Agriculture Research and Education

## Abstract

**This paper examines sustainable agriculture research and education policy issues and options. It begins by reviewing the short history, contributions, and limitations of the Sustainable Agriculture Research and Education program of the U. S. Department of Agriculture. The principal contributions of SARE are its purpose, approach and results which, combined, have set a new example and direction for conventional agricultural research and extension education. With extensive involvement of farmers and ranchers in the design and conduct of funded projects, SARE is generating an impressive store of scientifically sound information on the feasibility and impacts of site-specific, potentially sustainable farming systems. And yet, its full potential is restrained by lack of federal support, difficulties of addressing certain research needs and the program's declining uniqueness. 1995 Farm Bill provisions could help to overcome those limitations if they clarify and simplify SARE's authority, improve USDA coordination, elevate the SARE program in USDA's organization, strengthen the role of extension education, reinforce ties between research and extension agencies, and strengthen research on issues not yet adequately addressed by SARE. But more substantial or "radical" policy changes are imperative if the nation's food and agricultural research and extension system is to fully address the goal of agricultural sustainability.**

## History of the SARE Program

The Sustainable Agriculture Research and Education program, or SARE, is currently a $10-million competitive research grants and training program administered by the U. S. Department of Agriculture. It is not the only USDA research and education program concerned with issues related to sustainability. But others, such as integrated pest management, water quality and nutrient management programs, deal mainly with components of sustainability and often involve only research or extension education.

The purpose of SARE, launched in 1988, is to generate and extend sound, practical information on alternative farming systems believed to have the potential to increase the sustainability of agriculture. As defined in the 1990 Farm Bill, a sustainable agriculture is:

> "...an integrated system of plant and animal production practices having a site-specific application that will, over the long-term (A) satisfy human food and fiber needs; (B) enhance environmental quality and the natural resource base upon which the agriculture economy depends; (C) make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; (D) sustain the economic viability of farm operations; and (E) enhance the quality of life for farmers and society as a whole." (U. S. Congress, 1990, Title XVI, Research, Subtitle A, Section 1602).

*The purpose of SARE, launched in 1988, is to generate and extend sound, practical information on alternative farming systems believed to have the potential to increase the sustainability of agriculture.*

Current federal funding for SARE is less than one-half of 1 percent of the total annual appropriation of over $1.5 billion for food and agricultural research and extension (USDA, 1994). The latter includes research conducted by the USDA's own Agricultural Research Service; research funded by USDA in the nation's land grant universities and experiment stations as well as other research institutions; and federally funded educational programs of the state cooperative extension services. Combined, these institutions make up what is commonly referred to as the USDA-LG system.

The SARE program grew out of two major concerns: the unforeseen ill-effects of conventional farming on natural resources, environmental quality, food safety and the quality of life, as well as on the future of agriculture; and relative neglect of those concerns by USDA-LG research and education (see Hightower, 1972; U. S. Congress, 1977; USDA, 1980; and USDA, 1981). Legislative attempts in the early 1980s to stimulate research and education on alternative agriculture, including organic farming, were unsuccessful. But a breakthrough came in a provision of the 1985 Farm Bill that instructed the USDA to inventory and do more research on ways to conserve resources and protect the environment while ensuring agricultural productivity (U. S. Congress, 1985).

In response, the USDA formed a department-wide Alternative Farming Systems Task Force. When Congress, in late 1987, appropriated $3.9 million for a new program to implement the 1985 legislation, the task force drafted and gained approval of an official policy statement, to be in effect for one year, affirming "...the Department's support for research and education programs and activities concerning 'alternative farming systems,' which is sometimes referred to as 'sustainable farming systems.'" (USDA, 1988). The USDA then convened a small group of supporters in the USDA-LG system and private nonprofit organizations to design what was called the "Low-Input Sustainable Agriculture Research and Education" program, soon known widely by its acronym "LISA" (Schaller, 1991b).

## The Initial Years of LISA (Now SARE)

*SARE involves farmers, ranchers, and nonprofit groups in the policy development, management, and oversight of the program, and in the technical review of projects proposed for funding.*

The design team, with support from congressional staff, crafted a unique set of rules for LISA. They said: Make it a science-based, grassroots, problem-solving program. Involve farmers, ranchers and nonprofit groups in the policy development, management and oversight of the program, and in the technical review of projects proposed for funding. Urge those people to work closely with scientists to develop research proposals and to carry out the research. Tie extension in to ensure that research findings are communicated and explained to users. To simplify administration, operate the program through one agency, the Cooperative States Research Service, but require liaison with the extension service.

These rules remain in effect. The Washington, D.C., office, located in CSRS and headed by a SARE director, is responsible for overall management and federal support. This includes the development and dissemination of information about the program and its results by an Alternative Farming Systems Information Center in USDA's National Agricultural Library, now with the help of a computerized reporting and retrieval system called the Sustainable Agricultural Network. The latter provides ready access to information on the kinds, locations and results of SARE and related projects.

The program is managed principally by an Administrative Council in each of the four major U. S. regions. Each council is aided by a Technical Review Committee. From the start, Administrative Council and Technical Review Committee members included agricultural producers as well as representatives of federal and state research and extension agencies and private nonprofit organizations. Each region has a regional coordinator for the program housed at a host institution, both chosen by the Administrative Council because of high-level interest in and support for the program. Current hosts are Utah State University (West), the University of Nebraska (North Central), the University of Georgia (South), and the University of Vermont (Northeast). The University of California was the initial host in the Western region, and Louisiana State University has served in

that role for the South.

The 1990 Farm Bill augmented the program's mission and administration, as follows (U. S. Congress, 1990, Title XVI, Subtitle B):

- It reauthorized LISA, but dropped "low-input" from its name. The term had been chosen initially to add meaning to "sustainable" and to head off an interpretation by conventional agriculture groups and agribusiness that the hidden purpose of the program was to promote chemical-free or organic farming. But even "low-input" was a red flag to conventional farm, commodity and agribusiness groups who argued that lower use of chemical pesticides and fertilizers would curtail the profitability and future productivity of agriculture. After an extended debate in Congress about the meaning and methods of sustainability, the legislators voted to rename the program the Sustainable Agriculture Research and Education program, or SARE. But "low input" and the need to reduce chemical inputs were still mentioned here and there in the congressional authorization and subsequent appropriations language.

- In further response to concerns of various farm and commodity groups, the reauthorization of LISA as SARE included *three* separate programs under SARE, designated Chapters 1, 2, and 3:

*The 1990 version of SARE includes three separate programs: the former LISA program, the Integrated Management Systems Program, and the Sustainable Agriculture Technology Development and Transfer program.*

**Chapter 1** is the former LISA program, administered by CSRS. Under pressure to downplay low-input farming, Congress labelled it "BUBA," or "Best Utilization of Biological Alternatives." The Chapter 1 authority also told USDA to do more research on the economics and possible impacts of adoption of sustainable farming systems. This paved the way for SARE, in 1991, to join forces with the U. S. Environmental Protection Agency to give increased emphasis to research on those impacts. The joint effort was called "Agriculture in Concert with the Environment." During 1991-1994, SARE and EPA each put $3.55 million into ACE, including $1.2 million for research on economic impacts of sustainable farming.

**Chapter 2**, though similar to Chapter 1, was named the Integrated Management Systems Program, to be administered through USDA's Extension Service. Commodity groups such as the National Cattlemen's Association favored Chapter 2. They were more comfortable with the integrated management concept, which they had previously helped to develop. Privately, they also felt that they would have more of a say in the design and operation of the Chapter 2 program administered through extension than they had in the administration of LISA. Congress, unable to decide between the two approaches, kept both of them in the bill.

**Chapter 3**, the Sustainable Agriculture Technology Development and Transfer Program, called for training in sustainable agriculture of cooperative extension agents and USDA personnel who work with agricultural producers. It also authorized two or more regional training centers and training

coordinator positions, as well as the development and dissemination of technical guides to help producers plan and adopt sustainable systems.

*The 1990 Farm Bill, for the first time, authorized funding for SARE: $40 million for Chapter 1, $20 million for Chapter 2, and $20 million for Chapter 3 -- a total of $80 million for what began as a single LISA program in 1988.*

The 1990 legislation also 1) expanded the membership of the regional Administrative Councils to include representatives of the USDA Soil Conservation Service, state departments of agriculture, federal agencies such as the EPA and the Geological Survey and agribusiness; 2) established a 28-member National Sustainable Agriculture Advisory Council to advise the secretary of agriculture on research, education, policy and financial issues related to sustainable agriculture; and 3) instructed USDA to support the sustainability of agriculture through its National Research Initiative, a major new program backed by the USDA-LG system to strengthen the science base for all food and agricultural research.

Finally, the 1990 bill, for the first time, authorized funding for SARE: $40 million for Chapter 1, $20 million for Chapter 2 and $20 million for chapter 3 -- a total of $80 million for what began as a single LISA program in 1988.

Shown below is the history of funds requested by the administration for LISA and SARE, the amounts appropriated annually by the Congress, along with the numbers of project proposals submitted and funded. To date, no funds have been appropriated for Chapter 2. The Congress appropriated $3 million for Chapter 3 for fiscal year 1994.

| Fiscal Year | SARE FUNDING *a* | | PROJECTS *b* | |
|---|---|---|---|---|
| | Requested | Appropriated | Proposed | Funded |
| | (millions of dollars) | | | |
| 1985-1987: | -------No funds requested or appropriated--------- | | | |
| 1988 | 0 | 3.90 | 370 | 53 |
| 1989 | 0 | 4.45 | 318 | 57 |
| 1990 | 0 | 4.45 | 158 | 41 |
| 1991 | 4.45 | 6.725 | 205 | 79 |
| 1992 | 4.45 | 6.725 | 171 | 69 |
| 1993 | 4.45 | 6.725 | 161 | 62 |
| 1994 | 6.91 | 7.40 *c* | -- | -- |
| 1995 | 8.825 *d* | -- | -- | -- |
| Totals | | 40.375 | 1,383 | 361 |

*Sources: USDA, 1994; Madden, 1994; author's records.*

*a* *Chapter 1 funds. Excludes funds provided by EPA in 1991-1994.*

*b* *In most regions and years, full proposals were selected from a larger number of pre-proposals.*

*c* *Plus $3 million for Chapter 3.*

*d* *Plus $5 million for Chapter 3.*

# SARE's Contributions and Limitations

Policies needed to support sustainable agriculture research and education should logically include those that will protect and extend the program's contributions and those that will seek to overcome its limitations. What are SARE's main contributions and limitations?

## Contributions

*SARE's principal contributions are its **purpose**, **approach**, and **results**. Nationwide, 1,208 farmers and ranchers helped to develop project proposals, provided land for research, or have otherwise participated in the 178 projects currently being funded by the program.*

SARE's principal contributions are its **purpose**, **approach** and **results**. The program's noble purpose and unique approach go hand in hand. Both depart from tradition. Either alone was enough at first to spawn questions and discomfort within the USDA-LG system. The purpose of the program is to develop and extend sound facts and information on alternative farming systems, not to produce journal articles. However, to be funded, projects not only must produce relevant information but also qualify as good science. The administration and conduct of SARE bring together new teams of producers, representatives of private and public groups involved in sustainable agriculture and scientists from different disciplines. Nationwide, 1,208 farmers and ranchers helped to develop project proposals, provided land for research, or have otherwise participated in the 178 projects currently being funded by the program (Madden, 1994).

SARE's results, while typically partial and tentative, are shedding needed light on site-specific ways to achieve sustainable farming systems. The management and findings of projects have consistently dispelled the conventional wisdom that research carried out with direct involvement of farmers and proponents of sustainability, much of it on practicing farms, is unlikely to satisfy the requirement of scientific objectivity. In fact, SARE project participants, aware of that belief, are all the more determined to show not only that scientific rigor and down-to-earth relevance need not conflict, but that they can strengthen each other. Many of the full-time commercial farmer participants are skilled scientists in their own right.

Each year, additional SARE results are added to what is becoming a vast, accessible library of data on potentially sustainable farming systems and practices. These are now reported and updated in numerous USDA-LG publications, as well as through electronic communication channels, such as Internet.

SARE's most impressive overall contribution, in effect, is the example it has set. The U.S. General Accounting Office, which reviewed the program in 1992, wrote that the program has "...successfully involved often opposing entities, including farmers, nonprofit organizations, agribusiness, and public and private research and extension institutions. The SARE program has been a catalyst in increasing interest in and acceptance of sustainable agriculture by individuals and institutions" (U.S. GAO, 1992, p. 3). All this despite lingering resistance from members of the USDA-LG community, in-

cluding those who may see SARE as threatening their long-standing leadership of agricultural research and education.

## Limitations

*The principal limitations of SARE are 1) its lack of federal support, 2) the difficulties it has had in addressing certain research needs, and 3) its declining uniqueness among research and extension programs.*

The principal limitations of SARE are 1) its lack of federal support, 2) the difficulties it has had in addressing certain research needs, and 3) its declining uniqueness among research and extension programs.

**Lack of federal support**. Federal support includes both money and administrative and professional support. Past funding support for SARE has come almost entirely from the Congress. As seen in the table above, the USDA requested no money for the program in 1988-1990, and never asked for an increase over the previous year's appropriation until the proposed budget for 1995. One reason, according to students of Washington politics, is that SARE was never the administration's idea. It came out of the Congress. The Clinton administration has changed that pattern by requesting a 19-percent boost in Chapter 1 funds for 1995--as well as an increase from $3 to $5 million for Chapter 3. But it remains to be seen if this signals a major policy shift.

USDA administrative and professional support have been minimal. While growing numbers of USDA-LG professionals now endorse SARE, officially the program is still a new "kid on the block," housed in a special projects unit of the Cooperative States Research Service along with other small, non-mainstream agriculture programs that in recent years have dealt with topics such as aquaculture, new crops and small farms. Left where it is, there is no assurance that SARE can have a strong voice in USDA research and extension policy-making and agenda setting.

Lack of department-wide coordination of sustainable agriculture programs and activities in the USDA also weakens potential support for SARE. As stated in the GAO report on SARE in 1992, "USDA currently has no policy on sustainable agriculture to provide clear and comprehensive direction for the nine agencies involved" (U. S. GAO, 1992, p. 3). The National Sustainable Agriculture Advisory Council, established in the 1990 Farm Bill, has yet to become a strong voice in the USDA. Furthermore, the Clinton administration was in office for 16 months before it nominated a new USDA assistant secretary for science and education. Whether that person, if confirmed, will encourage a stronger and more coordinated role for SARE remains to be seen.

Congressional support has limits too. While the Congress deserves credit for creating and funding SARE, it has also shown wavering support for the program in the face of political pressure from conventional agriculture interest groups. Its definition of sustainable agriculture in the 1990 Farm Bill is so inclusive as to have questionable value. More serious perhaps was the inability of Congress to decide between reauthorizing the LISA program (Chapter 1) and a substitute program promoted by conventional

agriculture groups (Chapter 2). Further, while Congress increased the annual funding of SARE from $3.9 million in 1988 to more than $7 million in 1994, it has also quietly appropriated more than $100 million for USDA's even newer National Research Initiative backed by the past two administrations.

**Difficulties of addressing certain research needs.** SARE seeks to address sustainability through "systems" research. While it has made good progress in that direction, the 1992 GAO study of the program found that only 33 of the 162 projects funded through that year actually included integrated-systems research (U. S. GAO, 1992, p. 30). Most projects still tend to focus on components of total systems, such as weed control, rotations, crop-livestock diversity and conservation practices, rather than study the entire farm system of which they are integral parts.

Often, the reason is simple: Agricultural scientists are not rewarded for doing systems research as they are for reductionist, disciplinary studies. From a practical standpoint, it may suffice for researchers to "think system" as they proceed to analyze manageable components of a system. But even then, if SARE falls short of the claim that it does systems research, it will be difficult to convince people that such research is superior to narrower approaches often claimed by the conventional research community to effectively address sustainability, such as integrated pest management.

SARE projects, like conventional agriculture research, also do better analyzing physical and biological relationships affecting sustainability than those of an economic or social nature, despite the realization that adoption of sustainable systems depends heavily on what is profitable for farmers and socially acceptable. Moreover, too little pathbreaking research is underway to determine the extent to which the nation's food and fiber system, including input, production and marketing sectors, and the federal policies that affect them, are furthering or impeding agricultural sustainability.

*Too little pathbreaking research is underway to determine the extent to which the nation's food and fiber system, including input, production, and marketing sectors, and the federal policies that affect them, are furthering or impeding agricultural sustainability.*

Another basic limitation is the tendency for most research to concentrate on the here and now. True, the short-run feasibility and profitability of agricultural production are critical. But sustainability, as we so often forget, is also about distant outcomes.

Closely related is the unmet need for research on the likely impacts of sustainable farming systems, if widely adopted, not only on farmers and agribusiness but also on the location, volume and control of farm production, food prices, diets, the well-being of farmworkers and rural communities and other quality of life indicators (Schaller, 1991a). The 1990 Farm Bill cited these needs, but research addressing them has progressed slowly.

**Declining uniqueness.** The SARE program looks and acts more and more like mainstream research and education. The tendency is perhaps inevi-

table as those involved in SARE must live and work with the dominant conventional system. More and more traditional interests are now involved in its administration. More grant categories have been added to annual calls for proposals. Most of the SARE regions now invite project proposals specifically from farmers and ranchers, in addition to regular SARE projects that also involve producers.

*SARE could be assimilated by conventional research and education before it succeeds in permanently placing sustainability on the nation's agricultural research and extension agendas.*

Of course, many of these changes are the direct result of efforts by SARE leaders and the Congress to build coalitions of support for the program. Involving persons who want to get into SARE and giving the program a more acceptable mainstream look are ways to do that. But however valid their motives, these changes could be replacing SARE's vigorous commitment and informality with a complexity and bureaucratic style often found only in older, less pioneering programs. As a result, SARE could be assimilated by conventional research and education before it succeeds in permanently placing sustainability on the nation's agricultural research and extension agendas.

## SARE Policy Options

What policy changes should be made in the 1995 Farm Bill, or through other legislation, to protect and extend the contributions of SARE and to overcome its limitations? Both marginal and "radical" changes deserve consideration.

### Marginal Changes

Appropriate changes in the research and extension title of the 1995 Farm Bill could do the following:

**Clarify and simplify SARE's authority**. Correct the Chapter 1-2-3 confusion and unhealthy competition between competing approaches created in the 1990 Farm Bill. Reauthorize SARE as a single program. If separate chapters are retained, ensure that the outcome will not perpetuate competition between the different approaches and a watering down of total support for SARE.

**Require better USDA coordination**. Instruct the USDA to appoint a special assistant to the secretary for sustainable agriculture to coordinate USDA's diverse programs and activities related to sustainable agriculture, including research and education.

**Elevate SARE in USDA's organization**. The legislation could recommend that USDA elevate the SARE program, including the position of Washington director, to a level at which it has higher visibility and more direct access to top officials and leaders of other USDA programs, as well as interested publics.

**Strengthen extension's role.** To help the Cooperative Extension Service catch up with research on sustainable agriculture, the 1995 Farm Bill could require USDA to expedite and expand its support to extension agents and the field staff of other USDA agencies. Their interest in sustainable agriculture is growing. They need visible support and tools.

**Reinforce ties between research and extension.** Expand opportunities for the effective collaboration of sustainable agriculture researchers and extension agents by strengthening working relationships, if not organizational ties, between USDA's Cooperative States Research Service and the Cooperative Extension Service.

**Call for more research on unmet needs.** Require USDA to put increased emphasis on critical and neglected research areas, among them 1) whole-farm studies, 2) the economics of sustainable farming, 3) effects of increasing industrialization and the changing roles of input and marketing sectors on the sustainability of agriculture, and 4) the estimation of impacts of widespread adoption of sustainable agriculture. New incentives and rewards for scientists should be developed to encourage their attention to such needs.

## Radical Changes

Marginal change is often all that is needed to improve mainstream programs. But SARE is not a mainstream program. Indeed, if the ultimate goal is for all federally supported agricultural research and extension to contribute to, or at least not impair, the sustainability of agriculture, either of two radical changes must occur: The current agriculture research and extension system must undergo a fundamental transformation, or the SARE program must be expanded to replace most of that system.

It is impossible to imagine either of those changes occurring in annual steps based on current legislation. Funding authorizations alone show the absurdity of such an expectation. For example, even if all chapters of SARE were funded to their authorized level of $80 million, SARE would still be getting only 5 percent of the current federal appropriation for food and agricultural research and extension. SARE's newcomer standing in the USDA-LG system is equally out of sync with the goal of having all federally-supported research and extension support sustainability. Therefore, no discussion of federal policy options to fully support a sustainable agriculture would be complete if it did not consider radical changes of the kind needed to achieve such a goal in a reasonable period of time.

*If the ultimate goal is for all federally supported agricultural research and extension to contribute to the sustainability of agriculture, either the current agriculture research and extension system must undergo a fundamental transformation, or the SARE program must be expanded to replace most of that system.*

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# The Environmental Reserve-Rural Land Trust Program

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# The Environmental Reserve-Rural Land Trust Program

## Abstract

**The Environmental Reserve-Rural Land Trust program would increase the efficiency of the removal of acres from intensive production in a manner that realizes the highest possible net environmental benefit. For the Environmental Reserve, the maximization of net environmental benefit would be subject to first meeting supply control requirements. To accomplish this, the federal government would use a mix of short and long-term lease and easement arrangements. The objectives of the Environmental Reserve-Rural Land Trust are to:**

1. **Improve the cost-effectiveness, with respect to conservation objectives, of federal farm policy by maximizing the net environmental benefit of cropland set-asides and retirement programs**
2. **Manage supplies of commodities**
3. **Protect farm income**
4. **Increase commodity program flexibility**
5. **Remove the most highly sensitive cropland from intensive production**

**The advantage of a single Environmental Reserve-Rural Land Trust program, as compared to the current system of many separate conservation and land retirement programs (e.g. Water Bank, CRP, WRP, 0/50-85 and ARP), is that it would allow for more efficient land use planning. A unified program would allow both short-run and long-run goals to be addressed simultaneously. All land uses could be addressed within the ecosystem. Thus, the Environmental Reserve-Rural Land Trust is compatible with the objective of a single total-farm resource plan. The strength of the program is that it would not increase current federal expenditures and should not result in any significant income transfer or loss of income among producers.**

# Introduction

Agriculture's contribution to the deterioration of natural resources has become recognized as a significant problem in the United States. Erosion from cropland averages 7.3 tons/acre annually (USDA, 1989), but on 22 percent of cropland it exceeds 14 tons/acre annually (Clark, 1985). Erosion contributes to impaired water resources, impaired air quality and a decrease in long-term productivity of cropland. Runoff and infiltration of nutrients and pesticides applied to cropland into groundwater are increasingly frequent sources of nonpoint source water pollution. These contaminants, in water, air and soil, also impact wildlife populations and may threaten the health of producers, their families, farmworkers and the community at large.

The USDA spent $16 billion on domestic commodity programs in fiscal year 1993 (USDA, 1994). A significant percentage went directly to farmers as deficiency payments[1] for their program crops on base acres[2]. The program crops that receive deficiency payments are: corn, sorghum, oats, barley, wheat, rice and cotton. About 70 percent of the nation's cropland is currently enrolled in federal commodity programs (National Research Council, 1989).

*About 70 percent of the nation's cropland is currently enrolled in federal commodity programs. In a period of increasing awareness as to agriculture's contribution to the societal costs of pollution, commodity payments should provide producers who receive them with incentives for good resource and environmental management.*

In a period of increasing awareness as to agriculture's contribution to the societal costs of pollution, commodity payments should provide producers who receive them with incentives for good resource and environmental management. Our proposal for a "greening" of the farm program is to restructure the present land retirement programs, from the current system of primarily commodity production control, into a planned and targeted program that is designed to provide environmental benefits. The result would be a comprehensive land use management program integrating short and long-term land conservation programs.

As a condition to receive federal deficiency payments, farmers may be **required** to reduce their acres planted and eligible for payments through the acreage reduction program[3]. The ARP is a variable percentage of a producer's participating base acres that must be either put into some conservation use or planted to a few allowable industrial crops. These annual base acreage reductions (set-asides) occur primarily for two reasons: to control the supply and price of commodity crops and to reduce government outlays for deficiency payments.

There are additional programs such as 0/50/85[4], the Conservation Reserve Program[5], the Wetlands Reserve Program[6] and Water Bank[7] that also remove land from commodity crop production. Except for 0/50/85, which is an annual program, these **voluntary** programs differ in that they are long-term land idling programs and are targeted to some degree to provide environmental benefit.

*For the Environmental Reserve, the federal government would use a mix of short and long-term lease and easement arrangements. Long-term protection agreements would replace current programs like CRP, WRP and Water Bank. The annual and multi-year set-aside programs would be replaced by short-term conservation agreements.*

Our proposed Environmental Reserve-Rural Land Trust would replace these current land retirement programs. The goal of this program is to increase the efficiency of the removal of acres from intensive production such that the highest net environmental benefit is realized. For the Environmental Reserve, this maximization would be subject to supply control needs. To accomplish this, the federal government would use a mix of short and long-term lease and easement arrangements. Long-term protection agreements would replace current programs like CRP, WRP and Water Bank. The annual and multi-year set-aside programs would be replaced by short-term (one-to five-year) conservation agreements.

## Design of the Program

The objectives of the Environmental Reserve-Rural Land Trust are to:

1. Improve the cost-effectiveness, with respect to conservation objectives, of federal farm policy by maximizing the net environmental benefit of cropland set-asides and retirement programs
2. Manage supplies of commodities
3. Protect farm income
4. Increase commodity program flexibility
5. Remove the most highly sensitive cropland from intensive production

To meet the above objectives, the Environmental Reserve-Rural Land Trust would use both short and long-term agreements with producers. The Environmental Reserve would specifically target the land used for commodity reduction to provide the maximum environmental benefit possible.

The advantage to a unified Environmental Reserve-Rural Land Trust program, as compared to a separate Water Bank, CRP, WRP, 0/50/85 and ARP, is that it allows more efficient land use planning. A unified program would allow short-term and long-term goals to be considered simultaneously. All land categories could be addressed within an ecosystem. A unified program would complement the objective of total-farm resource planning.

Another benefit of the program is that the short-term enrollment option of the Environmental Reserve-Rural Land Trust would give producers an opportunity to try a conservation program for a few years before committing to a permanent agreement. Land could flow more readily from short-term to long-term agreements in the Environmental Reserve-Rural Land Trust. The land that went from a short-term to a long-term agreement should also contribute documented high environmental benefits.

In the **short term**, the Environmental Reserve would largely eliminate existing annual land set-aside and 0/50/85 programs and replace them with incentive "diversion" payments to farmers. They would be paid to remove land from crop production, or to change production practices, in a way that both reduces production and provides environmental benefit. Producers would enroll land into the program through a bid process. Their

bids would be ranked by a formula, to be developed by USDA, that selects bids that maximize environmental benefit per dollar spent, within the constraints of a preset supply reduction target and a set level of funding. The ranked bids would be accepted, in order of their rank, up to the point where supply reduction goals are met.

Bids for the Environmental Reserve would be for one to five years' duration, with the payments made to producers in annual installments. The total land area/production reduction available for bid would vary from year to year according to carry-over stocks and production needs. The USDA could retain provisional authority to reinstate the ARP in exceptional years in which carry-over stocks are heavy and further commodity supply reductions are needed.

*Especially sensitive acres that are either not suitable for sustained crop production or that provide exceptionally high levels of environmental benefit would be retired from production into a Rural Land Trust.*

The purpose of the Environmental Reserve-Rural Land Trust Program would be to reward producers who go **beyond** the minimum annual requirements to be in compliance with current environmental conditions of the farm program -- swampbuster, sodbuster and conservation compliance -- and the potential provisions of the Clean Water Act. It is not intended primarily to pay people for strict compliance. However, the program should recognize that the costs of pollution control are not uniform among producers, and that there are some producers for whom just achieving levels of minimal compliance puts them in serious financial straits. For these farmers, the program should be allowed as a resource to meet federal or local standards. Allowing a hardship clause to the program would allow meaningful minimum pollution control standards to be set, providing a safety net for those producers for whom meeting the regulation is infeasible.

Payments for the Environmental Reserve would be made for particular practices, with the bidding system also taking into account the contribution of the practices to supply control. Practices would include, but are not necessarily limited to: field borders (covered end rows), contour grass strips, grass waterways, grass windbreaks, wildlife habitat plantings, idling farmed wetlands and adding soil-building crops to rotations.

*The land would be placed into long term easements or contracts. This part of the program would focus on wetlands, riparian areas, endangered species habitat, aquifer recharge areas and lands which support demonstrably high levels of biodiversity.*

In the **long term**, WRP, CRP, Water Bank and other especially sensitive acres that are either not suitable for sustained crop production or that provide exceptionally high levels of environmental benefit would be retired from production into a Rural Land Trust, as conceived by Wolcott [1993]. This part of the program would also operate on a bid basis, but would be targeted to realize the greatest social/environmental value per dollar. The goal is to **permanently** protect those lands that provide more benefit to society in non-crop or restricted-crop use. The land would be placed into long-term easements or contracts. This part of the program would focus on wetlands, riparian areas, endangered species habitat, aquifer recharge areas and lands that support demonstrably high levels of biodiversity (Wolcott, 1993).

Existing practices on eligible land would be eligible for the Environmental Reserve-Rural Land Trust program, but the payment (acceptable bid) for maintaining the practice should be lower than the payment for newly created practices. The payment would be lower because there would not be the need to pay an incentive to install the practice. The payment would be a rental to maintain the practice. Existing practices, however, may be at a competitive advantage in the bidding process in years when the need for supply reduction is low, or when funds are tight. In those years, the bidding formula could be weighted to protect existing structures of known environmental benefit. This would favor those producers who are already good stewards by paying them to maintain such land uses as filter strips, end rows and wildlife habitat. The rationale for paying for existing practices is that they are very likely to be removed in years when there is a high incentive for commodity crop production. A nominal payment (with base protection for accepted bids) may control some of this loss.

*Funding for the Environmental Reserve portion of the program would be raised by: reducing deficiency payments levels by an amount roughly equal to the annual rental value of the land that a producer no longer has to idle, significantly reducing the 0/50/85 programs and transferring those funds to the Environmental Reserve, and closing payment limitation loopholes or further targeting program benefits.*

Funding for the Environmental Reserve portion of the program would be raised by: reducing deficiency payments levels by an amount roughly equal to the annual rental value of the land that a producer no longer has to idle, significantly reducing the 0/50/85 programs and transferring those funds to the Environmental Reserve, and closing payment limitation loopholes or further targeting program benefits (e.g. graduated target price deficiency payments or a graduated mandatory flex acre system). Because the commodities differ in supply management requirements, the Environmental Reserve would enroll each of the commodities separately to meet supply management objectives.

Using FAPRI projections for 1995-1996 corn prices, base acres, variable costs, yields, ARP, acres in 0/85 and deficiency payments levels, Tables 1, 2 and 3 show how funding could be raised through the restructuring of the commodity program, without reducing producer income, given the following assumptions:

- The targeted number of acres of corn are enrolled into the Environmental Reserve program, where targeted acres = ARP + (.75 x 0/85).
- 25 percent of 0-85 is maintained in the 0-85 program for minor oilseeds and planting is prevented.
- Average yield on 0-85 corn acres is one-half the average yield of other corn acres.
- Price of corn is not impacted.
- All nonpayment flex acres are planted to corn.

**Table One**

| Assumptions (Corn 1995-1996) | | | |
|---|---|---|---|
| Base (mil. ac) | 81.2 | Average Variable Cost ($/ac) | 143.3 |
| Base Acres in CRP (mil. ac) | 4.66 | Average Price Corn ($/bu) | 2.27 |
| ARP + 0/85 (mil.ac) | 7.50 | Average Deficiency Pmt. ($/bu) | 0.48 |
| 0/85 (mil. ac) | 2.70 | Average Govt. Yield (bu/ac) | 105.20 |
| Average Capital Replacement Costs from an Additional Acre of Corn ($/ac) | 28.59 | Average Yield (bu/ac) | 124.70 |
| | | NFA (%) | 15 |

*Source: FAPRI 1994 U.S. Agricultural Outlook, April 1994*

**National Net Income From Corn** =

**[revenue - costs + deficiency payments + 0/85 payments] =**

[(Base Acres - CRP Acres-0/85-ARP) X (Average Yield) X (Price Corn)] - [(Base Acres-CRP Acres-0/85-ARP) X (Variable Cost)] - [(Base Acres-CRP Acres-0/85-ARP) X (Capital Replacement Cost)] + [(Government Yield) X (Average Deficiency Payment) X (1-NFA %) X (Base Acres-CRP Acres-0/85-ARP)] + [(Government Yield) X (Average Deficiency Payment) X .85 X 0/85]

The NFA that would hold income constant for the Environmental Reserve where corn is planted on all former ARP acres and on 75% of the former 0-85 acres is:

**1-NFA** =

**[income - revenue on non-0/85 land - revenue on 0/85 land + costs - 0/85 payments] divided by [government yield X average deficiency payment X planted acres] =**

[(Income) - [(Base-CRP-0/85) X (Average Yield) X (Price Corn)] - [.75(0/85) X .5(Average Yield) X (Price Corn)] + [(Base - CRP - .25(0/85)) X (Variable Cost)] + [(Base - CRP - .25(0/85)) X (Capital Replacement Cost)] - [.85 X (Government Yield) X (Average Deficiency Payment) X .25(0/85)] ] ÷ [(Base - CRP-.25(0/85)) X (Government Yield) X (Average Deficiency Payment)]

## Table Two

| Government Outlays for Corn Deficiency Payments, Existing Program Compared to the Environmental Reserve | |
|---|---|
| Estimated National Net Income from Corn, Existing Program (bill. $) | 10.75 |
| Estimated Government Outlays for Corn Deficiency Payments, Existing Program (bill. $) | 3.08 |
| Average Deficiency Payment Outlay per Corn Acre, Existing Program ($) | 40.23 |
| Average Net Income per Acre of Corn ($) | 140.51 |
| NFA that Holds Income Constant, Environmental Reserve (0 ARP, 75% Reduction in 0/85, Deficiency Payment = $0.48/bu) (%) | 33 |
| Government Outlays for Corn Deficiency Payments, Environmental Reserve (bill. $) | 2.61 |
| Average Deficiency Payment Outlay per Corn Acre, Environmental Reserve ($) | 34.06 |

## Table Three

| Funding the Environmental Reserve | |
|---|---|
| Number of Corn Acres to be Reserved (ARP + .75 (0/85) (mil. ac) | 6.83 |
| Savings to Government from Reduced Deficiency Payment Layouts (bill. $) | 0.47 |
| Deficiency Payment Layouts Not Spent, on Acres to be Reserved [used to Fund the Reserve] ($31.51 X 6.83 mil. ac) (bill. $) | 0.23 |
| Total Funds Availabale (bill. $) | 0.70 |
| Average Funds Available per Acre [Assuming 6.8 mil. ac Enrollment] ($) | 103.24 |

To reserve 6.8 million acres, the same number that was estimated to be in the ARP plus 75 percent of the 0/85 in 1995-96, there would be about $103 per acre available - just from eliminating the ARP requirement, reducing 0/85 and increasing the NFA. This is comparable to the estimated $140 per acre that a producer enrolled in the commodity program would earn from growing corn in 1995-96.

Although the 33 percent NFA in the Environmental Reserve scenario may seem extreme compared to the current 15 percent NFA, because the Environmental Reserve also eliminates the 7.5 percent ARP requirement, it would be more accurate to compare the 33 percent NFA under the reserve to the actual 22.5 percent unpaid acres under the existing program. The per acre average income of production in **both** programs would be $140. Thus the increase in NFA, on average, would not reduce net income.

In addition, to fund the Rural Land Trust there is considerable money already budgeted to WRP and Water Bank that could be used, and perhaps some of the money currently budgeted to CRP could be retained[8]. The program would be designed to allow state, local and private groups to form partnerships with the USDA to focus scarce resources on areas of mutual concern, as has already happened in some Hydrologic Units Areas.

The program would be administered at the national level by ASCS, with SCS responsible for approving practices, technical specifications and ICM plans. However, because there are regional differences in environmental problems, production capacities and costs, the creation of the bid ranking formula for the Environmental Reserve-Rural Land Trust Program should be similar to the process of the present WRP, in which states have the option to alter the national formula to reflect local conditions, subject to approval. This would allow some state level targeting of environmental/economic problems.

*At the national level, net income should be about the same for producers. Farmers will have greater flexibility to farm their land. They can chose between more production and lower deficiency payments or, if they need help addressing environmental problems on their farm, they can choose less production and higher "green" payments.*

Current levels of program base acres and/or having land eligible to be enrolled in a long-term conservation program (e.g. WRP) would determine producer eligibility for the program. The long-term Rural Land Trust could be more flexible about the land that it enrolls, as its funding would not be so intimately tied to the commodity program. Environmental Reserve acres would have to have existing base.

At the national level, by the design of the program, net income should be about the same for producers. Farmers will have greater flexibility to farm their land in a way that makes economic and environmental sense. They can choose between more production and lower deficiency payments or, if they need help addressing environmental problems on their farm, they can choose less production and higher "green" payments. Producers whose bids are not accepted can increase their production levels (with the elimination of set-aside requirements) such that the reduction in income from lower deficiency payments rates should be offset by increased crop sales.

However, exactly how income would be affected at the individual farm level will depend upon the weights of the bid formulas. Producers whose bids are not accepted into the Environmental Reserve (or who do not enroll), and whose land has relatively low variable costs per unit of production, will be likely to receive an increase in income. Producers whose land has relatively high per unit variable costs of production would be likely to experience a reduction in income, if they give up additional government payments to farm all of their land. However, such high cost producers should have a competitive advantage in bidding their land into the Environmental Reserve, as they give up less income by foregoing production. Prices received by producers for commodities should not be impacted by the program because achieving specific levels of supply control is a stated objective of the program.

## Economic Impacts of the Environmental Reserve-Rural Land Trust

*For all farmers, the program may improve cropland values. Farm values, for long-term program participants, may rise as a result of the steady stream of fixed income generated by the program and improved soil and water quality on-site. The value of land surrounding program participants may increase as a result of the off-site benefits from their practices.*

### Farm Level

The establishment of an Environmental Reserve-Rural Land Trust would provide producers with the flexibility to decide whether to participate in land set-aside programs. For those producers who do decide to join, the program would guarantee them a fixed income for the contracted number of years, much like the present CRP, thereby reducing risk. It would provide assistance to incorporate good stewardship practices on a farm, potentially improve on-site water and soil quality and reduce the incidence of chemical exposure.

For those who choose not to participate, or whose bids are not accepted, their income should remain about the same (on average) as additional revenue resulting from the removal of ARP requirements (allowing increased production) should offset their reduced federal deficiency payments income.

For all farmers, the program may improve cropland values. As was seen in the CRP, farm values, for long-term program participants, may rise as a result of the steady stream of fixed income generated by the program and improved soil and water quality on site. The value of land surrounding program participants may increase as a result of the off site benefits from their practices.

### Local Level

The effect at the local level of the program may be mixed, depending on how croplands and set-asides are distributed. The CRP, which idled vast tracts of land, was shown not to have much of an impact overall on a regional scale (Dicks et al., 1990). In areas where there was large acreage

enrolled, however, there did tend to be a negative impact on local economies, resulting from the purchase of fewer inputs and a reduced need for labor (Mortensen et al., 1989; Reichenberger, 1987). However, it is important to bear in mind that, because the bids for the Environmental Reserve-Rural Land Trust would include many partial field enrollments and changes in management practices, it would tend not to have the concentrations in acreage that the CRP had. Therefore, any negative economic impacts on communities from the Environmental Reserve-Rural Land Trust should be less than the CRP's impact.

Some of the positive economic impacts in high reserve areas may be: increased benefit from recreational use (hunting and fishing) and improvements in water quality, resulting in lower treatment costs to local communities.

### State and Federal Level

At the state level, high enrollments of land in especially sensitive areas may help states meet water quality attainment goals and other environmental objectives. This would reduce the amount that the state would have to pay to meet these goals. Other benefits to a state might be increased tourism resulting from improvements to wildlife habitat and water quality that raise the recreation value of these resources.

*At the state level, high enrollments of land in especially sensitive areas may help states meet water quality attainment goals and other environmental objectives. Other benefits might be increased tourism resulting from improvements to wildlife habitat and water quality that raise the recreation value of these resources.*

At the federal level, the program would provide environmental benefits without additional cost to the government. Reductions in deficiency payments outlays would offset the new diversion payments.

## Other Impacts

### Environment

It is expected that the net effect of the Environmental Reserve-Rural Land Trust on the environment will be positive. However, the size of the impact of this program is difficult to state with precision. As an example, a practice to control erosion, such as no-till, can be very pesticide intensive. While erosion levels may go down, groundwater may now be threatened. These potential cross-media transfers of pollution need to be considered in the planning process.

Should a region have a lot of land that scores low on the bid ranking formula, substantial increases in production may cause environmental quality in those areas to decline. This assumes, however, that set-asides as currently practiced play a significant role in improving the environment. This is a tenuous assumption at best. In any event, the positive environmental benefits received from the Environmental Reserve-Rural Land Trust would exceed any environmental losses from reduced set-asides.

## Fairness

This program does not even attempt to rectify the considerable disparities that exist in the distribution of federal farm program payments. In 1985, more than 60 percent of direct government payments went to only 14 percent of all operators, whose net cash incomes averaged $130,000 (Whittaker and Ahern, 1993). These income inequalities are largely because federal payments are based on crop base acreage and historical yields, and they would be unaffected by this program.

The program will, however, reward producers for using agricultural land to protect the environment. Those who enroll in the program and are accepted should receive higher government payments than non-Environmental Reserve-Rural Land Trust farm program participants. However, nonparticipants, because they can plant additional acres (former ARP-0/50/85 acres), should not observe substantial income loss.

The program would also assist those producers to whom compliance with federal environmental regulations would pose an excessive financial burden. This would help to target some of the farm program payments away from wealthy farmers to lower income farmers. It would also help to make regulations enforceable and reasonable at a national level. Nonpoint source pollution is, to an extent, a problem of large numbers of land users. Therefore, if more people achieve minimum federal standards, overall contamination should be reduced.

*The program keeps the costs of protecting the environment from agricultural pollution within the payment structure of the agricultural program. The societal costs of pollution are, to a greater extent, internalized into the producer's costs.*

The program is also fair at a national level because it keeps the costs of protecting the environment from agricultural pollution within the payment structure of the agricultural program. Some federal income is transferred from those who are not enrolled in a conservation program to those who are. As it requires no additional funding from USDA, this program would not put additional costs on non-farm program participants (e.g. from tax increases, budget allocation transfers from other programs). Therefore, the societal costs of pollution are, to a greater extent, internalized into the producer's costs.

## Food Security

The Environmental Reserve-Rural Land Trust program could give the Department of Agriculture the provisional right to set across-the-board land set-asides when there are gluts of certain commodities and, in emergency situations, the authority to release producers, on a voluntary basis, from their contracts. In concept, there should be no change in supplies of commodities with the implementation of the program.

# Program Acceptability

## Farmer

The Environmental Reserve-Rural Land Trust, if it is well administered by USDA with clear rules, should be well received by producers. Like the CRP, which was extremely well received by farmers, it provides an amount of income security and risk reduction. It allows more flexibility to farm program participants and provides incentive for good stewardship. Its popularity also depends on relative commodity prices and deficiency payments to determine how attractive the alternative -- of planting the entire acreage -- would be.

*The Environmental Reserve-Rural Land Trust, if it is well administered by USDA with clear rules, should be well received by producers. Like the CRP, which was extremely well received by farmers, it provides an amount of income security and risk reduction. It allows more flexibility to farm program participants, and provides incentive for good stewardship.*

## General Public

Many people have perceived commodity program benefits as handouts to farmers. Payments for environmental benefit should seem a more attractive use of federal dollars. Also, as the majority of nonpoint source contamination effects are felt off site, all of society benefits by reducing agriculture's nonpoint source contribution. In particular, the benefits of the Environmental Reserve-Rural Land Trust from the long-term contracts, such as improved wildlife habitat, wetlands and riparian area restoration and significant water quality improvements, would accrue off site. Therefore, the program should be favorably considered by the general public.

## Political

This program should be extremely acceptable politically. First, the program does not require any new funding, just a restructuring of current resources. Second, the program should not involve a large redistribution of income. Net income would remain the same. Most producers should receive the same net income as they do now. Some will just receive more federal money and less from the market, and others will receive more money from the market and less federal money. And finally, the program, by redirecting funds to environmental purposes, should gain support from non-farm groups.

# Ease of Implementation

## Assigned Agencies

How easy this program is to administer really depends upon the willingness of the USDA to support it. As was seen in the Integrated Farm Management program, a program will not be successful if the rules are too complicated and if the local USDA administrators are not well trained and kept up to date on the program. Initially, the most difficult part will probably be the development of the bid-ranking formula and designing the

proper process of acquiring the necessary information from producers to be able to rank bids. Fortunately, the USDA does have the experience of creating the CRP and the WRP bid formulas to draw upon.

For the Environmental Reserve, a transition period, for the first few years, in which an increasing percentage of ARP acres were available for the reserve, would probably be necessary. This would prevent USDA staff, who are unfamiliar with the program, from becoming overwhelmed by the sheer volume of bids. Because the majority of the bids will be multi-year, once the ARP program is fully transitioned over to the reserve, USDA would have to deal with only a portion of the potential acreage in any given year.

Assessing compliance with environmentally targeted land set-asides should be no more difficult than the current program. However, checking for compliance with changes in management practices and yield goals will present greater, but not insurmountable, administrative problems.

A significant problem may be the inexperience of many SCS employees in creating farm plans that do not control soil erosion. The SCS has not been as comfortable in the areas of nutrient and pesticide management as in erosion. However, they are supposed to be doing whole-farm plans now that encompass nutrients, pesticides and other environmental concerns for such programs as ICM and WQIP. They are also required to delineate agricultural wetlands. Therefore, this is a problem that they will need to address (and are addressing) whether or not the Environmental Reserve-Rural Land Trust exists.

## Program Flexibility

*With the Environmental Reserve-Rural Land Trust, farmers are explicitly recognized as producing joint products, agricultural goods and environmental benefits. Producers can choose what mix of those two to provide.*

One benefit to the program is that it provides more flexibility to producers than the current system of mandatory set-asides. With the Environmental Reserve-Rural Land Trust, farmers are explicitly recognized as producing joint products, agricultural goods and environmental benefits [Wolcott, 1993]. Producers can choose what mix of those two to provide.

## Timeliness of Desired Effects

Some of the effects of the Environmental Reserve-Rural Land Trust should be apparent in the short term. Reductions in soil erosion and increased wildlife habitat and reductions in sediment loadings to nearby bodies of water would fall under this category. Unfortunately, some of the benefits of the program will take considerably more time to occur. Soil quality and water quality changes, especially groundwater, will occur over a long period of time.

Also, although the program will be targeted to provide the most benefit possible, this is no guarantee that in all areas there will be enough land enrolled to provide observable change in ambient environmental quality. Monitoring and record-keeping will be a very important aspect of the pro-

gram to help establish the connection between the land use change and the change (or lack there of) in the surrounding environment.

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# Endnotes

[1]The deficiency payment is either the difference between the market price and the target price or the loan rate and the target price, whichever is the lesser amount. The target price is established in law by Congress and the loan rate is set by USDA, within the parameters set by Congress. The target price, designed to support farm income, is often set well above the market price and the cost to the farmer to produce a crop.

[2]Base acres are calculated as a moving average of acres planted to a program crop over the preceding five years (three years for cotton and rice).

[3]The Acreage Reduction Program is announced annually for each program crop. The resulting "reduced acres" on participating farms form the Acreage Conservation Reserve. Technically ARP differ slightly from "set-asides," but this paper uses the terms interchangeably following common usage.

[4]**0/50/85** are optional federal acreage diversion programs that allow commodity crop producers to divert a portion of their base acres that are eligible for deficiency payments to conservation uses or to a few allowable crops. **0/85** is the program for wheat and feed grain producers. It allows them to devote all or a portion of their paid 85 percent of base to a conservation use of minor oilseeds, sesame or crambe, and under some conditions, receive deficiency payments. **50/85** is the program for cotton and rice producers. For this program at least 50 percent of the eligible 85 percent of paid base acres must be planted to the commodity crop. On the remaining 50 percent, minor oilseeds may not be planted but sesame or crambe may be planted, or the land may be put into a conservation use.

[5]The Conservation Reserve Program was initially created for supply and erosion control purposes. It offered producers 10-year contracts, paying rent and cost share assistance, to idle highly erodible cropland. From 1986 to 1992, 36 million acres of land were enrolled into the program. The bidding process changed in 1990 to include other environmental benefits such as water quality and wildlife habitat. Annual costs have been about $1.9 billion.

[6]The Wetland Reserve Program is currently available in 20 states, and compensates landowners for restoring and protecting wetlands that were previously drained for crop production. WRP establishes a permanent easement that limits land use to those activities that do not conflict with the functions of a wetland. By the end of 1994, nearly 125,000 acres will be enrolled into the program.

[7]The Water Bank program, which protects existing natural wetlands, was established in 1972. Water Bank protects unconverted wetlands and therefore rewards landowners who have protected wetlands from development. The program enrolls producers into 10-year contracts, which may be re-

newed for an additional 10-year period. In 1992, 607,000 acres were enrolled.

[8]In the current budget baseline, CRP funding steadily declines as 10-year contracts come to an end between 1995 and 2002. Some of this funding could be restored during 1995 budget and farm bill deliberations. Funding could also be gained from existing CRP outlay by allowing participants to bid out of CRP prior to the end of the 10 years in cases where the land is likely to go back into crop production anyway and where it can be farmed within the soil tolerance level.

# The Guaranteed Revenue Approach to Farm Programs: The Iowa Proposal and Other Alternatives

## Otto C. Doering

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*Doering is a past director of the American Agricultural Economics Association. He has served on national advisory boards of USDA and the Department of Energy, and has been a consultant to the National Academy of Sciences, the Congressional Office of Technology Assessment and the World Bank. He has served as chairman of the National Public Policy Education Committee, director of the Energy Policy Research and Information Program at Purdue, and served for over a decade on Indiana's Recycling and Energy Development Board. He has had four years of field experience in Southeast Asia, including two years with the Ford Foundation.*

*Doering's training includes a B.A. in government from Cornell University, an M.S. degree from the London School of Economics, and a Ph.D. in agricultural economics from Cornell University. His current responsibility is to coordinate research and education on environmental policy issues for the School of Agriculture at Purdue.*

# The Guaranteed Revenue Approach to Farm Programs: The Iowa Proposal and Other Alternatives

## Abstract

**A number of people are suggesting that we replace current farm programs in the U.S. with revenue insurance, a form of guaranteed revenue for farmers. There are two similar guaranteed revenue programs being discussed. One is revenue assurance like the Iowa Program and the other is revenue insurance as suggested by Harrington and Doering. In revenue assurance, gross revenue is guaranteed while revenue insurance separately insures yield risk and price risk. Two critical differences are the greater insurability of the Harrington-Doering proposal and the different regional effects of the Iowa proposal The Harrington-Doering proposal allows for more stable and predictable costs and a larger potential role for the private sector in providing the insurance. The Iowa proposal can disproportionately reward fringe production areas (areas with more highly variable yields) while comparatively penalizing major production areas (areas with more stable yields).**

**Both these guaranteed revenue programs offer the opportunity to reduce the costs of current programs from $6-7 billion/year to $4-5 billion for revenue assurance, or to less than $4 billion under revenue insurance depending upon the contribution made by farmers.**

**Guaranteed revenue programs offer protection to farmers that compares favorably with current programs. Revenue insurance appears to be GATT legal. These new programs could be more environmentally friendly, and budgetary savings might be devoted to environmental concerns.**

**Acceptability of guaranteed revenue programs will largely depend upon the political will of Congress. Adopting a program that allows less tinkering to meet special needs and special situations would have to follow some discipline for long-term average yield, and prices play the major role in determining levels of revenue support.**

# Introduction

Guaranteed revenue plans like revenue insurance and revenue assurance are designed primarily to even out the fluctuations in farm income. Revenue guarantees may also be a vehicle for government transfers of income to farmers, depending upon the design of the program. In the basic concept, farmers receive a guarantee of some safety net level of income, usually based upon historical production levels or yields (to protect against yield variation) and upon past prices or farm incomes (to protect against price or income variation). Thus, a farmer commits to a package that might substitute for today's crop insurance and disaster payments on the one hand and fixed target prices and deficiency payments on the other.

*Guaranteed revenue plans like revenue insurance and revenue assurance are designed primarily to even out the fluctuations in farm income. In the basic concept, farmers receive a guarantee of some safety net level of income as a substitute for today's crop insurance, disaster payments, fixed target prices and deficiency payments.*

Such programs, similar in concept, can be designed in different ways, and these differences are extremely important with respect to the distribution of costs and benefits of the program. We need to explore the consequences of the revenue insurance approach compared to the revenue assurance approach.

Most revenue insurance programs (like the Harrington-Doering proposal and the Ontario Market Revenue Plan) separate the two risks. On the one hand there is the yield risk, largely a factor of weather, that can be insured on an actuarial basis. On the other hand, there is the price risk that might be guaranteed by government, or might be self-insured by farmers over the long run on the basis of long-term average prices.

Most revenue assurance programs (like the Iowa Proposal and the Canadian Gross Revenue Insurance Program for Western Canada) deal with both risks simultaneously. The programs protect against the joint impact on revenue of yield variability (weather) and price variability. This joint set of risks is extremely difficult to calculate and to insure on an actuarial basis so that premiums reliably cover costs.

## Revenue Insurance

Revenue insurance, as pictured in Figure 1, starts with a base of crop insurance to protect yield levels. In this figure the yield is protected on some proportion, Cy, of the historical yield, HY. Revenue for yield levels below the guaranteed yield are guaranteed by the insurance, in this case at the market price. Remember that the left axis of the graph represents gross revenue per acre. As the actual yield increases from zero, gross revenue comes less and less from crop insurance and more and more from the market sale of the harvested crop. In this instance, all revenue beyond the yield coverage level is revenue from the market. There is every incentive to harvest as much crop as possible, and such risk is insurable under standard insurance procedures (i.e., actuarially sound).

In Figure 2, we have added a target price based on a long term (10 to 15

Figure 1

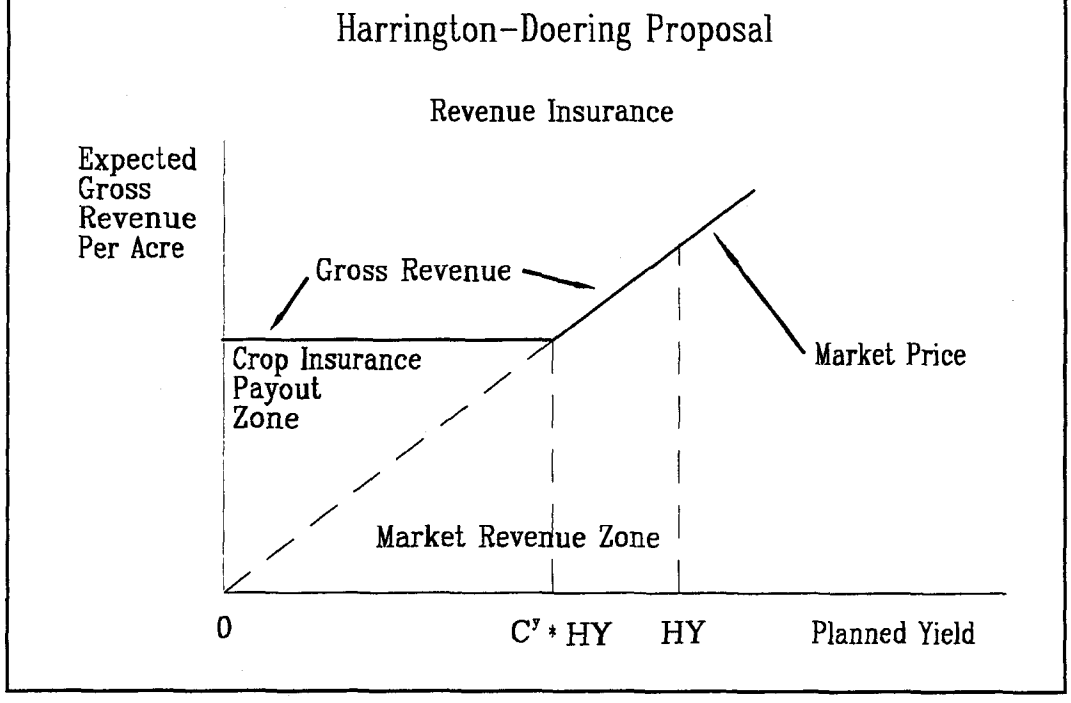
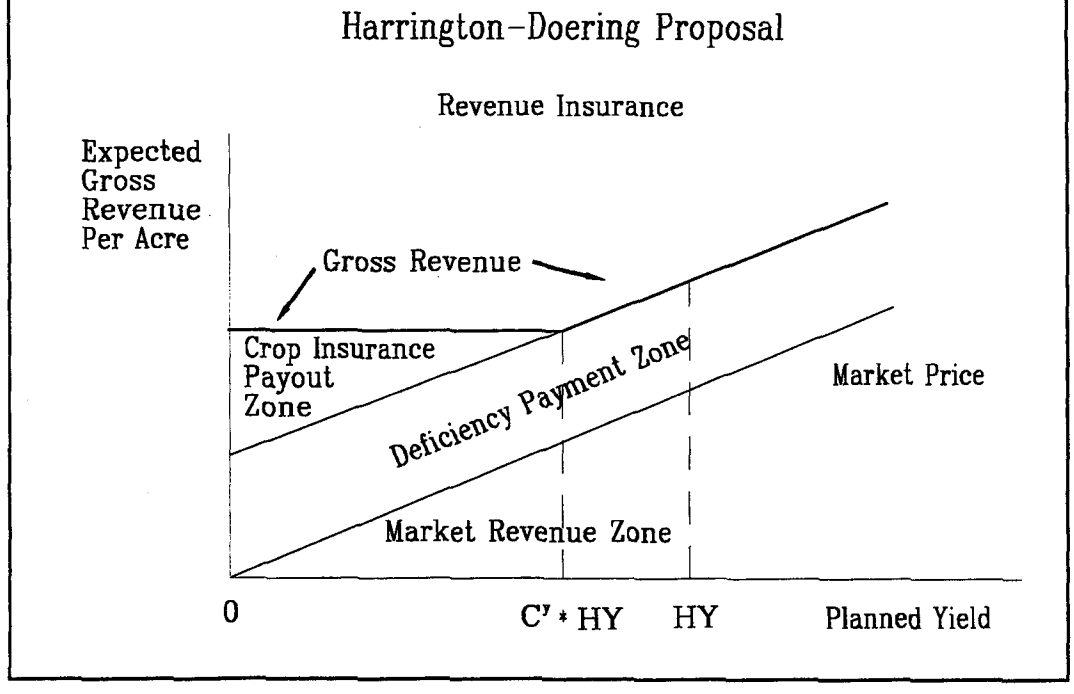



Figure 2



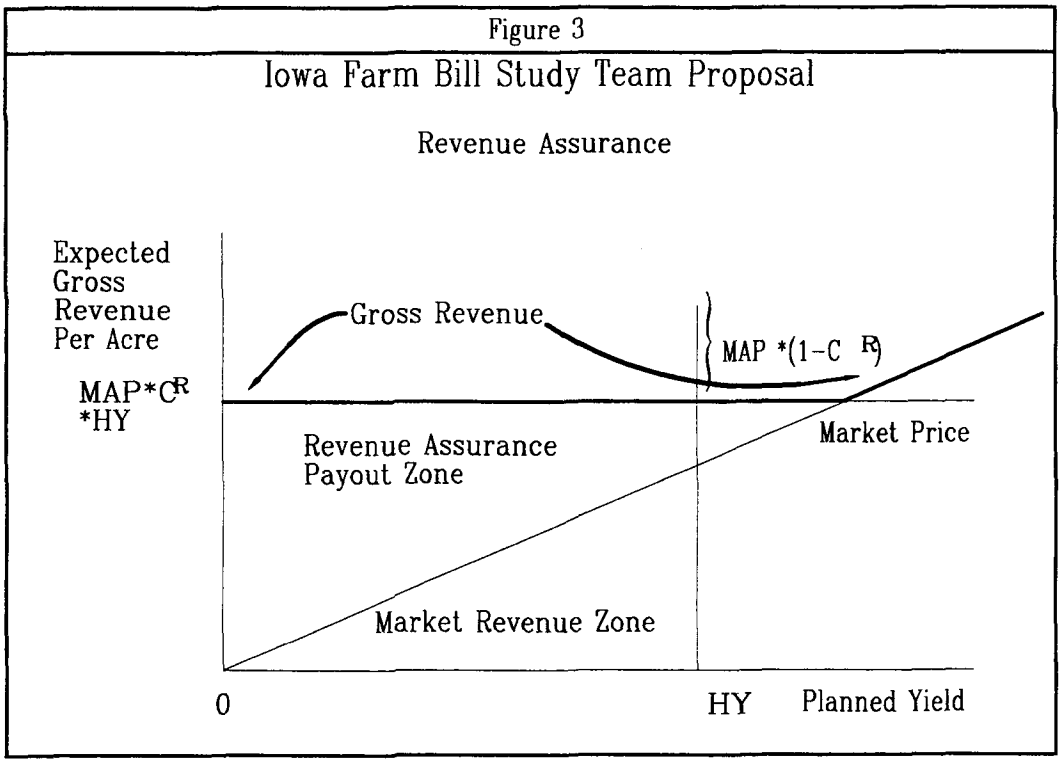
years) moving average of prices for this commodity and, in this case, the market price has fallen below the target price. The target price is some percent coverage (generally less than 100 percent) of this long-term moving average price. It could also be indexed to a modern parity index which would adjust for changes in prices paid for inputs. The vertical distance from the horizontal axis (planned yield) to the market price line gives the market revenue per acre at different yield levels.

The revenue coverage per acre is figured at the historic yields, HY. The vertical distance between the market price and the gross revenue line at HY represents the deficiency payment necessary to bring per-acre revenue up to the coverage level determined by the target prices. Thus, at any positive yield level there is some market revenue, a fixed amount of deficiency payment and some crop insurance payout when yields are below the covered yield level. As yields increase, market revenue increases, crop insurance payout decreases, and the deficiency payment remains the same on a per-acre basis.

*Revenue insurance separately insures yield risk and price risk while revenue assurance focuses only on gross revenues.*

Note that the crop insurance for yield coverage is still on a separate and distinct basis that is actuarially sound. The revenue payment could also be insured by farmers over a long period of time as prices should move on both sides of the long term moving average price used to determine the target price. Government could choose to pay none, some part of or all of this price risk premium.

Figure 3



### Revenue Assurance

*Both programs would make crop yield insurance an integral part of farm programs. Disaster programs could be eliminated without subsequent remorse for farmers affected by drought or disaster. This would be a major budgetary savings and also restore a sense of fairness that disaster programs diminish by specially rewarding farmers who do not insure their crops.*

Revenue assurance, like the Iowa proposal, is illustrated in Figure 3. Because its focus is on revenue, it looks somewhat similar to the single insurance case in Figure 1 for the crop/yield insurance. Under revenue assurance, each producer is assured of a certain percentage of their normal gross crop revenue. This might be calculated by taking some set of moving average prices times a revenue coverage percentage (which in the Iowa program is illustrated at 70 percent) times the farmer's historic yields. The Iowa proposal suggests a five-year moving average of prices. Figure 3 illustrates a case where the market price is lower than the moving average price. In this case, gross revenue stays the same to a yield well above the historic yields. If market prices are higher than the moving average price, then gross revenue starts rising at yields lower than the historic yields.

In revenue assurance, as pictured in Figure 3, there is a very wide range of yields where the gross revenue remains the same. In this case, with the short run revenue from additional yield worth zero, farmers may be encouraged to have a crop failure at low yields rather than harvest additional bushels of crop at additional harvest expense per bushel.

Both programs would make crop yield insurance an integral part of farm programs. Disaster programs could be eliminated without subsequent remorse for farmers affected by drought or disaster -- political remorse that has provided disaster payments for those unwilling to insure their own risks. This would be a major budgetary savings and also restore a sense of fairness that disaster programs diminish by specially rewarding farmers who do not insure their crops.

## Economic Impacts

### At the Farm Level

For market impacts of either revenue insurance or revenue assurance, the devil is in the details! In many instances, tinkering with the calculation of the moving average prices or coverage levels can make the programs different one from the other. However, in Table 1, comparing gross revenues for 100 acres of wheat, even when calculated on a comparable basis, some important differences do come out between traditional farm programs, nonparticipation, the Harrington-Doering Revenue Insurance Program, and the program under the Iowa plan.

The results of the revenue guarantee programs in Table 1 largely reflect: 1. differences due to guaranteeing yields and prices separately (Harrington-Doering) versus jointly (Iowa) and 2. differences due to 15-year indexed, versus five-year moving average prices, compared to actual programs for 1992/93.

## Table 1

**1992/93 Gross Cash Revenues for 100 Acres of Wheat: Non-participation, Current Wheat Program Harrington - Doering Proposal, and Iowa Proposal.**

**Situation I: HIGH YIELD, HIGH PRICE: Normal 30 bushel Yield, Market Price $3.72/bu.**

| | Non-Participant | Current Program | H-D Program | Iowa Program |
|---|---|---|---|---|
| Gross Cash Revenues: | $ | $ | $ | $ |
| o From the Market | 11,160 | 9,542 | 11,160 | 11,160 |
| o From Crop Insurance | - | - | - | |
| o From Revenue Program | - | 544 | - | |
| Less: Premiums or Govt. subsidy | - | (577) | (1,500) | (1,500) |
| Equals: Gross Revenue less premiums or subsidies | **11,160** | 9,529 | 9,660 | 9,660 |
| Acres in Wheat | 100 | 85.5 | 100 | 100 |

**Situation II: HIGH YIELD, LOW PRICE: Normal 30 bushel Yield, Market Price $3.00/bu.**

| | Non-Participant | Current Program | H-D Program | Iowa Program |
|---|---|---|---|---|
| Gross Cash Revenues: | $ | $ | $ | $ |
| o From the Market | 9,000 | 7,695 | 9,000 | 9,000 |
| o From Crop Insurance | - | - | - | |
| o From Revenue Program | - | 1,945 | 818 | |
| Less: Premiums or Govt. subsidy | - | (577) | (1,500) | (1,500) |
| Equals: Gross Revenue less premiums or subsidies | 9,000 | **9,063** | 8,318 | 7,500 |

**Situation III: LOW YIELD, HIGH PRICE: Low 15 bushel Yield, Market Price $3.72/bu.**

| | Non-Participant | Current Program | H-D Program | Iowa Program |
|---|---|---|---|---|
| Gross Cash Revenues: | $ | $ | $ | $ |
| o From the Market | 5,580 | 4,771 | 5,580 | 5,580 |
| o From Crop Insurance | - | 2,385 | 3,761 | |
| o From Revenue Program | - | 544 | | 1,245 |
| Less: Premiums or Govt. subsidy | - | (577) | (1,500) | (1,500) |
| Equals: Gross Revenue less premiums or subsidies | 5,580 | 7,123 | **7,841** | 5,325 |

**Situation IV: LOW YIELD, LOW PRICE: Low 15 bushel Yield, Market Price $3.00/bu.**

| | Non-Participant | Current Program | H-D Program | Iowa Program |
|---|---|---|---|---|
| Gross Cash Revenues: | $ | $ | $ | $ |
| o From the Market | 4,500 | 3,848 | 4,500 | 4,500 |
| o From Crop Insurance | - | 1,924 | 3,033 | 2,325 |
| o From Revenue Program | - | 1,944 | 818 | 1,245 |
| Less: Premiums or Govt. subsidy | - | (577) | (1,500) | (1,500) |
| Equals: Gross Revenue less premiums or subsidies | 4,500 | **7,139** | 6,851 | 5,325 |

## Assumptions for Table 1

Current Program: 1992/93 parameters; target prices = $4, wheat base = 90 acres, program yield = 27 bushels/acre, ARP = 5%, normal flex acres = 15%, optional flex acres = 10% in wheat, crop insurance at market price for 75% of proven yield of 30 bushels/acre, crop insurance premium = $5.00 per acre, government subsidy on crop insurance = $1.75, implicit annual average subsidy = approximately $30 per base acre per year.

Harrington-Doering Plan: Indexed moving average price over 15 years = $3.91, yield coverage percentage = 83.7% of the 15-year moving average yield of 30 bushels/acre, price coverage percentage = 83.7% of IMAP which equals 70% (i.e., Cp times Cy = Cr = 70%), annual average premium (or government subsidy if all paid by taxpayers) per crop acre = $15.

Iowa Proposal: Moving average price over 5 years = $3.25, moving average yield = 30 bushels/acre, revenue coverage percentage (Cr) = 70%, annual average government subsidy per crop acre = $15.

In this illustration, neither revenue guarantee program has any set-aside. The Iowa program still sees a role for supply management through loan and storage programs.

**Situation I, High yield and High price**: Most plans are inactive. The key thing that separates the revenue guarantee programs from others is the implicit premium payment of $1,500. If either were to be self-supporting, such a premium would have to be paid by either government or farmers to finance yield/price shortfalls in later years. The traditional program participant is paying $577 (including the government subsidy) in current crop insurance protection, but also receiving $544 back.

**Situation II, High yield/Low price**: Current programs provide the highest gross revenue, reflecting the high, fixed $4 target prices.

**Situation III, Low yield/High price**; Revenue insurance provides the most protection because deficiency payments under current programs are reduced by the higher market prices.

**Situation IV, Low yield/Low price**: Current programs provide the most protection, again reflecting the high fixed target prices in this particular case.

Note that situations I and IV are relatively rare in major production areas because yields and prices tend to move in opposite directions (low yields = high prices and vice versa). Also note that any reduction of payment acres under current programs, by increasing ARP or flex acres for example, make the revenue insurance program most favorable for farmers.

## At the Local Level

One of the most important impacts of the Harrington-Doering or Iowa programs at the local level would be the lack of ARP or set-aside acres. This might mean higher levels of input purchases and a greater volume of commodity marketing. This would also have some state impact.

## At the State and Federal Level

The key impact (the potential budget savings) is at the federal level. If the government paid the full $1,500 actuarial charge under the guaranteed revenue programs in Table 1, the annual cost would be about $4 billion after phase-in. Projected costs for current (1992/93) deficiency and disaster payments is about $7 billion ($4.3 billion for deficiency and $2.6 billion for disaster payments). The critical questions are political: 1. Would there be the desire to have the program actuarially sound? 2. In the case of insurable programs, what portion would farmers pay and what portion would the government pay? The Iowa plan also might place some major production areas like the Corn Belt at a real disadvantage. Because such areas account for a high proportion of total production, their yields and prices tend to move in opposite directions (low yields = high prices, etc.). Similarly their yields are very stable compared to more fringe production areas. As a result, their revenue assurance payouts under the Iowa plan would be rarer and relatively smaller than payouts in fringe areas with smaller production (not likely to impact prices) and greater yield variability. Fringe areas would thus receive disproportionate payout. In the Harrington-Doering proposal, separate payout rules for price and yield protection allow premiums in each region to be adjusted to the price and yield risk experiences of that region -- eliminating any regional biases between regions.

*The key impact (the potential budget savings) is at the federal level. If the government paid the full $1,500 actuarial charge under the guaranteed revenue programs, the annual cost would be about $4 billion after phase-in. Projected costs for current (1992/93) deficiency and disaster payments is about $7 billion.*

## Impact Upon International Competitiveness

A key question here would be whether supply management programs like set asides and loan rates were given up entirely as in revenue insurance or whether they were maintained. If maintained, they could be used to make the United States less competitive, as in the 1980s. A revenue insurance proposal with a moving average of prices would appear to be legal under the General Agreement on Trade and Tariffs. Revenue insurance should dampen price variability and help stabilize price and yield revenue fluctuations for farmers without distorting the basic longer-term market price signals. A revenue assurance program might not be GATT legal depending upon how the level of revenue support was calculated. Current programs may also need further modifications to be GATT legal.

# Other Important Impacts

## Impacts on the Environment

The two critical questions are: 1. Would guaranteed revenue proposals tilt agricultural practices in a particular direction? and 2. What replaces current mechanisms, like cross compliance, that enforce environmental standards? Nothing in guaranteed revenue proposals should lead to more intensive production. The use of long-term historic yields does not make the long-term overuse of inputs to raise yields very attractive because long run average prices will drop. Answering question 2, when we were willing to pay for farm programs of clear economic benefit to farmers, they were willing to follow cross compliance rules and meet specific environmental standards.

*One important environmental characteristic of guaranteed revenue programs is that they can be applied across a broader range of commodities than current programs. This could encourage less monoculture and a wider diversity of crops for those wanting to accomplish some of their pest control or plant nutrition through rotations.*

One important environmental characteristic of guaranteed revenue programs is that they can be applied across a broader range of commodities than current programs. This could encourage less monoculture and a wider diversity of crops for those wanting to accomplish some of their pest control or plant nutrition through rotations. In addition, the combination of yield and price insurance, whether as insurance or as a package of assurance, would reduce the very real risk of a farmer trying a new rotation or crop. This should give greater flexibility in meeting conservation and environmental goals by changing crop mixes and farming systems.

Acreage set-asides (such as ARP) under current programs do have environmental value -- though less so under current policy when they are periodically **completely** eliminated to meet estimated production needs. The Harrington/Doering proposal does away with all set-asides. It would envision the use of long-term programs to take environmentally sensitive land out of production. In this way, the most environmentally sensitive land nationally could be withheld instead of the least productive portion of every farmer's land being set aside. This is an important targeting issue.

There are different ways the current goals of cross compliance could be met with guaranteed revenue plans. If the stability given by a guaranteed revenue program is perceived by farmers as having value, then some degree of cross compliance should be possible even if producers pay premiums. The comparison in Table 1 of revenues from different programs indicates that guaranteed revenue options would become more favorable than current programs if any further reduction in target prices or payment acres were to occur. However, the actuality and the perception of program benefits is crop specific and regional to some extent. Corn/soybean producers in the Midwest do not see the current program as highly attractive, but sign-up numbers appear to be holding. This may not continue if current programs are reduced.

The real question is how the more stringent standards the public might desire could be adopted by farmers on a 'voluntary' or incentive basis rather than through regulations. It is here that current cross compliance is likely to fall short of the mark, either for today's farm programs or for guaranteed revenue programs. Something like green payments may be necessary if additional restrictions are to be added voluntarily, especially in those regions and for those crops where current programs contribute less to farm returns. If the public wants additional environmental benefits, the public must either pay for these benefits or enforce additional regulations (which have their own costs). Programs like cotton, rice and peanuts, which contribute more to farm returns, could take on additional cross compliance burdens and obtain sufficient participation to meet environmental goals.

## Equity and Fairness Issues

One plus of guaranteed revenue schemes is that they can be adopted for a wider range of crops and commodities than those currently included in our farm programs. A larger number of farm products could participate. This need not necessarily lead to correspondingly larger government expenditure on farm programs. The expenditure level will depend upon whether the program is insurable and how much of the cost the public is willing to bear through tax payments or the farmer through insurance premiums. A guaranteed revenue program in and of itself says nothing definitive about the final level of government expenditure. That depends upon how the program is structured and how the costs are shared.

*Guaranteed revenue programs would appear to place a tighter band around fluctuations of farm income as compared to current farm programs. This may be more equitable to farmers forced to compete in a world markets with more price variation due to international competitiveness circumstances.*

Payments under both guaranteed revenue programs are still related to the level of production (which is an important factor in gross revenue). Farmers with modest-sized operations will still get smaller payments than farmers growing many times the number of bushels. With guaranteed revenue, as with current programs, overall payment limitations would still be necessary if the goal is to limit income transfers to large operators. Under a revenue insurance program, yield (weather-related) insurance could operate the same for all sizes of farms, but larger farms might receive a reduced level of price protection beyond some threshold of production.

Guaranteed revenue programs would appear to place a tighter band around fluctuations of farm income as compared to current farm programs. This may be more equitable to farmers forced to compete in a world market with more price variation due to international competitiveness circumstances.

## Impacts on Food Security

More stable incomes under guaranteed revenue policies should lead to more stable production intentions. In the United States, where farm programs have resulted in almost chronic overproduction for program commodities, there should be less of this tendency under guaranteed revenue

programs, particularly under revenue insurance, because long run average prices will decline. The food security issue will be one relating to the food needs for the rest of the world where excess American production has often provided a safety buffer against world shortages.

## Acceptability

The issue here is what is the best perceived deal for those involved.

### Farmer Acceptance

In the current budgetary and political climate, today's farm programs are being squeezed down to as little expenditure as possible. Politically weak participants are being cut off. If farmers believe that this process is actually occurring (and some do), then they may be willing to strike a different kind of deal that offers important benefits to them at lower cost to the public. The interest in the Iowa plan has been a surprise to many. Farmers are more likely to look favorably at the Iowa plan, which has a greater likelihood of requiring at least some, if not a larger amount, of government co-funding. Revenue insurance, like the Harrington-Doering proposal, makes the cost for yield insurance, and even for price insurance, very transparent. This characteristic may make it less attractive to farmers who might be asked to contribute to paying that bill. However, a balancing political consideration is whether the general public will be willing to support a revenue assurance program like the Iowa plan where the program cost and appropriate levels of farmer contribution are less clear.

*Part of the public acceptance of any future farm policy will relate to other issues like the environment. In a package with specific programs designed to deal with habitat and fragile lands along with cross compliance to provide basic environmental standards, a guaranteed revenue program should be more acceptable than the current program.*

### Acceptance by the Public

The public is increasingly concerned about the budget. Income transfers to farmers are no longer seen as essential given current farm family income and wealth levels. The public still appears unwilling to touch entitlements like social security, which are in fact income transfers that provide substantial benefits to the middle class -- especially the retired. But transfers to the small number of United States farmers appear to be more vulnerable politically.

Part of the public acceptance of any future farm policy will relate to other issues, such as the environment. In a package with specific programs designed to deal with habitat and fragile lands along with cross compliance to provide basic environmental standards, a guaranteed revenue program should be more acceptable than the current program. Recognize that current farm programs grew up as a bundle over time, so they are likely to be replaced by a similar bundle meeting an equally wide range of the concerns of today and tomorrow.

### Political Acceptance

A guaranteed revenue program, especially revenue insurance, can be seen as providing limited but critical benefits to farmers primarily in the management of risks peculiar to agriculture. While the objective of the Roosevelt administration under the Agricultural Adjustment Act of 1933 was to get cash into depressed rural areas, where farm incomes were less than half of urban incomes, this is no longer the case or the political necessity. A guaranteed revenue program can be a straightforward risk management program where long-term costs can be estimated and where the beneficiaries can pay part of the cost. This can be easily demonstrated for revenue insurance. The proponents of the Iowa revenue assurance plan also make that case.

*A guaranteed revenue program can be a straightforward risk management program where long-term costs can be estimated and where the beneficiaries can pay part of the cost.*

## Ease of Implementation

### Implementation by Assigned Agencies

Guaranteed revenue programs are simpler than existing programs. Historic yields remain, but revenue insurance can do away with ARP, the paraphernalia of supply management tools and income transfer through commodity loans as it is phased in.

### Clarity of Program Regulations

The guaranteed revenue programs are simpler and affect less of the farmer's decision-making agenda. This should result in fewer program regulations. The key features of the program are historic yields, long-term moving average prices (which may be indexed to changes in prices paid for inputs), and some calculation of long-term gross revenue in the case of income assurance. An independent agency could adjust these over time, if Congress were willing to let these adjustments be made by the forces of changing yields and prices.

### Program Flexibility at the Local Level

Historic yields would be attached to each farm. Area yields could be used for a new crop covered by the program until a farm yield is established. Yield insurance under a revenue insurance program would have to be based on regions large enough to provide sound actuarial coverage. Crop choice, technology choice and cropping system choice could be much more flexible, as long as environmental standards were met.

### Timeliness of Desired Program Effects

*A guaranteed revenue program would have to be phased in commodity by commodity. It would also be a number of years before price insurance costs could be determined and changes made to meet fiscal targets for the program.*

A guaranteed revenue program would have to be phased in commodity by commodity. It would also be a number of years before price insurance costs could be determined, and changes made in the price coverage level (under revenue insurance) or the proportion of historical revenue guaranteed (under revenue assurance) to meet fiscal targets for the program.

## Further Reading

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# Potential for Inter-farm Transfer of Acreage Conservation Reserve Acres

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# Potential for Inter-farm Transfer of Acreage Conservation Reserve Acres

## Abstract

**The USDA's Annual Acreage Reduction program requires participating producers to devote a percentage of their crop bases acreage to conserving uses in order to be eligible for the Commodity Credit Corporation loan and deficiency payment programs. Producers will typically devote the least productive/most environmentally sensitive crop land to conserving use when participating in the ARP. Farms do not possess equal portions of such crop land. As a result, some producers devote highly productive/non-environmentally sensitive crop land to conserving uses while other producers crop more sensitive acreage.**

**A program that allowed transfer of conserving use acres from the highly productive farms to more environmentally sensitive farms and the reverse transfer of production rights has the potential to advance the conservation of production resources while improving aggregate efficiency of crop production. The transfer would be based on the farm receiving production rights paying the farm that increases conserving use acres. The transfer price would be based on the increased economic value obtained by moving crop production to higher soil productivity farms. It can be demonstrated that such a transfer increases overall net farm returns without changing the level of crop production.**

**Increased net farm returns lead to increased income tax revenues to federal and state governments. Because the program can be implemented to be production neutral, the budget exposure for implementing USDA commodity programs would not increase. The market price of commodities and therefore the competitive position of U.S. agriculture would not be altered.**

**Caution would have to be taken in implementing such a plan to avoid adversely impacting local economies. Significant reductions in crop production in a particular area could adversely impact related agricultural industries and therefore the local economy. Limitations on cropland transfer might be required.**

**The transfer program is expected to be readily acceptable to producers, public interest groups and policy-makers. The program would further conservation objectives, increase net farm returns, increase tax revenues and would be, at worst, budget-neutral.**

**The program would likely be implemented by the USDA's Agricultural Stabilization and Conservation Service using a negotiable certificate**

**program. A one- or two-year pilot program would be prudent. The pilot might involve several counties within a state or a few counties in several states and could be limited to one or a few representative commodities.**

## Introduction

*The annual Acreage Reduction Program (ARP) for feedgrain, wheat, rice, and cotton requires participating producers to devote a portion of the base acres of those crops to conserving uses in order to be eligible for the Commodity Credit Corporation (CCC) loan and deficiency payment benefits. These conserving use acres are referred to as Acreage Conservation Reserve (ACR), or simply set-aside acres.*

The annual Acreage Reduction Program for feedgrain, wheat, rice and cotton requires participating producers to devote a portion of the base acres of those crops to conserving uses in order to be eligible for the Commodity Credit Corporation loan and deficiency payment benefits. These conserving use acres are referred to as Acreage Conservation Reserve, or simply set-aside acres. Under current legislation, the Food, Agriculture, Conservation and Trade Act (FACTA) of 1990, the secretary of agriculture determines the annual set-aside requirement, specified as a percentage of base acres, within a predetermined set of parameters. The magnitude of set-aside is based on the projected stocks-to-use ratio at the end of the current marketing year. For example, the set-aside program for feedgrains must be announced by Sept. 30, with adjustments permitted until Nov. 15. If, for the current marketing year, the projected year ending stocks-to-use[1] ratio is greater than 25 percent, the set-aside must be between 10 and 20 percent. If the projected stocks-to-use ratio is 25 percent or less, the set-aside must be between 0 and 12.5 percent. The only exception is oats, which has a zero set-aside for the 1991 through 1995 crops.

In addition, the secretary may offer Targeted Option Payments to producers who increase (or decrease) their set-aside acres in return for an increase (or decrease) in the target prices for that crop. For each voluntary 1 percent increase (or decrease) in the set-aside rate above (or below) the announced level, a producer may receive an increase (or decrease) in the target prices between one half and 1 percent. Participating producers may not increase their annual wheat set-aside by more than 10 percentage points for the 1991 crop and 15 percentage points for the 1992 through 1995 crops, or above a maximum of 25 percent. The annual corn set-aside cannot be increased by more than 5 percentage points for the 1991 crop and 10 percentage points for the 1992 through 1995 crops, or above a maximum of 20 percent. A producer may not reduce the annual set-aside by more than one-half of the announced set-aside requirement. Targeted option payments cannot significantly affect program participation or production and cannot increase budget outlays. The TOP program had not been implemented through the 1994 crop year.

Finally, the secretary may implement a Paid Land Diversion whether or not a set-aside program is in place. The Secretary has discretion in determining the magnitude of PLD and the method of determining payment rates. The total acreage diverted in any county must be limited so that the local

economy is not adversely affected. A PLD has not been implemented since 1986.

To comply with the ARP and/or PLD requirements, producers will naturally devote the least productive acres to set-aside. Observation suggests that these acres tend to be more susceptible to erosion or seasonal flooding than the rest of the farm. Some farms have a larger supply of land susceptible to erosion or seasonal flooding than do other farmers. For farms with mostly flat, highly productive land, producers will use endrows or odd-shaped fields to satisfy the annual set-aside requirements. In many instances, however, producers in this situation idle highly productive land that is not wetland or highly erodible. Other producers, with larger acreage of erodible land, plant acres that are more environmentally sensitive than the land idled on other farms.

*From a conservation standpoint, the application of ARP requirements to individual farms results in the planting of some environmentally sensitive crop land and the idling of much less sensitive land. Allowing a transfer of ACR acres could adjust production, protect environmentally sensitive crop land, increase income to agriculture and increase tax revenues to state and federal governments.*

From an administrative standpoint, the current ARP is fairly efficient. Each farm unit has a program crop base and the Agricultural Stabilization and Conservation Service can readily verify compliance with the program. In addition, the primary objective of the ARP program is to adjust production potential to align with market demand at an "acceptable" cost to USDA. Application of set-aside requirements to individual farms results in a more predictable production response since, in theory, idled acreage is of average productivity. However, from a conservation standpoint, the application of ARP requirements to individual farms results in the planting of some environmentally sensitive crop land and the idling of much less sensitive land. Allowing a transfer of ACR acres, including PLD acres, among farmers could accomplish four objectives--adjust production, protect environmentally sensitive crop land, increase income to agriculture, and increase tax revenues to state and federal governments. The second objective may become increasingly important if Conservation Reserve Program acreage comes back into production beginning in 1996.

## Economic Impacts

For individual producers, the transfer of set-aside would be based on economic benefits to both the buyer and seller of production rights. An example, using corn, serves to illustrate the potential economic advantage to both parties. Consider two Midwest corn and soybean farms. Farm A consists of all highly productive, non-environmentally sensitive crop land when properly managed-- typical of many central Illinois farms. Farm B consists of both highly productive land and a significant area of environmentally sensitive crop land-- typical of many southern Illinois farms. In any given year, it might be economically advantageous for Farm A to transfer corn set-aside acres to Farm B, by purchasing corn production rights from Farm B. The payment per acre would be negotiated, with the parameters determined by the relative value of the transfer to each participant. For example, the **maximum** Farm A would be willing to pay for the production rights would be the increase in net returns as a result of producing more corn. The **minimum** Farm B would be willing to accept for idling

additional acres are the returns that are forfeited by producing less corn and managing more set-aside acres. Farm B may be willing to accept less than the theoretical minimum because the "rental" income would be certain, while production returns are uncertain.

To illustrate the concept, consider Farm A and Farm B with the following characteristics: (Yield and cost estimates derived from Lattz, 1994)

| | Farm A | Farm B |
|---|---|---|
| Base acres of corn | 600 | 250 |
| ASCS Yield, bu/a | 125 | 100 |
| Set-aside With 5% ARP | 30 | 12.5 |
| Expected Yield, bu/a | 150 | 120 |
| Expected Corn Price, $/bu | $2.30 | $2.30 |
| Expected Gross Returns, $/a | $345 | $276 |
| Non-Land Cost of Corn Production, $/a | $243 | $228 |
| Expected Net Returns, $/a | $102 | $48 |
| Deficiency payment, $/Farm[1] | $27,000 | $9,000 |
| Cost of Managing Set-aside, $/a | $20 | $20 |

*The transfer of set-aside acres would be based on economic benefits to both the buyer and seller of production rights.*

[1] Calculated as base acres x .8 x ASCS Yield x $.45. By statute, producer does not receive deficiency payment on 15 percent of base nor on the set-aside acres. Expected payment rate is the target prices ($2.75) minus expected market price ($2.30).

For the transfer of set-aside acres to be production neutral (and therefore not void the impact of the ARP), Farm A would need to purchase 1.25 acres of production rights from Farm B for each acre of set-aside planted. To plant the 30 acres of set-aside, then, Farm A would need to rent 37.5 acres of base acres from Farm B. In that case, the following total net returns (for the corn acres) would be expected for each farm, before transfer payments (the purchase by Farm A of Farm B's production rights) were made.

| | Farm A | Farm B |
|---|---|---|
| | total net returns[1] | |
| Without Transfer | $84,540 | $20,150 |
| With Transfer | 88,200 | 17,600 |
| Difference | $3,660 | -$2,550 |

[1] Returns above non-land costs, including deficiency payment received.

With the transfer, Farm A is able to increase net returns by $3,660, by earning $102 per acre on an additional 30 acres of corn and avoiding $600 in costs of maintaining 30 acres of set-aside. Net returns on Farm B are reduced by $2,500, reflecting the loss of returns of $48 per acre on 37.5 acres of corn and additional costs of $750 for maintaining an additional 37.5 acres of set-aside. Because 37.5 acres of corn base are purchased, the most Farm A can pay would be $97.60 per acre ($3,660 ÷ 37.5). The minimum Farm B could accept is $68 per acre ($2,550 ÷ 37.5). The actual transfer price would likely be closer to $68 than to $97.60, due to the relative risk position of Farm A and Farm B. The price may even be less than $68 due to reduced risk on Farm B. Farm A is assuming all of the production and price risk on an additional 30 acres, while Farm B is avoiding that same risk on 37.5 acres. In this example, it is assumed that deficiency payments are not altered by the transfer.

From this example, a simple procedure by which producers could formulate bid process and offer prices is illustrated. The process involves transferring the right to produce bushels of corn from Farm B to Farm A. The buying farm, then, could simply calculate a bid process price per bushel of ASCS yield. Similarly, Farm B could calculate an offer price per bushel of ASCS yield. In this example, Farm A can increase expected net returns by $122 for each acre taken out of set-aside (save $20) and planted to corn (net return of $102). That expected increase calculates to $.976 per bushel of ASCS yield (125 bushels). Assume Farm A was able to purchase production rights for $.75 per bushel. For each acre of set-aside planted, Farm A would need to purchase 125 bushels of production rights, for a total cost of $93.75 per acre. Expected net returns would increase by $122, for a profit of $28.25 per acre.

In a similar fashion, Farm B could calculate an offer price. In this case, net returns are reduced by $68 for each additional acres put in set-aside (cost $20) and taken out of corn production (lose $48). That calculates to $.68 per bushel of ASCS yield (100 bushels). If Farm B received a bid process of $.75 per bushel ($75 per bushel) profit per acre would be increased by $7.

*Based on this scheme, each potential buyer and seller could formulate a bid process or offer price based on individual expectations about actual yields, market prices and costs of production.*

Under flexibility provisions of the 1990 FACTA, producers do not receive deficiency payments on 15 percent of the base acres of program crops, but are free to plant that acreage to most other crops (except fruits and vegetables). It is possible, then, that bid process and offer prices in this example could be formulated on the basis of costs and returns for a crop other than corn. Calculations based on estimates for soybeans (Lattz, 1994) suggest a slightly higher bid process and offer price, assuming a price of $6 per bushel.

Based on this scheme, each potential buyer and seller could formulate a bid process or offer price based on individual expectations about actual yields, market prices and costs of production. Based on bid process and offer prices per bushel of ASCS yield, nationwide trading of production rights could be accommodated.

If the program to transfer set-aside acres was not production neutral, acres rather than bushels would be the unit of trade. Under that scenario, bids would be formulated on a per-acre basis and would likely be much more attractive to selling farms. In the example developed above, Farm A could bid process a **maximum** of $122 per acre. The **minimum** offer from Farm B would still be $68. A transfer price of, say, $85 per acre would in fact be more attractive to both buyer and seller. This alternative might be easier to implement than the bushel transfer scheme but to compensate for the likely production increase resulting from the transfer of production (acre for acre) from lower yielding to higher yielding farms, the USDA would need to require a larger ARP than under the bushel transfer scheme. A larger ARP, in turn, would reduce the number of bushels eligible for deficiency payment and reduce the cost of that program, assuming production is unchanged in total. The USDA might even capture additional savings by reducing the deficiency payment **rate** for farms that sell production rights, those farms having been compensated by the higher rental rates received. If the concept of transferring set-aside acres were implemented along with implementation of the Targeted Option Payments program, a significant increase in the number of acres of crop land devoted to conserving uses could be achieved.

*If the concept of transferring set-aside acres were implemented along with implementation of the Targeted Option Payments program, a significant increase in the number of acres of crop land devoted to conserving uses could be achieved.*

As illustrated in the above example, the transfer of set-aside acres could result in positive economic benefits to both the buying and selling farm. The total farm level benefit is difficult to assess, but under the acre for acre transfer described above, net returns were increased by $54 per acre. Under the bushel transfer scheme, the increase was more like $30 per acre. For each 1 million acres transferred, net farm income could be increased by several million dollars. In 1993, 7.1 million acres of corn and sorghum base acres were idled under a 5 percent ARP. The opportunity to transfer set-aside/base acres might marginally increase the level of participation in the ARP.

The primary concern about the transfer plan is the potential negative impact on the economies of those areas that might sell a significant amount of production rights to other areas. Figures from Lattz indicate that the average cash expenditures to produce an acre of corn in Illinois was about $140 in 1993 (Lattz, 1994). Those expenditures are for fertilizer, pesticides, seed, grain drying, repairs, fuel and machinery hire.[2] Every acre of production transferred out of a region would have a significant impact on those input supply businesses. That negative impact, in turn, would have a multiplier effect on the community. Reduced volume of corn production would also negatively impact the local grain elevator industry, with associated multiplier effects. Finally, reduced production might also negatively impact the local lending institutions as producers borrowed less operating capital. Obviously, areas that increased production as a result of the transfer plan would benefit from the increased economic activity, so that the net impact on economic activity in the country would be neutral.

The negative local economic impacts could be minimized by including a statement similar to that associated with the Paid Land Diversion program -- that transfers in any county be limited so that the local economy is not adversely affected. In addition, the impact could be minimized by allowing transfer of set-aside acres only within the county.

*The increased net returns to farming expected to be generated by the transfer of set-aside acres would generate larger federal income tax revenues. Each $1 million acres of corn transferred would generate an additional $30 million in net farm income and approximately $6 million in federal tax revenues. State income tax revenues would also be increased.*

The increased net returns to farming expected to be generated by the transfer of set-aside acres would also generate larger federal income tax revenues. Extending the farm example developed earlier, each $1 million acres of corn transferred would generate an additional $30 million in net farm income and approximately $6 million in federal tax revenues. State income tax revenues would also be increased. The distribution of those increased revenues among states would depend on the pattern of transfer. Negative impacts on any individual state would likely be small.

Federal expenditures for commodity programs should remain constant, or decline slightly, depending on how the transfer program was implemented. Requiring transfer of "bushels" would be production and price neutral, resulting in no change in outlays for the Commodity Credit Corporation loan and deficiency payment programs. A transfer program that allowed an acre for acre transfer would likely have to be accompanied by a slightly larger set-aside requirement. The larger requirement would result in fewer bushels eligible for deficiency payments and would be price neutral so that total budget expenditures would decline slightly. Each 1 percent increase in the set-aside requirement for corn, as an example, would result in about 60 million fewer bushels eligible for deficiency payments. Assuming a deficiency payment of $.45 per bushel, expenditures would be reduced by $27 million, assuming a constant level of participation in the program. In addition, the acre for acre transfer might allow a lower deficiency payment rate for producers who have sold production rights. The concept could be made more attractive to sellers by allowing livestock grazing on the additional set-aside acres.

The bushel set-aside transfer program would not alter general market conditions for individual commodities. Production levels would not be altered, so the program would be price neutral. To the extent that the geographic location of production was altered significantly, some negative impact on the domestic market might be expected, in the form of higher transportation costs for example. Such an impact would be minimal, however, since corn production would remain in the corn belt, wheat production in the wheat belt, etc.

## Other Impacts

The transfer of set-aside acres would clearly have positive economic benefits for the farm sector and the U.S. Treasury. There are other significant, positive implications of such a program. The most important of these, of

course, is the potential for protecting additional acreage of environmentally sensitive crop land. It is difficult to estimate the environmental impact, but such impact could be maximized by targeting certain geographic areas as qualified to sell production rights (increase set-aside) and other areas as qualified to buy production rights (increase planted acreage). Some thought would need to be given to how narrowly to define qualified areas, e.g. flood plain, watershed, county, region, etc. The targeting concept would reduce the flexibility of, and perhaps participation in, such a program. If the argument was accepted that the least productive crop land, or crop land with greatest production risk, was also generally the most environmentally sensitive crop land, then targeting would not be required. Economic considerations would lead to the "correct" transfer within areas, within states and across state lines. Without restrictions, however, the correct transfer might be geographically concentrated. Since the correlation between soil productivity and environmental sensitivity is low, targeting would probably be required.

Allowing the transfer of set-aside acres might also benefit producers who are struggling to meet conservation compliance requirements. Such farms could move crop land from row crop production to conserving uses rather than adopting cropping systems to meet compliance regulations. The transfer system might also provide a mechanism to keep some environmentally sensitive acres in conserving use as the CRP contracts expire. In some instances, CRP acreage is owned by those who are nearing retirement or who have liquidated other production assets (machinery, etc.). Those individuals might sell production rights at rates lower than currently paid by the USDA.

*The transfer system might also provide a mechanism to keep some environmentally sensitive acres in conserving uses as the CRP contracts expire.*

It could also be argued that transferring production in the manner described here could lead to slightly more stability in crop production. As production migrated away from less productive to more productive areas, variation in yield might be reduced somewhat. To that extent, USDA policies on set-aside programs, etc. might have more predictable results.

## Acceptability

It is believed that producers would readily accept a well-thought-out set-aside transfer plan. The economic benefits to producers can be clearly demonstrated. Producers have also become more accustomed to transfer mechanisms, (e.g., Conservation Reserve Program, commodity certificates). Special attention, however, might have to be given to existing landowner/tenant relationships to provide some protection to tenants who are currently renting crop land that could be switched to set-aside and no longer be available for rent. In addition, some limits would have to be considered to protect the economic interests of local agri-business firms.

The plan should also be attractive to those public interest groups desiring

increased use of conservation practices in production agriculture and continued improvement in environmental protection. Conservation objectives could be addressed without increased regulation or expenditures. The plan should find public acceptance for the same reasons. In addition, the recent advent of trading of pollution rights, for example, has increased the public's awareness of these kinds of transfer mechanisms. The plan described here would be even more attractive than that concept, as the transfer involves production rights and has positive environmental impacts.

*At worst, the plan is budget neutral for the USDA, would increase federal tax revenues, would increase net farm income, would not reduce overall economic activity and would make a significant contribution toward achieving environmental goals in production agriculture.*

The political community would be expected to embrace the concept because it addresses many of the current issues important in agricultural policy. At worst, the plan is budget neutral for the USDA, would increase federal tax revenues, would increase net farm income, would not reduce overall economic activity and would make a significant contribution toward achieving environmental goals in production agriculture.

## Implementation

For the set-aside transfer program, as described here, to be successful, there obviously needs to be an ARP requirement in excess of 0 percent each year. The seller of production rights would benefit from a long term commitment. The longer the commitment, the more permanent the cover crops that could be established on set-aside acres. An annual program is likely all that is feasible, however, so that cover crops would likely be annually seeded crops.

It is envisioned that the transfer program be implemented by the Agricultural Stabilization and Conservation Service as that is the agency that has responsibility for the ARP. There are two alternative models that could be considered in implementing the program. One approach is for ASCS to internalize the transfer process by acting as the clearinghouse for bids and offers. That approach, however, is probably not functional due to the workload that would be created.

A second approach is to externalize the transfer process through a certificate mechanism. That is, eligible producers could be issued certificates, denominated in bushels or acres of a specific commodity, depending on the specifications of the program, which then could be freely traded. Recipients of the certificates would again be a function of the specifications of the program. If a targeted approach was used, only those farms in designated "selling" areas would receive certificates. If a non-targeted approach was used, all participants would be eligible to receive certificates. All issued certificates would have to be returned to ASCS, either as purchased or unused, by a predetermined deadline in order to verify individual compliance with the ARP. Alternatively, certificates could be declared null after a certain date. Necessary steps would have to be taken to prevent abuse of the certificates. It may be that certificates would be issued to only

those requesting them at the time of ARP sign-up. To facilitate trading of the certificates, a commercial brokerage function might develop. The brokerage function would be financed from commissions paid by buyers and/or sellers. It is feasible that, over time, an electronic auction for certificates could be established.

Implementation of the transfer program would require that the sign-up for the feedgrain ARP, for example, be completed much earlier than is now the case. Early sign-up would facilitate the timely issue and trading of certificates. The deadline for completing and documenting transactions could be the same as the current requirement for documenting compliance with ARP.

There are likely unforeseen challenges in implementing the transfer program. A one or two year pilot program might be considered. That pilot could be small enough in scope (a few counties and one commodity) to be manageable, but would have to be large enough to identify pitfalls.

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## Endnotes

[1] Ratio is calculated as projected stocks divided by projected annual use.
[2] Total non-land costs of production are significantly larger and include machinery and building depreciation, interest expenses and some hired labor expenses.

# Index

## Symbols



## A



## B



## C

## D



## E



## F



## G



## H



## I



## L

## M



## N



## O



## P



## R



## S



## T

## V



## W

**American Farmland Trust**
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American Farmland Trust is a private, nonprofit membership organization founded in 1980 to protect our nation's farmland. AFT works to stop the loss of productive farmland and to promote farming practices that lead to a healthy environment. The Center for Agriculture in the Environment was established in 1992 by AFT and Northern Illinois University with help from The Ford Foundation. The Center, located at NIU's Social Science Research Institute, carries out policy research on agricultural resource protection issues. AFT's basic annual membership is $20.

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