Agri-Environmental Policy at the Crossroads: Guideposts on a Changing Landscape. Roger Claassen, LeRoy Hansen, Mark Peters, Vince Breneman, Marca Weinberg, Andrea Cattaneo, Peter Feather, Dwight Gadsby, Daniel Hellerstein, Jeff Hopkins, Paul Johnston, Mitch Morehart, and Mark Smith. Agricultural Economic Report Number 794.

Abstract

Agri-environmental policy is at a crossroads. Over the past 20 years, a wide range of policies addressing the environmental implications of agricultural production have been implemented at the Federal level. Those policies have played an important role in reducing soil erosion, protecting and restoring wetlands, and creating wildlife habitat. However, emerging agri-environmental issues, evolution of farm income support policies, and limits imposed by trade agreements may point toward a rethinking of agri-environmental policy. This report identifies the types of policy tools available and the design features that have improved the effectiveness of current programs. It provides an indepth analysis of one policy tool that may be an important component of a future policy package—agri-environmental payments. The analysis focuses on issues and tradeoffs that policymakers would face in designing a program of agri-environmental payments.

Keywords: conservation programs, environmental policy, agricultural policy, policy instruments, agricultural program design, soil erosion, and nitrogen runoff

Acknowledgments

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Summary

In the upcoming farm bill debate, decisionmakers considering policies that address the environmental implications of agricultural production may find themselves at a crossroads. Significant progress has been made in addressing traditional environmental concerns over the past 15 years; soil erosion is down, wetland restoration and protection have increased, and more wildlife habitat exists on farmlands. But the array of policy-relevant agri-environmental problems has also grown, as farm practices have changed and public concern has increased. In addition, world trade agreements may limit farm program options, perhaps increasing the practicality of "green-box" agri-environmental programs as vehicles for income support. This changing landscape presents decisionmakers with tremendous challenges as well as new opportunities.

This report provides policymakers with a guide to some of the choices they may face in formulating new agri-environmental policies. This guide looks back at past policies and the lessons that can be gleaned from their implementation, and it looks forward at the range of options available, providing conceptual insights and estimates of future policy tradeoffs. The potential benefits and costs of each policy option depend on the specifics of the program's design, so significant detail on design features is provided.

A glimpse into the policy toolbox reveals a wide variety of policy options: information dissemination programs such as education and technical assistance, government labeling standards, economic incentives, compliance mechanisms, and regulatory requirements. These tools range from voluntary to mandatory. Some are better suited for addressing problems or creating benefits flowing from the amount of land in crop production, while others are best suited for addressing issues arising from the choice of which crops to produce and how to produce them. The role of government varies as well. Government participation may be indirect or direct; for example, government agents may make information available to farmers or they might disburse (or collect) payments to (from) farmers. This variation in features among policy tools implies potential variation in the environmental effectiveness, economic efficiency, and distributional consequences of each. Tradeoffs—among environmental goals and in who gains and who loses and where in the country those gains and losses occur—are inherent in any policy choice.

Experiences with past agri-environmental programs provide lessons on effective design options.

- ◆ *Environmental targeting* channels funding to those areas where the environmental benefits are greatest relative to costs. Targeting can, however, result in an uneven distribution of program funding. One approach to environmental targeting—the Environmental Benefits Index—has been successfully applied in the Conservation Reserve Program (CRP).

- ◆ *Producer flexibility* allows farmers to devise a least-cost approach to meeting environmental improvements rather than imposing a specific approach devised at county, State, or Federal offices. This flexibility has been successfully applied in implementation of conservation compliance provisions.

- ◆ *Program coordination* ensures that programs do not duplicate or offset each other. Coordination is complicated because of the wide range of existing farm

programs and environmental regulations. Implementation of conservation compliance provisions with the 1985 farm bill demonstrated successful coordination.

Maintaining the environmental gains achieved to date and addressing an expanded range of problems (nitrate leaching, manure management, etc.) in an increasingly complex policy landscape may require a mix of policy tools, some relatively new. One such tool is an agri-environmental payments program—payments to farmers who use or adopt practices that enhance the environment. While agri-environmental payments have tremendous potential to meet multiple environmental and farm income goals, how well they perform will depend on numerous design decisions, such as:

⬥ The objective of the program—which environmental goal(s) is the program designed to achieve? Is support of farm income a program goal?

⬥ The program base—what actions will trigger payments? Will we pay only for improvements in environmental quality, or will payments be made to all "good actors?" Will payments be based on the use or adoption of specific management practices thought to improve the environment, or will they be based on a measure of whether environmental quality actually improves? Will constraints be imposed on which lands are eligible for payments?

⬥ The payment rate—How much will farmers be paid? Will payments exceed farmers' costs? Will payments be targeted, that is, will they vary spatially with the level of potential benefits from improving environmental quality? Will total program size be limited?

An agricultural sector simulation model measures many of the tradeoffs inherent in selecting among environmental goals or across program design features. Because not all market and nonmarket impacts are measured, results are instructive but not definitive. The environmental quality measures featured in the analysis are benefits from reduced soil erosion and nitrogen runoff. Soil erosion, at 1.9 billion tons per year, remains significant even though farm programs and changes in farming practices have reduced erosion 40 percent between 1982 and 1997. Nitrogen's adverse impact on water quality in coastal areas is a significant and growing concern. Nitrogen loadings (from fertilizer) are a leading cause of eutrophication in coastal estuaries and a large hypoxic zone in the Gulf of Mexico, though the full scope of these problems is still unknown.

Given the multiple objectives of agricultural policy, the analysis suggests that some tradeoffs can be avoided by addressing each objective separately. Objectives may be complementary or conflicting, but even where overlap exists, the ability to achieve two or more goals with a single instrument may be limited. For example, a program targeted to reduce nitrogen runoff damage could increase soil erosion damage. However, reductions in soil erosion may reduce damages from phosphorus. In other examples, the analysis shows that targeting payments to support the incomes of any specific group of farmers is unlikely to solve any given agri-environmental problem. Conversely, targeting any specific agri-environmental problem may exclude many producers that policymakers would otherwise include in an income support program.

Simulation results indicate that subsidizing only environmental improvement (if such a program can be implemented) would be the most cost-effective way to achieve environmental gains. However, environmental improvement implies that

payments would apply only for changes in environmental performance made after enactment of an agri-environmental payment program. Lack of a pre-program, farm-specific environmental baseline may prevent policymakers from implementing such a program. Moreover, payments based on environmental improvement would not recognize the past contribution of "good actors"—producers who have already achieved a high level of environmental performance.

Alternatives include payments based on "good" environmental performance (e.g., "low" rates of soil erosion as estimated by the Universal Soil Loss Equation) or the use of environmentally "good" practices (e.g., conservation tillage), regardless of when or why "good" performance was achieved or "good" practices were adopted. These approaches are practical and equitable to good actors. However, they are likely to be less cost effective in achieving environmental gains and, unless carefully crafted, may create an incentive to expand production onto previously uncropped land. This could lead to a worsening of environmental quality.

Payments for "good" environmental performance would focus on management or conservation practices that are environmentally effective. When there is more than one way to achieve an environmental gain, a performance-based payment would allow producers to select the lowest cost alternative for their own resource conditions and farming operation. However, performance-based payments may entail substantial public investment in planning and enforcement. Farm- or field-specific conservation plans would be required.

Payments for "good" practices would limit producer flexibility and may result in the use of practices that are ineffective under some resource conditions. However, planning and enforcement costs may be quite low. Thus, practice-based payments may be more or less cost effective than performance-based payments depending on the environmental problem to be addressed and the resource conditions, crops, and farming practices at hand.

Agri-environmental issues come in all shapes and sizes and a one-size-fits-all policy tool does not exist. Hence, harmonizing agricultural production with preferences for improved environmental quality may require a menu of policy options. But choosing one, or many, policy tools is just the beginning. How well a policy instrument performs and the distribution of benefits and costs—among and between farmers, consumers, and taxpayers—will depend as much on how a policy is designed as on which policy is selected.