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Flexible Conservation Measures on Working Land

What Challenges Lie Ahead?

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Abstract

From 1985 to 2002, most Federal conservation dollars going to farm operators have been to retire land from crop production. Yet most U.S. farmland (850 million acres) remains in active production. The Farm Security and Rural Investment (FSRI) Act of 2002 sharply increased conservation funding and earmarked most of the increase for working-land payment programs (WLPPs). The design and implementation of WLPPs will largely determine the extent to which environmental goals are achieved and whether they are cost effective. We simulate potential environmental gains as well as adjustments in agricultural production, price, and income associated with various WLPP features to illustrate tradeoffs arising from WLPP design and implementation. Competitive bidding with the use of environmental indices to rank producers for enrollment is most cost effective. Payments based on past conservation will help support farm incomes, but limit the amount of additional environmental benefit that can be generated under a fixed budget.

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Summary

Agricultural production can have damaging environmental impacts. Although past conservation efforts—particularly land retirement—have helped, agri-environmental problems remain. Because most agricultural land (850 million acres) remains in production, and many agri-environmental problems are the result of small contributions from many widely dispersed farms, improving environmental performance on "working lands" is an important next step.

What Is the Issue?

The 2002 Farm Security and Rural Investment Act, or the 2002 farm bill, shifted U.S. agri-environmental policy from land retirement to conservation on working lands—land used primarily for crop production and grazing. Spending for conservation programs was increased by 80 percent over the previous farm bill, with much of that going to the Environmental Quality Incentives Program (EQIP) and the Conservation Security Program (CSP). While actual funding of these working-land payment programs (WLPPs) is unlikely to reach authorized levels, the scope of working-land conservation is nevertheless expanding.

Whether this trend continues in subsequent legislation is uncertain. However, effective design of agri-environmental programs can help stretch the available budget, whatever it might be, in terms of environmental gains or other program goals. But because of the complexity of farm household decisionmaking and the nonpoint source and site-specific nature of agri-environmental problems, forecasting the benefits of agri-environmental conservation programs is data-demanding and technically challenging.

What Did the Study Find?

Once a working land payment program has been designed—before any producers are enrolled or any contracts are signed—most of what can be done to ensure that program objectives are achieved is locked in place. If funding is limited, program goals are likely to be achieved only if program decisionmakers can anticipate the effect of enrolling a given producer.

Producers will apply for participation when the benefits they receive outweigh their costs, which will depend on program details. Program decisionmakers may apply enrollment screening criteria to determine which applicants are enrolled. Participation patterns then determine the environmental and economic outcomes of the program. The trick is to (1) develop a request for proposals that is attractive to producers who can contribute to achieving program goals and (2) develop enrollment screening criteria that use information provided by the applicants to select those best suited for the job. Policymakers and program managers may sometimes need to balance conflicting goals of fiscal conservatism versus conservation coverage, acknowledgment of ongoing stewardship versus reward for all-new efforts, or even resource concerns themselves (managing nutrient runoff, say, versus maintaining soil productivity).

Environmental cost-effectiveness. Programs best designed to maximize environmental gain from a limited budget will:

- Structure the application/enrollment process as a "request for proposals," which can then be accepted or rejected. This allows program decision-makers to glean valuable information before committing to a pool of program applicants.
- Rank proposals by benefit-cost criteria. Given a pool of willing participants, information on the practices to be adopted—soil quality in fields to be enrolled, farms' proximity to surface water, etc.—can be used to assess potential environmental benefits. Contract costs can be gleaned directly from the proposal. Environmental indices, like the Environmental Benefits Index (EBI) in the Conservation Reserve Program, can then be used to rank proposals.
- Promote bidding on financial assistance. In a competitive enrollment program, bidding on the level of financial assistance (e.g., the cost-share rate) can stretch budgets by reducing the cost of individual contracts. For a fixed budget, environmental performance on working lands may be increased by 25 percent with bidding provisions versus payments based on an (index-based) estimate of potential environmental benefits.

Stewardship payments. Only policymakers can decide the appropriate level of a good-stewardship reward. However, rewarding past performance could mean that there will be less program budget to encourage new conservation efforts. This tradeoff becomes more apparent when new and old practices are eligible for similar payments and when budgets are relatively small. In such a program, eligible stewards will have a greater incentive to accept a given payment for a particular practice they have already implemented than would eligible producers who would be newly adopting the same practice. Given that the number of eligible stewards is the same regardless of the budget level, the proportion of the budget allocated to stewardship payments will increase as the size of the budget decreases. Alternatively, program managers could decide to set aside a fixed proportion of the budget to reward stewards and another portion to encourage new adoption.

- Simulation results indicate that when budgets are capped at $500 million, a program that provides equal payments for both new and existing practices may achieve only one-fourth as much environmental gain as a program that focuses exclusively on new conservation activities. At lower budgets, given that the number of eligible stewards is still the same, a greater share of the budget goes toward stewardship payments and a smaller share is available to encourage new conservation efforts. A $250-million program that provides equal payments for new and existing practices may achieve less than one-twelfth as much environmental gain as a program that pays only for new practices.
- Payments designed to reward producers who are already good environmental stewards will limit the cost-effectiveness of achieving new environmental benefits, but may complement other programs that target regions or producers with a high potential for environmental improvement.

Alternative resource concerns. Environmental and economic outcomes of WLPPs depend on which agri-environmental problems are emphasized in the establishment of program incentives or enrollment criteria. These emphases are implicit in the environmental indices used to rank and select program participants. In the past, conservation practices that maintain and enhance soil productivity have been heavily weighted. We find that the environmental impacts of deviating from this paradigm are minimal because many conservation practices address multiple resource concerns.

How Was the Study Conducted?

A conceptual framework describes the effect of program design decisions on producer application, program enrollment, and, ultimately environmental gain and economic outcomes (e.g., farm income effects). We describe a range of design options available to policymakers and discuss each in terms of environmental gain and equity considerations. We estimate the magnitude—regarding public spending, environmental gain, and change in farm income—for several specific designs using the U.S. Agriculture Mathematical Programming (USMP) model.

USMP and environmental simulation models linked to it are used to quantify the potential environmental and economic tradeoffs in selecting among program objectives and design features. The report uses cost-effectiveness to measure program success and compare alternative program designs; i.e., how much environmental gain was achieved by each alternative design for a given level of public expenditure?