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# Farmer Decision-Making on Enrollment in the Conservation Reserve Program

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## Recommendations Regarding Data Collection and Analysis

1. Recognize and incorporate the reality that few decisions are made in isolation by paying attention to the influence of others on and role of others in the decision-making process.
2. Consider that what respondents report may not be what they do, believe or experience, or the specific farm structure and practices in place. Research which examines behavior, especially when it is evidenced by supporting secondary data, may be more predictive of future behavior than respondent-reported intentions. The tradeoff is an understanding of why.
3. Work to ensure the right variables are included. Consider those related to farm structure (land location, farm type, type of conservation practice) and landowner (heir transfer, retirement, occupation including farm and non-farm, land ownership, level of interest in what others are doing and thinking, and motivations, thoughts on external stakeholders, traditionalism, and attitudes about property rights and the role of the government).
4. Consider barriers to adoption. Knowing what would prevent / is preventing participation may require that question be explicitly asked.
5. Consider whether important differences in farmer or farm structure characteristics call for estimation of separate equations (conservation practice under consideration; benefactor of practice; farm locale; farm type; irrigation use; and full versus part-time farmer).
6. Consider that clearly targeted research objectives may be better than that more general.
7. However, recognize that a focus on a particular conservation practice and / or program may be limiting if considered in isolation if choices regarding conservation practices are not independent.
8. Be cognizant of the overarching importance of economic factors (e.g., real or perceived effect on profits; payments) but that a farmer may not be working to maximize profit.
9. Consider continued, not just initial, adoption. What may motivate participation or conversion may differ from what would motivate continued participation or conversion.
10. Explicitly address non-response bias and response distribution.
11. Consider how data is represented as it may influence revealed effects (e.g., selection of variable categories, use of categorical versus continuous measurements).
12. Carefully consider data analysis, paying special attention to interactive effects which may be important even when main effects are not independently significant.

## The Conservation Reserve Program

1. Exogenous market conditions and expectations are important in decisions regarding enrollment in CRP, which may limit the value of existing literature.
2. Even given the steep penalty, early withdrawal from a CRP contract might be a viable option.
3. Structural and other changes associated with conservation adoption or returning land to production can be expensive and take time. Consider the potential lag.
4. The consequence of enrollment into CRP is not acre-for-acre because of slippage.
5. The effect of enrollment on farmland prices for enrolled and nearby acres should be included as an economic consideration, although farmers may not be aware of this effect.
6. Landowners refine their bids in response to results of earlier enrollment periods.
7. Grouping or clustering producers by their characteristics and those of their farms will provide more insight on producer behavior.
8. Other methods of eliciting landowner perceptions should be considered to refine variables considered (e.g., open-ended questioning).

## Recommendations under Existing Conservation Programs

1. Encourage and facilitate relationships between farmers and external stakeholders so that each better understands and can empathize with the situation of the other.
2. Educate farmers on specific benefits rather than on the more general impact of conservation on the environment.
3. Use care in defining the economic and other benefits of programs. What matters most to the target audience should be emphasized and, what they fear, addressed.
4. Increase research and extension / outreach efforts regarding the economic impact of particular conservation practices under specific farm and market environments and under different programs.
5. Look for innovative, efficient methods to increase farmer access to information (e.g., use of social networks to extend reach of extension and other educational efforts; peer dissemination).

## Literature Cited

- Gleason, RA, NH Eullis Jr., BA Tangen, MK Laubhan, and BA Browne (2011) USDA conservation program and practice effects on wetland ecosystem services in the Prairie Pothole Region. *Ecological Applications*, 21(3) Supplement: S65–S81.
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- Stubbs, M (2012), *Conservation Reserve Program (CRP): Status and Issues*, Congressional Research Service, (October 18), R42783, 16 pages.
- Wachenheim, C and W Lesch (2014) *The Conservation Reserve Program: A Literature Review*. *Agricultural Economics Report No. 723*, North Dakota State University, Fargo.

## Objectives

- Refine attributes salient to decisions made by producers regarding landscape decisions;
- Model and empirically test the contribution of producer attitudes toward landscapes;
- Assess the effects of socio-demographic, bio-physical (farm), farm management, and exogenous variables on landscape decisions;
- Empirically assess the value of a range of hypothetical CRP program features to ascertain producer preferences for various CRP program elements; and
- Develop empirical profiles of producers representing segments of producer-types

## Methods

Sample-of-convenience interviews of producers in South Dakota, Iowa, and Minnesota. Detailed interviews eliciting producer behaviors, intentions, attitudes and ideas related to adoption of conservation practices and participation in conservation programs.

## Sample Characteristics

Producers selected by the Farm Service Agency and Extension contacts included those with grain, grain and livestock, and principally livestock operations. A majority of producers had at least small parcels of CRP, while some had large tracts. All were aware of the CRP program. Most were aged between 50 and 65, while the youngest were in their 30's, and oldest in their 70's. Two husband-wife couples and two independent women farmers participated; all others have been male producers. Most interviews were completed within an hour. Fifty interviews were conducted.

## Results [Very Preliminary Findings / General Observations]

1. Few farmers were engaged in formal long-term planning for their crop and livestock enterprises. Few reported that they had crop plans at least five years out; most reported they were engaged in planning during the 6 to 18 months prior to planting. Decision factors include rotation considerations for soil fertility, insect or disease control; commodity prices; input costs; interplay of livestock-crop production needs; and age/transition considerations.
2. Few farmers reported removing parcels from CRP under penalty; many reported the return to production following contract expiration; some because of commodity prices or their value to the farm operation and others because the land no-longer qualified. 3. Farmers are participating in a number of federal, state, and local conservation programs that provide technical and monetary assistance and land payments. There is considerable variability in level of knowledge regarding these opportunities and this is in part a result of farmer participation in ancillary opportunities (e.g., county boards, commodity associations).
3. Most reported that CRP was a choice when the land was not suitable for economic reasons (only marginally productive or economically viable), or, for soil preservation (erosion). Few producers engaged in CRP primarily as a conservation ethic.
4. A majority of producers commented on the effects of non-local decision-making regarding conservation program eligibility and implementation rules. The associated cost of local-control would be an important hurdle (difficult to administer and police).
5. Educational efforts that focus on economic impact (or lack thereof), program availability, and support are likely to be high-value uses of limited resources.
6. Variability in personnel does appear to be a factor in program adoption. Some agency-staff are better at facilitating conservation efforts than others; training and education may help.
7. Technology influences ability to implement conservation practices and the cost of doing so. While farm equipment size has grown substantially, so has the technology that allows producers to see the cost of using inputs on non- or less-productive acres and allows for non-application of inputs to non-productive acres with more accuracy and less inconvenience.

## The Way Forward

A contingent valuation experiment was conducted to identify the relative importance of contract characteristics on likelihood of enrollment in CRP. Choice options defined by:

- Rental payment (80%, 100%, and 120% of comparable land lease rates)
- Length of contract (10 years or 15 years)
- Terms (fixed at start for contract or readjusted every five years)
- Establishment cost paid by government (50% or 100%)
- Land use options (allowed haying or grazing every two years or remains idle)

Two groups completed the exercise

1. Farmers participating in interviews (currently 60)
2. Student / farmer teams comprised of students in an introductory agricultural economics course at NDSU and the primary decision-maker on their home operation or for that where they are employed. Current response rate for pairs is 36% (20 responses from decision-makers associated with 56 student participants).

The resulting information will be analyzed using an Exploded Logit or Conditional Logit to estimate the relative importance of program-features to farmers.

Option A	Option B	Option C	Option A	Option B	Option C
Enroll CRP %	Enroll 100%	No enroll	Enroll 100%	Enroll 80%	No enroll
Start Year to start	Immediate at the start	Do not enroll in CRP	Start Year to start	Start Year to start	Do not enroll in CRP
Length of contract, 10 years	Length of contract, 15 years		Length of contract, 10 years	Length of contract, 15 years	
Establishment cost, 0%	Establishment cost, 100%		Establishment cost, 0%	Establishment cost, 100%	
Land use permitted Grain/No livestock site only			Land use permitted Grain/No livestock other use	Land use permitted Grain/No livestock other use	

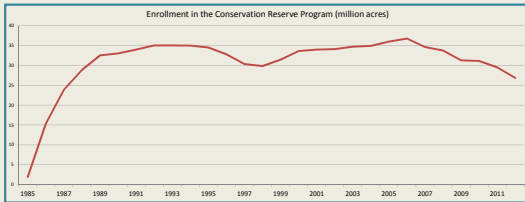
The table offers three options. Write "best" in the box under the option you would be most likely to choose and "worst" in the box under the option you would be least likely to choose.

## Background

High commodity prices and other factors have led to reduced conservation acres, to include loss of enrolled acres in the large and popular land retirement option, the USDA Conservation Reserve Program (CRP) (Stubbs, 2012). The loss of associated environmental benefits as producers opt out of participation can be especially long-felt because, for land in production, it may take years to recover the cost of conversion. The Prairie Pothole Region (PPR), spanning parts of Montana, North Dakota, South Dakota, Minnesota and Iowa, relies on conservation efforts to provide important wildlife habitat and other environmental benefits. The region is especially important in providing nesting habitat for American migratory waterfowl (Gleason et al., 2011). Here, CRP and the Wetlands Reserve Program (WRP) have restored approximately 5.4 million acres of wetland and grassland habitats.



Image from: Contributing to the North American Waterfowl Management Plan, U.S. Fish and Wildlife Service Mountain Prairie Region. <http://www.fws.gov/mountain-prairie/plw/16plw2b.htm> (Accessed February 19, 2014).



## Lessons from the Literature

Motivated by a desire to understand factors contributing to landowner and producer decisions to engage in conservation, our goals were to: identify factors important when conducting research eliciting landowner decision-making about conservation; understand what influences the efficacy of conservation programs in meeting policy objectives, with a secondary focus on CRP; and make recommendations about the implementation of existing programs.

Lesch and Wachenheim (2014) and Wachenheim and Lesch (2014) compiled related literature. They considered research investigating (intended or actual) adoption of conservation practices on working lands and in land retirement programs. Wachenheim and Lesch put special emphasis on identifying factors influencing participation in the Conservation Reserve Program and also cover literature related to program effectiveness.

A majority of literature reviewed was based on research using producer and landowner input elicited through surveys, interviews, and instruments obtaining their reactions to hypothetical choice sets including conservation practices. Literature using secondary data was also considered. Two models were introduced: the rational economic man model, based on profit maximization, and the utility model, which considers the perceived value of a basket of factors, including those monetary and non-monetary.