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Landowner Conservation Attitudes and Behaviors in the Prairie Pothole Region

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Abstract

Long-term and widespread wetlands conservation within agricultural working lands remains tenable. There exists a need to identify alternative options for incentivizing wetland maintenance on private property. The objective of this research is to facilitate development of viable options by developing an understanding of how landowners view conservation, including that specifically targeted towards maintenance of wetlands, and what influences their decision regarding conservation program participation. Landowners in the five-state Prairie Pothole Region were surveyed. Most landowners supported use of incentives for wetlands conservation. Fewer supported the options of incentivized regulation, easements, and regulation. Landowners identified contract attributes including payment level and guaranteed source of income as important in their decision-making regarding conservation program participation. Effect of program participation on soil quality and erosion control were also considered important. Other program attribute and external effect factors were of moderate importance, and impact on neighboring properties was not considered important. Revealed decision criteria differed between groups defined by operation as including livestock, residence as on-farm, gender, previous or current participation in the Conservation Reserve Program, and support of various policy options for wetlands conservation.

Attitudinal questions revealed that landowners in general agreed that they should be consulted on wetlands programs, promoting healthy ecosystems is a landowner's responsibility, and landowners have the right to decide land use, should be compensated for land use choices that benefit the environment, including for maintenance of wetlands, and should be able to farm wetlands. They agreed that wetlands are important for wildlife and their conservation is important, although agreement that it is important to protect wetlands on private and public lands and especially that small wetlands benefit their operations tended toward neutral. Landowners were neutral on whether current conservation programs are effective and there should be regulations to control the conversion of naturally-occurring wetlands on agricultural land. Landowners with a CRP contract history were more supportive of the role of and need to protect wetlands, and had a lower level of agreement that decisions on land use are their right and that landowners should be able to farm their wetlands than those without. Members of general and crop-specific farm organizations were more strongly in agreement with landowners' rights than non-members and less supportive of the role of wetlands and the need and policy tools to protect them. Members of Farmers Union and three crop commodity organizations also more strongly agreed that farmers should receive compensation when land use choices benefit the environment than non-members. Alternatively, conservation organization member agreement was higher than that of non-members that small wetlands benefit their operations, that it is important to protect wetlands, and that conservation of wetlands is important, and was lower for statements reflecting landowner rights.

Key Words: Wetlands, Working lands, Conservation, Prairie Pothole Region

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1. Introduction

Wetlands play an important role in the environment, serving as a transition zone where the flow of water, cycling of nutrients, and the energy of the sun meet to produce a unique ecosystem characterized by its hydrology, soils, and vegetation. In recent years, there has been considerable focus on the conservation of wetlands and for good reason. They provide a range of important ecological functions and services, including flood and water flow control, surface and groundwater recharge and discharge, water quality maintenance, nutrient retention, and nursery and habitat for biodiversity. However, despite their important role, their presence on agricultural lands can interfere with yields and productive efficiency, reducing land value for use in agricultural production, and resulting in an economic incentive to drain, fill, or otherwise alter wetlands. Recognition of this helped spawn the development of programs aimed at wetland conservation and restoration (Reimer 2012).

1.1. Conservation Programs

Conservation programs generally fall into two categories: land retirement and working lands programs (Lesch and Wachenheim 2014). Targeted specifically at wetlands, the Agricultural Conservation Easement Program (ACEP) replaces the long-running Wetland Reserve Program. It is considered a *land retirement* program. Participants provide a permanent or 30-year easement and enter into a restoration cost-share agreement. The Natural Resources Conservation Service (NRCS) pays a rental rate based on the terms of enrollment. Landowners pay taxes on the property and retain title to the land and thus the right to control access and recreational use.

Working lands programs generally have shorter contract lengths and do not require lands be retired from agricultural use. They are almost always voluntary and often include a payment to help cover the cost for producers to employ a conservation practice that they otherwise would not find cost effective or consistent with their objectives. The Agricultural Act of 2014 has an increased emphasis on these programs (USDA 2014), including the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP). EQIP was introduced in 1996 to provide cost-share payments and technical assistance to promote adoption of conservation practices on active agricultural lands. Contracts are between one and ten years in length. CSP, introduced in 2002, provides annual payments to farmers to address resource concerns on their farms. Contracts are five years in length. Since 2002, expenditures on working lands programs have seen tremendous growth. Over the life of the 2014 Farm Bill, expenditures for working lands programs is projected to be between $1.35 and $1.75 billion for EQIP and between $1.05 and $1.78 billion for CSP (USDA 2014). Despite growth in these programs, some argue that these programs and other working lands and land retirement programs are not effective in addressing existing water quality problems; and call for new programs (Ribaudo 2015).

1.2. Literature

For a comprehensive review of literature including determinants of farmer adoption of conservation practices and programs, producer preferences for conservation programs, and producers' attitudes and perceptions, and their influence on conservation, see Lesch and

Wachenheim (2014). The literature demonstrates that financial incentives are not always the sole reported or even main motivator for the adoption of conservation programs or practices. Farm size, education, gender, age, capital, income, availability of programs providing financial incentives, participation cost, farmer awareness and understanding of programs, access to information, conservation attitudes, presence of a succession plan, and experience managing wetlands have also been identified as factors influencing adoption. The literature in general supports the notion that farmers prefer conservation programs that have high levels of biodiversity, provide research, education and training opportunities, and allow farmers to maintain and manage activities on their farm land, even when compensation is lower. Also, shorter contract lengths are generally preferred while longer contract lengths, in general, must have higher financial incentives. Contracts are preferred that are flexible and allow farmers to decide areas of their land to include in the program.

1.3. Objectives

Incentive-based farm programs in general, including conservation programs, employ the use of public resources to encourage actions that support public objectives. Agricultural conservation programs are designed to facilitate multiple public objectives including those environmental, while not adversely affecting rural economies. For success, programs have to be attractive to intended enrollees. Wetlands conservation focusing on retirement programs in past legislation has become less operationally attractive inadvertently increasing the role of conservation compliance to incentivize maintenance of some wetlands. The 2014 Farm Bill re-linked wetlands conservation compliance with federal crop insurance subsidies, renewing the incentive for landowners to maintain wetlands even when subsidies have declined. As such, wetlands conservation is at least in part dependent on the continuation of policies which provide insurance subsidies attractive enough to affect landowner conservation behavior. That is, it is dependent on incentivized regulation and does not tie landowner conservation decisions directly to the positive environmental externalities they provide by maintaining wetlands.

Under current policy, long-term and widespread wetlands conservation is tenable. This situation calls for consideration of alternative options for incentivizing wetland maintenance on private property. One pilot program, the Pilot Working Wetlands Program, is in the third year of its funded five-year tenure in the Prairie Pothole Region of North Dakota. The program provides incentives to landowners who maintain their wetlands in recognition that doing so provides society a positive environmental externality. The success of this and other programs will be influenced by willingness of producers to participate. It is therefore important that we understand how landowners view conservation, including that specifically targeted towards maintenance of wetlands, and what influences their decision regarding program participation. That is the overall goal of this research, which specifically aims to: (1) understand use of wetlands, conservation practices employed, and the importance of different program-specific and program-effect factors on the participation decision; (2) Elicit landowner thoughts about landowner rights and responsibilities, conservation, and policy tools aimed at wetland conservation; (3) Identify potential landowner intention regarding maintenance of wetlands under different incentives and what factors would influence this decision.

2. Survey

Data was collected by mail survey. A survey was sent to 10,172 landowners in 187 counties in the five-state Prairie Pothole Region in 2017. Surveys were sent to landowners in 35 counties in Iowa, 54 counties in Minnesota, 15 counties in Montana, 39 counties in North Dakota, and 44 counties in South Dakota. A list of landowners participating in any government program within the Prairie Pothole Region counties was solicited from the Kansas City Farm Services Agency under the Freedom of Information Act. Approximately half of the surveys were sent in February; the other half were sent in March. In both cases, a reminder postcard was sent approximately three weeks after the mailing.

There were 868 complete or mostly complete surveys returned. Most surveys were completed and returned through the mail (97%). The remainder were completed online. Of those returning completed surveys, all indicated they had wetlands on land they owned in the PPR. Postcards were included with the survey for producers to return if their land did not contain wetlands, indicating they did not qualify to continue completing the survey. Of 10,172 surveys delivered, a response defined as completed or partially-completed survey or return of postcard was received from 2,048, a 20.13% response rate. Total percentage of delivered surveys that resulted in a completed survey by owners of lands containing wetlands was 8.52%.

The survey consisted of six parts. The first part qualified landowners to participate in the survey. Those indicating they did not own or operate farmland in the PPR that contains wetlands were asked to indicate as such and return the provided postcard. Postage was not included on the postcard, which may have reduced response rate among non-qualifier landowners. The second part contained questions about the farm and farm operations, including queries about the number and use of wetlands. The third part inquired about the types of conservation practices employed on the farm and the level of importance of different program-specific and program-effect factors on their participation decision. The fourth part included questions designed to elicit landowner thoughts about conservation. Landowners were asked about the appropriateness of different conservation policy tools and their level of agreement with different conservation-related attitudinal statements. They were also asked the percentage of their wetlands they would drain for farming if they could do so without penalty or loss of program eligibility, what factors would influence this decision. The fifth set of questions elicited socio-demographic characteristics of the farmers and the last part consisted of choice set questions. Information from the latter is excluded in this report.

The percentage of respondent landowners from each state was: Minnesota (38.8), South Dakota (19.1), North Dakota (18.5), Iowa (16.9), and Montana (3.7). This rank-order is the same as that reflecting the percentage of surveys sent to landowners in each state (e.g., the greatest percentage of surveys was sent to landowners in Minnesota).

2.1. Survey Respondents

Almost 92 percent of respondents were male. With the exception of one landowner self-reporting as Asian and two as American Indians, all respondents self-reported as white. The average age was 60 years. Average years until retirement was 11. Eighteen percent of respondents reported

being retired. Only considering those not yet retired, the average years until retirement was 13. Among those not yet retired, 56% plan to retire within 10 years, 85% within 20 years and 95% within 30 years.

Landowners were relatively well educated. Nearly all graduated from high school. Sixty-one percent completed at least a two-year college degree including 32% of respondents who completed a four-year degree, and 13% with a graduate degree.

Seventy-three percent of landowners indicated membership in one of several listed organizations or in another (non-listed) organization (table 1). Among those who indicated membership in one or more organizations, the average number was 2.08 of listed organizations.[1]

Table 1. Organizational membership of respondent landowners

Specified Organization	Percentage indicating membership
American Soybean Association	31%
National Corn Growers Association	31%
Farm Bureau	28%
Conservation organization	23%
Farmers Union	22%
Grain Growers	9%
Stockman's Association	8%

3. Results and Discussion

3.1. Farm and Respondent Characteristics

Sixty-four percent of respondents reported living on the farm (table 2) and most (88.7%) live on or within 100 miles of the farm.

Table 2. Location of residence of respondent landowner

Live	Percentage
On the farm	63.9
Rural area within 100 miles of farm	8.9
Town or city within 100 miles of farm	15.8
> 100 miles of farm	11.3

[1] Membership indicated for one or more conservation organizations was counted as one organizational membership because some landowners indicating this choice did not write in a number of organizations or the organizations themselves, or because the organizations were an unorthodox definition of conservation organization (e.g., “the school of hard knocks”). The average of conservation organizations (as interpreted to be such by the respondent) written in by the 130 respondents (of 190) who wrote in organizations was 1.72.

Respondents' farm definition based on annual sales revealed a balance between farm sizes in the sample (table 3).

Table 3. Farm sales for participant landowners

	Percentage
Residential farm (sales < $250,000, farming not main occupation)	28.7
Farming occupation (sales <$250,000, farming is main occupation)	23.5
Large family farm (sales between $250,000 and $499,999)	16.8
Very large family farm (sales of $500,000 or more)	28.1
Non-family farm (farms organized as non-family corporations or cooperatives)	2.2

* Total < 100% because approximately 1% of respondents wrote in other definitions.

Landowners were asked to identify the *best* definition of their relationship to the farm or ranch. They could select more than one option if more than one applied, generally as owner and renter. Three-fourths reported themselves as the owner, actively involved in operations; 17% as the owner, involved in decision-making but not operations; and 10% as the owner not actively involved in decision-making. Only ten percent (10.5%) reported renter to be a best definition of their relationship to the farm although 61% of landowners reported some rented acres.

Thirty-four percent of respondents reported having livestock including 31% (of the total sample) supporting ruminant livestock (those likely to directly use pasture). Nearly one-quarter (23%) of respondents have beef cows and herds range from 2 to 1,000 cows with an average herd size of 132; only four percent of those with cows reported having 500 or more. Two-thirds of those with cows have 120 or fewer, and 84% have 200 or fewer. Beef cattle or yearlings are raised by 7% of respondents with a range from 4 to 15,000 animals (average is 563). Hogs, dairy cattle, sheep, and poultry were reported raised by 4.2% (average is 2,937), 3.3% (161), 1.6% (221), and 1.1% (8,064) of the respondent population, respectively. Horses and elk were reported by 1.5% and 0.35% of respondents, respectively. Six respondents mentioned keeping bee colonies.

Land use is reported over all respondents that specified any land use item such that, e.g., mean owned crop acres includes those reporting zero owned crop acres, but who do have owned acreage in other uses. Average total acres reported was 1,666 comprised of 968 owned acres and 698 rented acres (table 4). The predominant land use is cropping, occupying two-thirds of owned acres and 80% of rented acres.

When the 258 respondents with grazing livestock are considered, the average total number of acres increases to 2,335, an increase of 40%. As was expected, the largest increase was in owned and rented pasture with both increasing nearly three-fold. Eighty percent of respondents have or have had CRP acres.

Landowners were asked about the primary crops raised on land containing their wetlands (multiple responses were allowed). Three-fourths (74%) indicated growing of row crops and one-quarter growing cereals (25%). Thirty-one percent reported raising hay and 16% raising of other crops. Of the 140 (of 854) that checked other and specified such, 26% indicated other to include a crop and 70% a conservation use.

Table 4. Land owned and rented by use for participant landowners

	Maximum	Mean	Std. Deviation	Percentage of		
				owned	rented	total
Owned crop acres	20,000	641	1,169	66.2		38.5
Owned pasture acres	12,000	179	837	18.5		10.8
Owned CRP acres	2,000	87	192	8.9		5.2
Owned other acres	12,000	60	452	6.2		3.6
Total Owned acres	24,100	968	1,774	100.0		58.1
Rented crop acres	13,000	555	1,102		79.5	33.3
Rented pasture acres	18,000	124	856		17.8	7.5
Rented CRP acres	600	12	53		1.7	0.7
Rented other acres	2,000	9	87		1.3	0.5
Total Rented acres	18,160	698	1,448		100.0	41.9
Total acres	24,100	1,666	90			100.0

3.2 Wetlands and Conservation Practices

Farmers were asked about the approximate number of wetlands on their farm and asked to indicate the number separately for wetlands up to and including two acres in size and those wetlands larger. Landowners reported an average of 28 wetlands for every 1,000 acres of land (i.e., 18 wetlands for every section or 640 acres), almost evenly split between small and large wetlands. Landowners were asked to distribute a percentage of total number of wetlands to categories reflecting how often their small wetlands are farmed. Thirty-eight percent were mostly farmed and just less than 10% each were farmed more than half the time (9.7) or less than 50% of the time (8.5).

Landowners were asked about use of the land within which their wetlands reside and to indicate the approximate percentage of total acres of wetlands in each use. The most common use averaged over all respondents was farming (43.3%) followed by idle (31.8%), grazed (13.8%), and other (11.2%). As expected, the percentage grazed was much higher among those raising ruminant livestock (33.3%) than those not (4.9%) (table 5).

Table 5. Use of land containing wetlands, comparison of those with and without ruminants

Practices	Average percentage (standard deviation)		Independent samples Mann Whitney U test significance
	With grazers	Without grazers	
Not used	25.2 (35.9)	34.9 (42.4)	.014
Farmed	37.8 (38.7)	45.6 (43.6)	.063
Grazed	33.3 (36.1)	4.9 (16.6)	.000
Other	3.72 (14.3)	14.8 (32.8)	.001

Landowners were asked to indicate (options provided) those conservation practices used on their farmland or that they operate. Sixty percent reported that they employ minimum-till and 36% reported practicing no-till. Grass waterways and buffer strips were reported used by 49% and 39% of respondents, respectively. One third used cover crops (32%) and 11% planted winter cereals. "Other" was checked by 15.7% of respondents and the most common noted in other was CRP.

3.3. Policy Options for Wetlands Conservation

Landowners were asked which policy tools are appropriate for wetlands conservation. Most (95%) agreed incentives were appropriate. Seventy-nine percent approved of using technical assistance and 68% of using incentivized regulation. Fewer agreed with the use of easements (56%) and regulation (43%).

3.4 Importance of Factors on Conservation Program Enrollment

Landowners were asked the level of importance of various program-specific and external factors on their decision whether to participate in conservation programs in general. 0 indicates the factor does not affect their decision; 1 = not very important; 5 = very important. On average, among the program specific factors, a guaranteed income (4.00) and payment (3.99) were most important (table 6). Length of contract (3.53) and maintenance requirements (3.46) were noted as important. The external impact on soil (4.04) and water quality (3.78), weeds (3.53), and wildlife (3.49) were reported to be important, averaged over all respondents. The effect on hunting (2.80) and neighbors (2.33) were not considered important. The perspective of neighbors was considered of low importance.

Table 6. Importance of factors on conservation program participation decision

		Overall	No livestock	Livestock	Sign. (F-test)
Program specific	Guaranteed income	4.00	4.13	3.70	0.000
	Payment	3.99	4.13	3.69	0.000
	Length contract	3.53	3.66	3.25	0.000
	Maintenance requirements	3.46	3.51	3.31	0.032
External impact, Effect on:	Soil quality, erosion control	4.04	4.06	4.00	0.479
	Water quality	3.78	3.82	3.70	0.193
	Weed pressure	3.53	3.53	3.51	0.870
	Wildlife population	3.49	3.59	3.27	0.003
	Hunting opportunities	2.80	2.89	2.61	0.032
	Neighboring property	2.33	2.38	2.24	0.251
	Perspective of neighbor	2.08	2.12	1.98	0.233

0 indicates the factor does not affect their decision; 1 = not very important; 5 = very important.

Contract requirements including payment, that payment was guaranteed, length of contract, and maintenance requirements, and the effect of the conservation program on hunting and on wildlife

populations were all slightly, but significantly less important for *those with ruminants* than others. There was no difference between the groups in level of importance assigned to the other effects of the conservation program.

There were only two statistically differences in level assigned to the factors by those who *lived on the farm* and those who did not. Those living on the farm found less important the effect on wildlife population (3.39 versus 3.78, p = .001) and hunting opportunities (2.74 versus 3.02, p = .040). The only difference between *gender attitude* was a higher level of importance assigned to the effect on hunting by men (2.86) than women (2.12, p<.001). Level of importance to three of the program attributes and four effects was higher for those who have or have had CRP acres than others (table 7).

Table 7 Importance of factors on conservation program participation decision for those with and without livestock

		CRP	No CRP	Sign. (F-test)
Program specific	Guaranteed income	4.08	3.68	.000
	Payment	4.09	3.61	.000
	Length contract	3.60	3.25	.002
External impact, Effect on:	Soil quality, erosion control	4.12	3.73	.000
	Water quality	3.91	3.29	.000
	Wildlife population	3.69	2.68	.000
	Hunting opportunities	2.97	2.11	.000

0 indicates the factor does not affect their decision; 1 = not very important; 5 = very important.

There were differences in assignment of level of importance to various contract attributes and program effect between landowners who agreed with a policy tool was appropriate for wetlands conservation and those who did not. Three contract attributes were more important to those who considered *incentives* a viable policy tool (table 8). They also found the effect on neighboring property to be more important, although there were no other differences in importance of the effect on different physical and social environment factors. Those who consider *incentivized regulation* a viable policy tool considered the contract maintenance requirements to be slightly less important than others, but the difference was small.

Table 8 Importance of factors on conservation program participation decision for those who find incentives to be a viable policy tool and those who do not

	Incentives		
Importance of	Yes	No	Sign. (F-test)
Payment	4.04	3.28	.000
Guaranteed payment	4.04	3.44	.004
Length contract	3.55	3.13	.045
Effect on neighboring property	2.36	1.82	.040

0 indicates the factor does not affect their decision; 1 = not very important; 5 = very important.

Those who consider regulation, incentivized regulation, technical assistance, and particularly easements to be appropriate policy tools found more important the effect of conservation programs on external social and environmental factors than those who indicated these policy

tools to be unacceptable (table 9). The largest differences were regarding the effect on wildlife population and hunting opportunities on the decision whether or not to participate in a conservation program. Importance assigned to perspective of peers was different only between those who considered easements a viable policy tool for wetlands conservation (2.26) and others (1.86, p = .000). Those who consider technical assistance a policy option appropriate for wetlands conservation found more important the effect of a conservation program on weed pressure (3.60 vs. 3.31, p = .012) and on neighboring property (2.40 vs. 2.10, p = .032).

Table 9. Importance of factors on conservation program participation decision by policy tool

	Regulation			Easements			Incentivized regulation		
Importance of	Yes	No	Sign. (F-test)	Yes	No	Sign. (F-test)	Yes	No	Sign. (F-test)
Wildlife population	3.84	3.23	.000	3.70	3.23	.000	3.67	3.12	.000
Water quality	3.97	3.66	.000	3.95	3.59	.000	3.85	3.66	.029
Soil quality				4.17	3.89	.001			
Weed pressure									
Hunting	3.04	2.63	.001	3.03	2.53	.000	2.95	2.51	.001
Neighboring property	2.46	2.23	.048	2.48	2.15	.003			
Perspective of peers				2.26	1.86	.000			

0 indicates the factor does not affect their decision; 1 = not very important; 5 = very important.

3.5. Landowner Attitudes and Beliefs

Landowners were asked to indicate their level of agreement with statements regarding conservation using a scale of 1 = strongly disagree to 5 = strongly agree. On average, respondents strongly agreed that farmers should be consulted when wetlands programs are designed (4.49) (table 10). They agreed that promoting healthy ecosystems is part of their responsibility as a steward of the land (4.32); that the decision of how to use their land is their right (4.29); that farmers should be compensated for land use choices that benefit the environment (4.17); that farmers should be paid to maintain wetlands (4.04); and that they should be able to farm their wetlands when feasible (3.94). Respondents on average also tended towards agreement that wetlands are important to maintain wildlife in their area (3.99) and that the conservation of wetlands is very important (3.81) Average level of agreement tended towards neutral (neither agree nor disagree) that it is important to protect wetlands on both private and public lands (3.63); current conservation programs are effective (3.49); there should be regulations to control the conversion of naturally-occurring wetlands on agricultural lands (3.04); and that small wetlands have benefits for their operation (2.91).

Table 10. Level of agreement with statements regarding conservation

	Mean	Std. Deviation
Farmers should be consulted on wetlands programs	4.49	0.632
Promoting healthy ecosystems my responsibility	4.32	0.719
Decision on land use my right	4.29	0.914
Farmers should be compensated for environmental choices	4.17	0.812
Landowners should be paid to maintain wetlands	4.04	0.91
Wetlands are important for wildlife	3.99	1.03
Should be able to farm wetlands	3.94	1.109
Conservation wetlands important	3.81	1.045
Important to protect wetlands	3.63	1.097
Current conservation programs effective	3.49	0.918
Regulations to control wetland conversions	3.04	1.247
Small wetlands benefit my operation	2.91	1.332

1 = strongly disagree; 5 = strongly agree

There was a difference in average rating between genders for only three statements. Men less strongly agreed that wetlands are important for wildlife (3.97 vs. 4.30 for women, $p = .009$) and that small wetlands benefit their operation (2.88 vs. 3.24, $p = .028$). Men more strongly agreed that landowners should be able to farm their wetlands (3.97 vs. 3.63, $p = .014$). With only one exception, there was no difference in average rating between those with and without ruminant livestock. The exception was that those with ruminant livestock were slightly less likely to agree that farmers should be compensated when their land use choices benefit the environment (4.08 vs. 4.21, $p = .037$).

Those who are participating or have participated in the Conservation Reserve Program less strongly agreed that they should be able to farm wetlands and that, more generally, the decision on land use is their right (table 11). They more strongly agreed that small wetlands benefit their operations, it is important to protect wetlands on both public and private property, conservation of wetlands is important and wetlands are important to maintain wildlife. They also more strongly agreed that current conservation programs are effective, it is their responsibility to promote healthy ecosystems, and there should be regulations to control the conversion of naturally-occurring wetlands on agricultural lands. Average level of agreement among those practicing no-till was slightly less than those not that there should be regulations to control the conversion of naturally-occurring wetlands on agricultural land (2.90 vs. 3.10, $p = .025$), and slightly higher that landowners should be able to farm their wetlands when feasible (4.07 vs. 3.89, $p = .026$).

There were differences in average level of agreement between those with membership in a general farm organization and those not (table 12). For those significantly different for both Farm Bureau and Farmers Union, directionality of the difference was the same. Independently considered, members of both organizations were more likely to agree that they should be able to farm wetlands and agree less strongly that wetlands are important for wildlife, wetlands are important and it is important to protect them on public and private land and that there should be regulations to control wetland conversions, than non-members. Specific to Farmers Union members was a slightly higher level of agreement among members that farmers should be

compensated for environmental choices, including maintaining wetlands. Farmers' Union members had a lower average level of agreement than nonmembers that small wetlands benefit their operation. Specific to Farm Bureau members was a higher average level of agreement than for nonmembers that the land-use decision is the right of the landowner and that farmers should be consulted on wetlands programs.

Table 11. Difference in level of agreement with statements between those with and without a history in the CRP

	CRP History		
	Yes	No	Difference
Small wetlands benefit my operation	3.01	2.47	0.54
Regulations to control wetland conversions	3.13	2.63	0.50
Important to protect wetlands	3.72	3.27	0.45
Conservation wetlands important	3.89	3.45	0.44
Wetlands are important for wildlife	4.08	3.69	0.39
Current conservation programs effective*	3.55	3.28	0.27
Promoting healthy ecosystems my responsibility*	4.38	4.16	0.22
Decision on land use my right	4.24	4.52	-0.28
Should be able to farm wetlands	3.86	4.30	-0.44

1 = strongly disagree; 5 = strongly agree
* p = 0.001; for all others, p = 0.000.

Table 12. Difference in level of agreement with statements by general farm organization membership

	Farm Bureau member				Farmers Union member			
	Yes	No	Diff.	p	Yes	No	Diff.	p
Should be able to farm wetlands	4.14	3.88	0.26	0.002	4.33	3.84	0.49	0.000
Decision on land use my right	4.47	4.22	0.25	0.001				
Farmers should be consulted on wetlands programs	4.58	4.45	0.13	0.006				
Conservation wetlands important	3.57	3.90	-0.33	0.000	3.48	3.90	-0.42	0.000
Wetlands are important for wildlife	3.73	4.09	-0.36	0.000	3.82	4.04	-0.22	0.010
Important to protect wetlands	3.37	3.74	-0.37	0.000	3.38	3.71	-0.33	0.000
Regulations to control wetland conversions	2.68	3.16	-0.48	0.000	2.74	3.11	-0.37	0.000
Farmers should be compensated for environmental choices					4.29	4.12	0.17	0.014
Landowners should be paid to maintain wetlands					4.14	4.00	0.14	0.012
Small wetlands benefit my operation					2.48	3.03	-0.55	0.000

Those who reported membership in Stockman's Association had a slightly lower average level of agreement that the conservation of wetlands important (3.56 vs. 3.83, p = .051) and that there should be regulations to control the conversion of naturally-occurring wetlands on agricultural lands (2.69 vs. 3.06, p = .023) than non-members.

Independently and jointly considered, there was a higher average level of agreement among members of grain associations including American Soybean Association, National Corn Growers Association and Grain Growers that farmers should be compensated for environmental choices that benefit the environment, including maintaining wetlands; the decision of land-use is the right of the landowner; and that landowners should be able to farm their wetlands, than among non-members (table 13). Grain Growers Association members had a slightly higher level of agreement than nonmembers that farmers should be consulted on wetlands programs. Average level of agreement was lower that wetlands are important for wildlife; conservation of wetlands is very important and it is important to protect wetlands on both public and private land; small wetlands benefit their operation; and there should be regulations to control the conversion of naturally-occurring wetlands on agricultural land. Members of the American Soybean and National Corn Growers Associations had a slightly lower level of agreement that promoting ecosystems is the landowner responsibility than nonmembers.

Table 13. Difference in level of agreement with statements regarding conservation by commodity-specific organizational membership

	American Soybean Association			National Corn Growers Association			Grain Growers Association		
	Yes	No	p	Yes	No	p	Yes	No	p
Should be able to farm wetlands	4.31	3.79	0.000	4.28	3.80	0.000	4.60	3.88	0.000
Decision on land use my right	4.42	4.23	0.008	4.40	4.24	0.016	4.55	4.26	0.009
Farmers should be compensated for environmental choices	4.25	4.11	0.025	4.25	4.11	0.026	4.42	4.13	0.003
Landowners should be paid to maintain wetlands	4.13	4.00	0.061	4.13	4.00	0.066	4.29	4.02	0.013
Farmers should be consulted on wetlands programs							4.63	4.47	0.037
Promoting healthy ecosystems my responsibility	4.22	4.36	0.009	4.23	4.35	0.018			
Conservation wetlands important	3.51	3.94	0.000	3.50	3.95	0.000	3.31	3.86	0.000
Wetlands are important for wildlife	3.68	4.15	0.000	3.63	4.15	0.000	3.71	4.02	0.011
Regulations to control wetland conversions	2.69	3.18	0.000	2.70	3.18	0.000	2.55	3.08	0.000
Important to protect wetlands	3.28	3.79	0.000	3.26	3.81	0.000	3.26	3.67	0.001
Small wetlands benefit my operation	2.41	3.12	0.000	2.38	3.15	0.000	2.42	2.96	0.001

1 = strongly disagree; 5 = strongly agree

The level of agreement among members of one or more of these crop commodity organizations that landowners should be able to farm their wetlands when feasible is notably higher than among nonmembers (table 14). The level of agreement among members is notably lower than among members that small wetlands are beneficial for the farm operation and for wildlife, that there should be regulations to control wetland conversion, and that it is important to protect and conserve wetlands. Notably, there is no difference between members and nonmembers in level of agreement that current conservation programs effective. Numeric differences between members and non-members of commodity organizations are shown (table 15).

Table 14. Difference in level of agreement with statements by membership in one of more grain organizations

	Member, one or more grain organizations			
	yes	no	diff.	p
Should be able to farm wetlands	4.33	3.70	0.63	.000
Decision on land use my right	4.42	4.20	0.22	.001
Farmers should be compensated for environmental choices	4.26	4.09	0.17	.004
Landowners should be paid to maintain wetlands	4.14	3.97	0.17	.009
Promoting healthy ecosystems my responsibility	4.25	4.36	-0.11	.034
Conservation wetlands important	3.51	4.00	-0.49	.000
Wetlands are important for wildlife	3.67	4.20	-0.53	.000
Important to protect wetlands	3.31	3.85	-0.54	.000
Regulations to control wetland conversions	2.68	3.26	-0.58	.000
Small wetlands benefit my operation	2.41	3.23	-0.82	.000

1 = strongly disagree; 5 = strongly agree

Table 15. Difference in level of agreement with statements by crop commodity organization membership

	Difference (member - non-member)			
	Soybean	Corn	Grain	Member ≥ 1 org.
Should be able to farm wetlands	0.52	0.48	0.72	0.63
Decision on land use my right	0.19	0.16	0.29	0.22
Farmers should be compensated for environmental choices	0.14	0.14	0.29	0.17
Landowners should be paid to maintain wetlands	0.13	0.13	0.27	0.17
Promoting healthy ecosystems my responsibility	-0.14	-0.12	0.00	-0.11
Conservation wetlands important	-0.43	-0.45	-0.55	-0.49
Wetlands are important for wildlife	-0.47	-0.52	-0.31	-0.53
Important to protect wetlands	-0.51	-0.55	-0.41	-0.54
Regulations to control wetland conversions	-0.49	-0.48	-0.53	-0.58
Small wetlands benefit my operation	-0.71	-0.77	-0.54	-0.82
Farmers should be consulted on wetlands programs			0.16	

1 = strongly disagree; 5 = strongly agree

Differences between levels of agreement among those noting themselves to be a member of one or more *conservation* organizations were notable (table 16). Members had a lower level of agreement that the decision on land use belongs to the landowner and that landowners should be able to farm their wetlands. They had a higher level of agreement for all statements indicating in some manner that wetlands are beneficial, we should make efforts to conserve wetlands, promoting healthy ecosystems is part of the landowner's responsibility and regulations are appropriate to control conversion of naturally-occurring wetlands on agricultural lands.

Table 16. Difference in agreement with statements by conservation organization membership

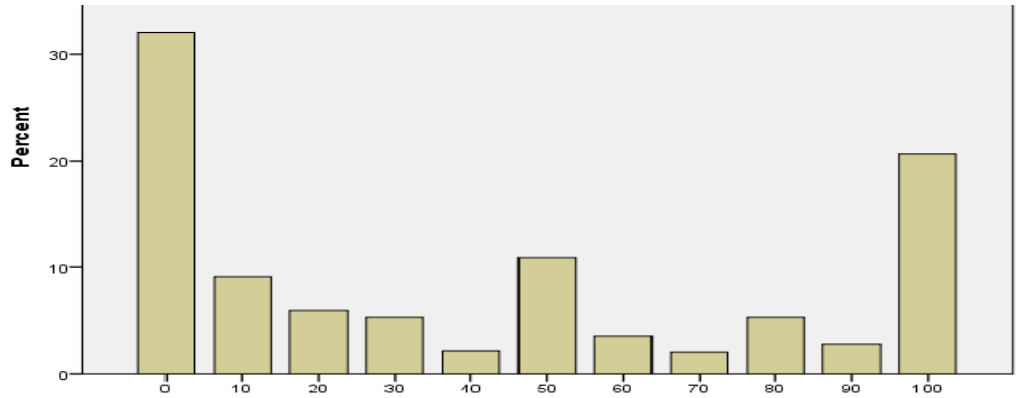
	Conservation organization		
	yes	no	Difference*
Regulations to control wetland conversions	3.64	2.85	0.79
Small wetlands benefit my operation	3.47	2.74	0.73
Important to protect wetlands	4.19	3.47	0.72
Conservation wetlands important	4.3	3.67	0.63
Wetlands are important for wildlife	4.44	3.85	0.59
Promoting healthy ecosystems my responsibility	4.53	4.25	0.28
Decision on land use my right	3.95	4.39	-0.44
Should be able to farm wetlands	3.38	4.12	-0.74

1 = strongly disagree; 5 = strongly agree; * p = .000

3.6. Wetland Conversion

Respondents were asked if they could do so without penalty or loss of program eligibility, what percentage of their wetlands they would consider draining for farming. The average response was 40.4%. Just under one-third of respondents indicated they would not drain any of their wetlands and 26% indicated they would drain all their wetlands (figure 1).

Males reported they would drain a higher percentage of their wetlands (41.32) than females (29.51, p = .018) if they could do so without loss of program eligibility. Those who live on a farm, own the farmland and are actively engaged in its operation, and do not raise hay would drain a higher average percentage of wetlands if they could do so without loss in program eligibility (table 17). There was no difference between those with and without livestock.



* 0 percentage represents a response of 0; 10% represents a response > 0 but less than 15%; 100% represents a response of 100 (all wetlands). The other values are the midpoint of a ten percentage point range. It is a percentage of the number rather than the total area they cover.

Figure 1. Percentage of respondents reporting they would drain the wetlands percentage indicated if they could do so without loss of program eligibility.

Table 17. Comparison of average percentage of wetlands landowners would drain if they could do so without loss of program eligibility

	Average percentage group member would drain			
	Yes	No	Diff.	p (T test)
Lives on farm	43.76	34.21	9.55	
Owner actively involved in operations	43.64	30.40	13.24	0.000
Raises hay	32.79	44.11	-11.32	0.000
Organizational Membership				
Farm Bureau	48.60	37.52	11.08	0.000
Farmers Union	49.80	37.90	11.90	0.000
Grain Growers	54.15	39.19	14.96	0.002
American Soybean Association	52.45	35.12	17.33	0.000
National Corn Growers Association	53.57	34.63	18.94	0.000
Member grain commodity group	53.18	32.23	20.95	0.000
Member conservation group	25.85	45.05	-19.20	0.000
Conservation				
History of CRP	38.37	50.22	-11.85	0.001
Buffer strips	37.22	42.81	-5.59	0.052
Acceptance of Policy Tool				
Incentivized regulation	33.36	54.69	-21.33	0.000
Regulation	30.49	47.80	-17.31	0.000
Easements	36.57	45.26	-8.69	0.002
Technical assistance	42.37	33.58	8.79	0.009

Members of one or more conservation groups would drain a lower average percentage of wetlands. Members of other organizations provided in the question would drain a higher

percentage than nonmembers, both independently and when membership in one or more grain commodity group is considered. The average percent of wetlands a landowner would drain did not differ between members of the Stockman's Association and non-members. Those with a history in CRP or who maintain buffer strips would drain a lower percentage of wetlands. There was no difference between groups differentiated by use of grass waterways or cover crops.

The average percentage of wetlands a landowner would drain if they could do so without loss in program eligibility is higher among those who do not find acceptable the policy tools of incentivized regulation, regulation, and easements for wetlands conservation (table 18). Those who find acceptable the use of technical assistance reported they would drain a higher percentage of their wetlands than those who do not. There was no difference between those who find incentives appropriate and those who do not.

Table 18. Landowners' acceptance of policy mechanisms: comparison between landowners who would not drain wetlands and those that would consider draining all wetlands

	Wetlands would drain (percent)			
Support policy option	None	All	Difference	p (t-test)
Regulation	56.9	29.2	27.6	0.000
Incentivized Regulation	75.3	46.8	28.5	0.000
Incentives	93.7	94.2	-0.4	0.860
Easements	62.7	49.7	13.1	0.009
Technical Assistance	72.2	79.4	-7.2	0.104

3.7. Factor Influence on Wetland Conversion

Given the conditions of no penalty for loss of program eligibility, respondents were asked to indicate the influence of several listed factors on the decision whether to drain a particular wetland where 0 indicates the factor does not influence the decision, 1 = very low level of influence and 5 = very high level of influence. All of the factors listed on average had a moderate level of influence or higher although variability in response was somewhat large (table 19). On average, the most important two factors were increased efficiency of operations and land quality.

Table 19. Influence of factor on decision to drain wetlands in absence of penalty

	Mean	Std. Deviation
Increased efficiency	3.89	1.51
Land quality	3.85	1.47
Cost	3.49	1.52
Effect on water quality	3.42	1.47
Effect on surrounding land	3.40	1.52
Accessibility	3.39	1.54
Prevented planting	3.37	1.61
Need for weed control	3.36	1.55
Effect on wildlife habitat	3.17	1.56

0 indicates no influence, 1 = very low level of influence and 5 = very high level of influence.

For purposes of subsequent discussion, operational concerns include increased efficiency of farming the tract of land (increased efficiency), land quality, cost, accessibility, frequency of prevented planting, and need for weed control. Environmental concerns include effect on water quality and effect on wildlife habitat. Effect on surrounding land is not categorized because its meaning may be operational or environmental or may reflect concern for neighbors.

Operational concerns were more important to those who are involved in day-to-day operations than others, particularly the impact on efficiency and land quality (table 20).

Table 20. Influence of factor on decision to drain wetlands: Landowners who own and operate the farm versus those not active in farm operations

	Own and operate farm	Not active	difference	p
Land quality	3.97	3.49	0.48	0.00
Efficiency increase	4.04	3.44	0.60	0.00
Frequency of prevented planting	3.44	3.14	0.30	0.02
Accessibility	3.45	3.20	0.25	0.04
Cost	3.57	3.27	0.30	0.02

0 indicates no influence, 1 = very low level of influence and 5 = very high level of influence.

There were no differences between operators and landowners not involved in day-to-day operations with regards to environmental impacts. Influence of increased efficiency of farming the tract of land was the only difference between genders with men finding this more important (3.95) than women (3.27, p = .003). Those who have or have held a CRP contract reported production practice factors would be of lower influence in their decision whether to drain wetlands, including impact on efficiency, accessibility, cost and weed control (table 21). Of higher influence would be the impact on water quality and, particularly, wildlife.

Table 21. Influence of factor on decision to drain wetlands: landowners with a CRP history compared to those without

	CRP history	No CRP history	difference	P
Efficiency increase	3.79	4.31	-0.52	0.000
Accessibility	3.30	3.71	-0.41	0.003
Cost	3.42	3.80	-0.38	0.002
Need for weed control	3.28	3.65	-0.37	0.007
Effect on water quality	3.50	3.09	0.41	0.002
Effect on wildlife habitat	3.31	2.59	0.72	0.000

0 indicates no influence, 1 = very low level of influence and 5 = very high level of influence.

However, those currently employing conservation practices including no- and minimum-till and planting winter cereals reported production practice impacts would be more important than those not adopting these specific practices (each practice considered independently) (table 22). The difference was considerable when those practicing one of the four conservation practices of no- or minimum-till, buffer zones, or grass waterways were compared with those practicing none of these four conservation practices. There is not consistency in directionality when comparing

those practicing a particular conservation practice and those not with regards to impact on the environment. Those practicing no-till and planting grass waterways do not differ from those not in assigning level of influence to environmental consequences of draining wetlands. Those using minimum tillage consider less influential the impact on water quality and wildlife habitat, while those planting winter cereals consider these factors more influential. Those planting buffer strips consider more influential the impact on wildlife habitat than those not.

Table 22. Influence of factor on decision to drain wetlands: landowners practicing conservation practices compared to other landowners

	Practice no-till				Practice minimum till			
	Yes	No	Diff.	p	Yes	No	Diff.	p
Land quality					3.98	3.70	0.28	0.012
Efficiency increase	4.10	3.78	0.32	0.003	4.16	3.49	0.67	0.000
Prevented planting	3.57	3.31	0.26	0.028	3.52	3.23	0.29	0.014
Accessibility	3.60	3.28	0.32	0.004	3.54	3.18	0.36	0.002
Cost	3.80	3.36	0.44	0.000				
Water quality					3.33	3.59	-0.26	0.015
Wildlife habitat					2.99	3.45	-0.46	0.000

	Plant winter cereals				Any of four conservation practices			
	Yes	No	Diff.	p	Yes	No	Diff.	p
Land quality					3.94	3.17	0.77	0.002
Efficiency increase	4.22	3.86	0.36	0.016	3.98	3.09	0.89	0.001
Prevented planting					3.45	2.94	0.51	0.032
Accessibility	3.79	3.35	0.44	0.007	3.46	2.76	0.70	0.005
Cost	3.94	3.47	0.47	0.002	3.56	3.12	0.44	0.021
Water quality	3.72	3.40	0.32	0.050				
Wildlife habitat	3.51	3.13	0.38	0.031				

0 indicates no influence, 1 = very low level of influence and 5 = very high level of influence.

Influence of factors when considering whether to drain wetlands was compared between members of organizations and non-members. Members of Farm Bureau, Farmers Union and one or more commodity organizations reported production-related factors more influential (table 23). [True for all factors for Farm Bureau members and members of grain commodity organizations, and for land quality and efficiency increase for Farmers Union members.] The difference in influence level for members and non-members is particularly notable for members of one or more crop commodity organizations, who also find more important the impact on surrounding land and on the need for weed control. Members of each of the three groups find less influential than non-members the impact on wildlife habitat.

Table 23. Influence on decision to drain wetlands: organizational members versus non-members

	Farm Bureau member				Farmers Union member			
	Yes	No	Diff.	p	Yes	No	Diff.	p
Land quality	4.18	3.74	0.44	0.000	4.08	3.80	0.28	0.022
Efficiency increase	4.25	3.76	0.49	0.000	4.19	3.82	0.37	0.001
Frequency of prevented planting	3.66	3.26	0.40	0.002				
Accessibility	3.66	3.30	0.36	0.003				
Cost	3.80	3.37	0.43	0.000				
Effect on wildlife habitat	2.96	3.26	-0.30	0.017	2.81	3.28	-0.47	0.000

	Crop commodity org. member			
	Yes	No	Diff.	p
Land quality	4.20	3.63	0.57	0.000
Efficiency increase	4.40	3.56	0.84	0.000
Frequency of prevented planting	3.73	3.12	0.61	0.000
Accessibility	3.67	3.21	0.46	0.000
Cost	3.78	3.30	0.48	0.000
Effect on surrounding land	3.62	3.25	0.37	0.001
Effect on wildlife habitat	2.96	3.32	-0.36	0.001
Need for weed control	3.54	3.22	0.32	0.004

0 indicates no influence, 1 = very low level of influence and 5 = very high level of influence.

Members of one or more conservation organizations report the direct opposite influence of each of the production and environmental factors when compared to non-members (table 24). Specifically, they find less important factors directly related to production, and effect on surrounding land, and more important impact on environmental factors of water quality and wildlife habitat. The difference in influence is sizeable for efficiency increases (less influential) and effect on wildlife habitat (more influential).

Table 24. Influence of factor on decision to drain wetlands: Conservation organization members compared to others

	Members	Non-members	Difference	p
Land quality	3.60	3.94	-0.34	0.013
Efficiency increase	3.23	4.20	-0.97	0.000
Frequency of prevented planting	3.06	3.46	-0.40	0.006
Accessibility	2.97	3.53	-0.56	0.000
Cost	3.17	3.58	-0.41	0.004
Effect on surrounding land	3.20	3.47	-0.27	0.051
Effect on water quality	3.66	3.35	0.31	0.014
Effect on wildlife habitat	3.74	3.01	0.73	0.000
Need for weed control	2.93	3.47	-0.54	0.000

0 indicates no influence; 1 = very low level of influence and 5 = very high level of influence.

Influence of factor on the decision to drain wetlands differed between those indicating they would not drain any wetlands if they could do so without penalty, and those who indicated they would drain all of their wetlands (table 25). Influence of all production-related factors, and of effect on surrounding land was considerably greater for those who would drain 100% of their wetlands, and considerably lower for the two environmental effect factors.

Table 25. Influence of factor on decision to drain wetlands: Comparison of those considering draining none and all of their wetlands

Percent wetlands would drain	Drain 0%	Drain 100%	100% - 0%	p (t-test)
Influence land quality	3.08	4.22	1.14	0.000
Influence increased efficiency	2.62	4.60	1.98	0.000
Influence prevented planting	2.60	3.78	1.18	0.000
Influence accessibility	2.55	3.76	1.21	0.000
Influence cost	2.87	3.79	0.92	0.000
Influence effect on surrounding land	2.98	3.56	0.58	0.001
Influence effect on water quality	3.59	3.03	-0.56	0.001
Influence effect on wildlife habitat	3.69	2.32	-1.37	0.000
Influence need for weed control	2.99	3.49	0.50	0.005

0 indicates no influence; 1 = very low level of influence and 5 = very high level of influence.

Finally, assigned influence to factors by those landowners who find a policy appropriate for wetland conversion were compared to those who do not (table 26). Landowners who do not support *regulation* as a viable policy option for wetlands conservation find more influential all production factors, and impact on surrounding land and less influential the impact on wildlife habitat than those who do find regulation to be a viable policy option. The same is true for those who do not support *incentivized regulation*, who also find effect on need for weed control more important. Those who support *incentives* find access more important, although the difference is not great. Average level of influence of impact on the environment, specifically water quality and wildlife habitat, was greater among those who support *easements* than those who do not. Finally, in direct contrast to those who support regulation and incentivized regulation as viable policy options for wetlands conservation are the higher level of influence assigned by those who support *technical assistance* as a policy option for all production-related effects.

3.8. Findings Summary[2]

Landowners identified contract attributes including payment level and guaranteed source of income as important to the conservation program participation choice. Attributes of length of contract and maintenance requirements were considered of slightly less importance. Effect of program participation on soil quality and erosion control were considered important, with effect on water quality, weed pressure, and wildlife population assigned slightly lower importance. Effect on hunting opportunities and particularly on neighboring properties were of lower importance.

[2] Summary statistics reported are as averaged over all respondents or within an identified group.

Table 26. Influence of factor on decision to drain wetlands: Landowners finding a policy appropriate for wetlands conservation compared to others

	Regulation				Incentivized regulation			
	Support	Not	Diff.	p	Support	Not	Diff.	p
Land quality	3.61	4.03	-0.42	0.000	3.74	4.07	-0.33	0.002
Efficiency increase	3.54	4.14	-0.60	0.000	3.71	4.24	-0.53	0.000
Frequency prevented planting	3.15	3.51	-0.36	0.002	3.28	3.53	-0.25	0.039
Accessibility	3.12	3.55	-0.43	0.000	3.24	3.64	-0.40	0.000
Cost	3.31	3.61	-0.30	0.008	3.40	3.65	-0.25	0.290
Effect on surrounding land	3.28	3.49	-0.21	0.054	3.30	3.61	-0.31	0.008
Effect on wildlife habitat	3.41	3.00	0.41	0.000	3.28	2.96	0.32	0.006
Need for weed control					3.25	3.60	-0.35	0.003
	Easements				Technical assistance			
	Support	Not	Diff.	p	Support	Not	Diff.	p
Land quality					3.92	3.60	0.32	0.012
Efficiency increase					3.98	3.55	0.43	0.002
Frequency prevented planting					3.45	3.02	0.43	0.002
Accessibility					3.48	2.96	0.52	0.000
Cost					3.56	3.19	0.37	0.005
Effect on surrounding land					3.44	3.05	0.39	0.002
Effect on water quality	3.55	3.26	0.29	0.006				
Effect on wildlife habitat	3.34	2.96	0.38	0.001				
Need for weed control					3.43	3.11	0.32	0.016

0 indicates no influence; 1 = very low level of influence and 5 = very high level of influence.

Those with livestock consider less important program attributes and effects on wildlife population and hunting opportunities than those without. On-farm residents consider these two effects less important than those not living on the farm. Women find effect on hunting opportunities less important than do men. Those with a history in the CRP find more important program attributes of guaranteed income, payment and length of contract, and the conservation program's effect on soil quality and erosion control, water quality, wildlife population, and hunting opportunities than those without.

When asked whether policy options were appropriate for wetlands conservation, ninety-five percent of landowners agreed incentives are appropriate. Fewer agreed with use of incentivized regulations (68%), easements (56%), and regulation (43%). Those who consider incentives appropriate find program attributes more important to their conservation program decision than others. With only one minor exception, there was no difference in importance of contract attributes between those supporting each of the other policy options (incentivized regulations, easements, and regulations) and those not. There were in general differences between supporters and non-supporters with regards to the importance of external effects. For each policy option except incentives, level of importance was higher among supporters for effect on wildlife population, water quality and hunting opportunities. Importance assigned to effect on neighboring property was higher for regulation and easements. Importance of perspective of

peers and soil quality were higher for those supporting easements than others.

Level of agreement with statements regarding landowner rights, conservation policy, general and wetlands conservation was elicited. There was moderately strong agreement that farmers should be consulted on wetlands programs and that promoting healthy ecosystems are a landowner's responsibility. There was agreement that landowners have the right to decide land use and that farmers should be compensated for land use choices that benefit the environment, including for maintenance of wetlands. There was general agreement that wetlands are important for wildlife and their conservation is important, although agreement that it is important to protect wetlands on private and public lands and especially that small wetlands benefit their operations tended toward neutral, i.e., the average respondent neither agreed nor disagreed. Landowners agreed that farmers should be able to farm wetlands. Landowners were neutral on the statements that current conservation programs are effective and that there should be regulations to control the conversion of naturally-occurring wetlands on agricultural land.

Landowners with a CRP contract history were more supportive of the role of and need to protect wetlands, and had a lower level of agreement that decisions on land use are their right and that landowners should be able to farm their wetlands than those without.

Members of general farm organizations (i.e., Farm Bureau and Farmers Union) were independently more strongly in agreement with landowners rights than non-members and less supportive of the role of wetlands and the need and policy tools to protect them. Members of Farmers Union also more strongly agreed than non-members that landowners should be compensated for choices that benefit the environment, including maintenance of wetlands, and disagreed that small wetlands benefit their operation, compared to non-members, who were neutral.

There were no notable differences in attitudes between members of Stockman's Association and non-members. Members of crop commodity organizations including American Soybean Association, National Corn Growers Association, and Grain Growers Association more strongly agreed that land use choices are the right of the landowner and that farmers should receive compensation when land use choices benefit the environment, independently and when considered as a group, than non-members. Members indicated a lower level of agreement with statements regarding the positive role of wetlands and the importance of and role of regulation in controlling conservation of wetlands than non-members. The difference in level of agreement between members and those not a member of any of the three crop associations was greatest for the statement that landowners should be able to farm their wetlands (members more strongly agreed) and that small wetlands benefit their operation (members less strongly agreed). Alternatively, conservation organization member agreement was higher than that of non-members that small wetlands benefit their operations, that it is important to protect wetlands, and that conservation of wetlands is important, and was lower for statements reflecting landowner rights.

Landowners were asked what percentage of their wetlands they would consider draining for farming if they could do so without penalty or loss of program eligibility. Thirty-two percent of landowners indicated none, and twenty-one percent indicated all. Half would consider draining

one quarter of their wetlands or less. Two-thirds would consider draining half of their wetlands or less.

Males, those living on a farm, and farmers raising hay would drain more than their counterparts. Members of listed farm organizations, except Stockmen's Association, would consider draining a higher percentage than non-members. Members of a conservation association and landowners with a CRP history, using buffer strips, and who support use of incentivized regulation, regulation, and easements as appropriate policy options for wetlands conservation would consider draining a lower percentage of their wetlands than their counterparts.

When asked what would influence the decision to drain a particular wetland under conditions of no penalty or loss of program eligibility, the most influential factors were increased efficiency and land quality. Moderate influence was noted for cost, effect on water quality and surrounding land, accessibility, prevented planting, need for weed control, and wildlife habitat.

Operational concerns were noted as of greater influence to those involved in day-to-day operations than those not, although there was no difference in influence of conservation effect factors. Members of farm organizations also found more important operational concerns, and less important the impact of wildlife habitat than non-members. Somewhat surprising, those who practice conservation practices of non-till, minimal till, or planting of winter cereals also found operational factors of greater influence to their decision than others. Operational considerations were indicated as less influential and environmental effects as more influential for those with a CRP history than others.

Finally, those do support regulation and incentivized regulation consider less important all operational considerations, and more important the effect on water quality. Average level of influence of operational considerations were more important to those who support provision of technical assistance as a policy option than those who do not.

4. Discussion and Conclusions

From the literature and as supported by the current study, several recommendations arise. First, it is important to understand the decision-maker and his or her decision-making process. The current study demonstrates that fiscal concerns including payment level and a guaranteed income source remain important as landowners decide on conservation program participation. It is notable that other factors, including those that affect the productive capacity of the farm such as effect on soil quality and erosion control, are also considered important. Those involved in the policy-making process and those who influence them are wise to understand what factors matter to whom and how they influence the attractiveness of various policy alternatives under particular conditions.

Second, as the current study overtly demonstrates, landowner groups can be differentiated with regards to their attitudes about the rights and responsibilities of landowners, conservation programs, and intentions. In this study, grouping distinctions include operational considerations such as whether the landowner raises livestock, lives on the farm, is a member of a farm or conservation organization, or has a history with the CRP. Other grouping distinctions include

landowner support or lack thereof of different conservation policy options and intentions regarding wetlands maintenance. In most cases, the current study confirms attitudinal and intended behavioral differences are in line with intuitive thought and the literature.

Third, it is worthwhile to explore ideas on how to continue to educate farmers about conservation and the conservation options available to them. The literature supports that farmers who are better informed about conservation practices and their influence on the environment and on their own operation are more likely to adopt. Novel ideas should be considered to distribute information and enhance knowledge including social media, demonstration acres by farmers who have high visibility, and making every effort to reward conservation behavior. The literature is particularly supportive of the demonstration effect (Claassen, et al. 2014). By financially or otherwise encouraging a visible, accessible farmer to adopt a conservation practice that can be done profitability, other local farmers will better understand how doing likewise may positively impact their own operation while helping them meet their own and / or societal conservation goals.

Fourth is to recognize the implication of an existing divergence of intention regarding draining wetlands among the target population. Nearly one-third of producers indicated they would not drain wetlands even in the absence of negative consequences; these are not the landowners that need to be enticed or convinced to maintain wetlands. It is rather the twenty percent that would consider draining all their wetlands, followed by the remaining landowners falling somewhere between. The good news from the current study is that those more likely to consider draining their wetlands can be somewhat identified and therefore targeted. For example, members of farm organizations would consider draining a higher percentage than non-members.

The current research provides an idea of who to target and what factors these targeted landowners consider most important when making decisions with regards to wetland maintenance; that is, what matters most to them. In this case, high payoff acres are owned by those most likely to drain wetlands. The study provides clear evidence that those who would consider draining all their wetlands are strongly influenced by operational factors such as effect of drainage on land quality, efficiency, prevented planting, accessibility, and cost. Education and marketing efforts focusing on these factors would be well-targeted.

It is encouraging that the literature offers support for the notion that farmers are accepting of such a targeted approach, especially those who are aware of and concerned about conservation issues and who are already in a longer-term program (Arbuckle 2013). It will take additional political capital to move any novel program to fruition, and this will be especially true when it provides for some and not others. However, as the steward of the volume of taxpayer dollars designated to benefit the environment through conservation agriculture, we are responsible in as much as we can cost-effectively do so to make sure we at least understand its highest and best use. The role of equity in distribution remains a normative question that will be answered politically, but we can ensure our policymakers have good information by which to do so.

Finally, we need new ideas. It may be fruitful to work to reach what Ribaudo (2015) terms ‘productivist farmers’, those who are less inclined to adopt conservation practices if the benefits are not economically most efficient and benefits are largely off-farm. Most water quality issues

cannot be observed on the farm so they are especially difficult to motivate among productivists (Ribaudo; Arbuckle 2013; and Reimer, Thompson and Prokopy 2012). Most landowners in the current study support incentive-based policy, and two-thirds support incentivized regulation. As one would expect, support for easements and regulation-based policy is lower. These tools would have a steeper political trek. As a strong majority of landowners support incentive-based policy, programs that explicitly provide financial incentives that maintain or increase the profitability of the farm such as the pilot Working Wetlands Program deserve careful attention.

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