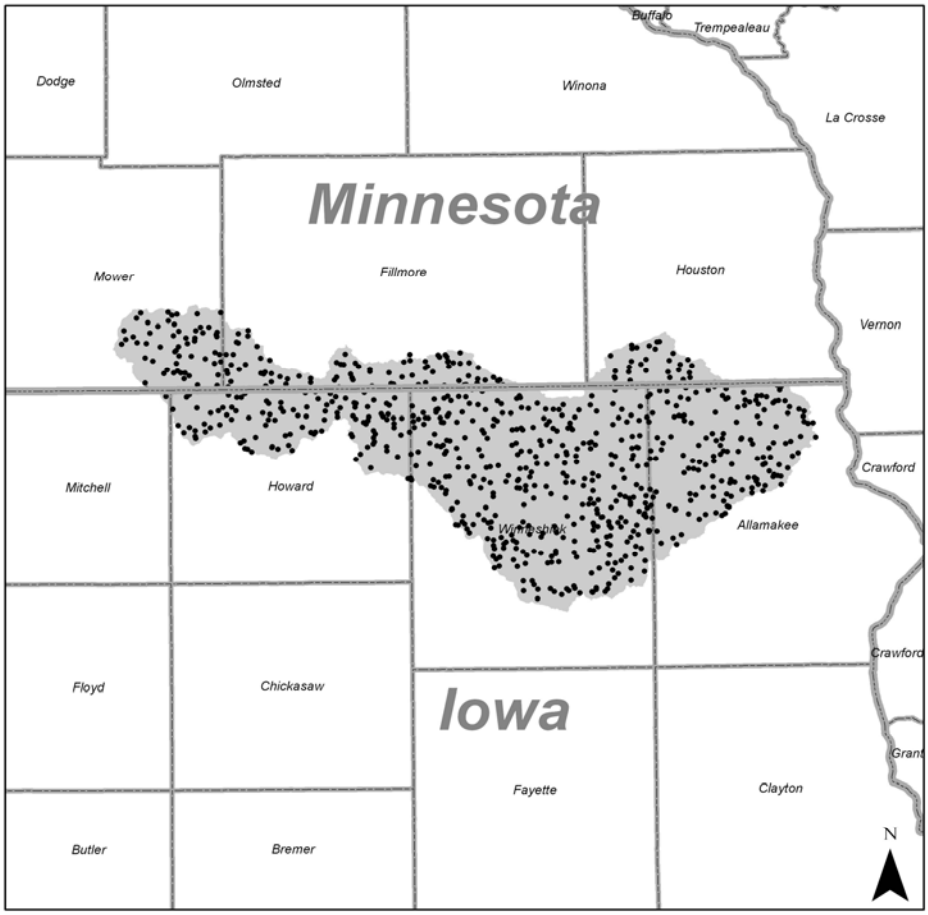
Farmer Feedback:
Farmers' Views on Agricultural Conservation Issues in the Upper Iowa River Watershed



By Rob Sand
Royce Fellow
Brown University
Providence, RI

Farmer Feedback:
Farmers' Views on Agricultural Conservation Issues in the Upper Iowa River Watershed

August 2004

Rob Sand
Brown University Box 1497
Providence, RI 02912
Robert_Sand@brown.edu

"For any farmer, I think by and large they know what's right and wrong.
They don't always do what's right- I'm sure finances are behind it."
-Winneshiek County Farmer

On the Cover: A map of Northeast Iowa, Southeast Minnesota, and Southwest Wisconsin, with the Upper Iowa River Watershed shaded gray. Each dot with in the 1,005 square mile watershed represents a residence to which a survey designed for this project was mailed.

Executive Summary

The Upper Iowa River Watershed (UIRW) has unusually complicated water quality issues due to its karst topography. In order for public conservation managers and advocates to effectively increase conservation in the Watershed, they must have an accurate picture of Watershed farmers' views on conservation issues. This report combines the results of two Watershed farmer surveys with qualitative data from forums and interviews with farmers to present a picture of the biggest challenges to increasing conservation in the UIRW.

Farmers view soil erosion, agricultural chemical runoff, and general water quality as the biggest problems in the Watershed. Soil and water conservation are almost universally viewed as important. Overall, farmers expressed commitment to conservation and a desire to increase their efforts, making a number of ways to aid them apparent.

An overwhelming majority of farmers cite cost as a major barrier to implementing additional conservation practices, and believe that more conservation program coordination and information is needed. Nearly half cite confusion about conservation programs. Only one-fifth feel they know all the programs available to them.

These findings were supported by the high usage levels of many conservation practices but low participation in many programs designed to support such practices. Many farmers are practicing conservation at their own cost, and no-till farming in particular seems poised for a major expansion.

Public policy solutions to increase conservation levels, such as Total Maximum Daily Loads (TMDLs) and nutrient markets or credit systems, enjoyed the support of over two-thirds of those farmers who were familiar with them; those farmers, however, were in the minority.

Additional concerns that were repeatedly raised included rising absentee landowner and increasing renters, and the need for federal funds for the Bear Creek Watershed Project, a proactive and promising water quality project.

Table of Contents

Acknowledgements

This project would never have gotten off the ground without the aid of Kerri Heffernan, Kath Connolly, and Lora Friest, all of who reviewed my grant proposal drafts. A great deal of thanks goes to them. Even more gratitude is reserved for the staff of Northeast Iowa Resource Conservation and Development. Teresa Steffins was helpful with logistics, and Adam Kiel's expertise was invaluable when it came to mailing, mapping, and other IT issues. The cooperation and comments of Vicki Bjerke and Lora Friest brought the survey to its final form, while helping me get reacquainted with some issues as well as explaining new ones.

The amazing promptness of Jennifer Lawless's assistance was much appreciated, considering I would have gladly waited weeks for the quality of the aid I received. Her sponsoring of the project is crucial, as was her teaching of the skills I needed to complete it.

Jim Boeding is a star citizen-farmer whose wisdom, intelligence, and willingness to help was an extraordinary benefit. Of course, thanks must be given the farmers who filled out surveys and attended forums: there would be no project without them. Hopefully, the favor will be returned in the form of improved conservation assistance.

The Upper Iowa River Watershed (UIRW) is special in many ways, but its beauty may be second to none. The last Ice Age's glaciers traversed around the 1,005 square miles of Northeast Iowa and Southeast Minnesota that make up the watershed. Their absence left its rolling hills intact, presenting spectacular yet commonplace 10-mile views from roadsides. The views could well be of Eden- endless waving fields of corn, soybeans, pastureland, and forests. It is green and gold all around, broken only by family farms and the occasional town. The Upper Iowa River itself feeds the wells of Decorah, Iowa, the largest town in the watershed and named one of "America's Top 75 Small Town Getaways." The river meanders through cropland, forests, and alongside 200 foot-tall bluffs, reason enough for National Geographic's *Adventure* magazine to call canoeing it one of America's Best 80 Adventures. The 90th U.S. Congress even considered including The Upper Iowa as one of the first 27 rivers in the National Wild and Scenic River System.

The Upper Iowa River is also essential to the area's economy. It is home to Iowa's last known population of native brook trout and eleven streams with natural trout reproduction, making it one of the top trout fishing destinations in the Midwest. The Iowa Department of Natural Resources estimates that over 314,000 fishing trips are made to the UIRW every year, adding $29 million to the area's economy. Canoers generate an additional $5 million. Tourism adds $3.33 million to Winneshiek County's payrolls, and the Upper Iowa River is the number one tourist attraction in the county. This makes the Upper Iowa River responsible for nearly $40 million in annual economic activity, yet local DNR officials say these estimates are very low.

Finally, the UIRW is unique in its geology. Limestone bluffs, weathered for millennia, sometimes form algific slopes. These tiny caves blow a cold breeze throughout the warmer months, which can be responsible for an entirely different ecosystem in the immediate area around them, similar to those found in Pacific Northwest forests. Porous limestone bedrock makes for confusing and even mysterious movements of groundwater and surface water. Over 2,000 sinkholes and dozens of disappearing streams dot the Watershed, moving surface water to underground rivers and aquifers. These underground rivers travel for miles before waters resurface in springs, wells, and waterfalls.

While the area's unique beauty and the Upper Iowa's unique bounty are both resources to be preserved for ages, the area's unique karst topography is precisely what makes it so difficult to do so. The unpredictable interaction of surface and ground waters makes identifying the specific source or often the general area of pollution and runoff sources nearly impossible. It also means that in the event of a massive pollution event, or even in the current situation of rising contaminant levels, there are quite literally no isolated aquifers from which cleaner water can be drawn. Water testing indicates serious impairments and Geographic Information Systems (GIS) analysis shows clusters of poor land use in critical conservation areas. In addition, field surveys indicate extensive ground and surface water interaction in areas with high levels of nutrients. These nutrients and other pollutants enter the system when fertilizers, herbicides, pesticides, and animal wastes runoff from farms and fields. Many things determine the level of runoff: the amount of substance applied, the occurrence and severity of rainfall, and the angle of the land, to name a few.

After run-off events, these pollutants, some of which are carcinogenic, find their way into drinking water supplies. Increases in non-Hodgkins lymphoma incidences have been associated with agricultural pollution, along with colorectal cancer. Nitrates cause "Blue Baby Syndrome," which damages fetal and infant development processes and causes death. In the UIRW, 33-75% of residents who test their well water find it unfit to drink. To quote one farmer during a farmer forum, "Conservation and environmental issues are among the most important of all issues facing us."

At a farmer forum, another Watershed farmer said with great alarm:

> I've been down to Coldwater Cave many many times… and I see down there, you can smell atrazine. And you can see where the stream flows down through there it foams, and that's all chemical runoff from the fields. And you can smell the stuff- it kind of reeks, you know.

The city of Decorah and the Watershed's rural residents have found increasing levels of pollutants in their drinking water, especially nitrates and atrazine, both of which are carcinogenic. As stated in a letter to the City of Decorah by the Iowa Geologic Survey Bureau, "Improvements to the water quality of the river will have a positive impact on the quality of the city's water, particularly with respect to dissolved chemicals such as nitrate and atrazine."

Because karst topography makes tracing the UIRW's runoff back to its source impossible, it must be stopped before it enters the system. It comes from the thousands of farms in the watershed; this necessitates the involvement of thousands of farmers. This, of course, is to be done with a spirit of cooperation. Farmers are not to be demonized as callous polluters; they simply do what their job requires, just as other jobs require using harmful chemicals, commuting in polluting vehicles, or generating dangerous medical wastes. Many of

them do everything within reason to reduce their environmental impact.

There are many groups, both governmental and non-profit, who work with farmers on agricultural conservation and pollution issues, attempting to make farming as clean and healthy as possible. But in order for these groups to be effective, they must know the farmer's views on agricultural pollution and conservation issues. If they pursue or propose solutions that are unacceptable or merely unpalatable to farmers, their solutions will never be implemented and their work will be fruitless. Making the views of farmers in the UIRW clearer to those groups working in it, such as local NRCS and SWCD offices, Northeast Iowa Resource Conservation and Development, the UIRW Project, and the UIRW Alliance, is the purpose of this study.

Methology

In an attempt to ascertain the views of UIRW farmers, I analyzed the results of two surveys: an unpublished 2002 survey performed by the UIRW Project, and a survey I designed in collaboration with Lora Friest of the NEIRC&D and Vicki Bjerke of the UIRWP. I also conducted forums and interviews of farmers throughout the Watershed to add depth to the survey data; quotes from farmers are found throughout the report.

The 2002 UIRWP survey was mailed to 1,000 rural landowners in the Watershed, chosen randomly by computer. It ascertained their level of concern on different environmental problems, their assessment of the severity of different barriers to increased conservation, their judgment of the performance of public conservation managers, and their knowledge of local water quality facts.

The second survey was mailed to a random mix of 800 rural landowners and residents. It addressed the importance of conservation to farmers, their level of concern about the environment and human health, their ranking of the severity of different barriers to increased conservation, their awareness and support of new strategies to increase conservation levels, and their familiarity with and use of different conservation programs and practices.

Finally, I conducted a series of farmer forums in the watershed in July 2004 to gather quantitative data. They were held after the analysis of both surveys was complete so that any questions about the results could be discussed. The forums were publicized and operated generally as opportunities for farmers to make their voices heard on conservation issues. As noted earlier, comments provided at the forums are interspersed throughout the report.

UIRW Demographics

According to the 2002 Federal Agriculture Census, the counties that make up the UIRW have a total of 7,194 farms operated by 10,204 farmers. The watershed does not follow county boundaries, though, and the census disregards non-political borders. Thus, it is necessary to estimate the UIRW farmer population by multiplying the number of farmers in each county by the percent of each county that lies within the UIRW. For example, there are 2,060 farmers in Winneshiek County, according to the Census. Since 60.3% of the county is in the UIRW, I estimate that 60.3% of Winneshiek farmers (1,304) are in the UIRW.

Table 1 displays the number of farmers for each county, as well as the number estimated to lie within the UIRW. To generalize the results and err on the side of caution, I estimated that an additional 3% of each county's farmer population lives within the UIRW. This added over 300 farmers, bringing the population estimate used for statistical purposes to 3,024.

Table 1: UIRW Farmer Populations

County	Farmer Population	**Estimated UIRW Farmers**
Mower (MN)	1,567	176
Houston (MN)	1,442	114
Fillmore (MN)	2,308	247
Howard (IA)	1,282	382
Winneshiek (IA)	2,060	1,304
Allamakee (IA)	1,545	479
TOTAL	10,204	**2,702**

Farmer Survey Return Rates

Before assessing the results, it is important to note that neither of the surveys achieved a response rate statistically high enough to generalize results to the population at large. Although relatively large percentages of the population responded to each survey respectively, low sample responses makes it necessary to address the possibility that returns were not random and do not fairly reflect the view of the population at large.

Low return rates for surveys of farmers are the rule; a 10% response rate is seen as very exceptional by many with experience in the area, such as Lora Friest. General contributing factors to

low return rates may be that farming is extraordinarily dangerous and involves longer hours, more stress, and less pay than most occupations. This leaves few farmers with the time or mood to fill out surveys. One farmer had another explanation for low return rates:

> There's a certain thought that farmers maybe do themselves in by submitting survey data. And, it's maybe, this thought is that its just as well for the producer's interests that survey results are not available to speculators, et cetera. It may be just as well that the Mercantile Exchange or the Board of Trade doesn't know the size of the cattle crop… if you're shooting yourself in the foot by revealing data that may work against you.

Lora Friest, author of the 2002 UIRWP Survey, credits her 23% response rate to the fact that the survey followed a extended period of massive public relations efforts by the UIRWP, and the fact that it was mailed during the winter. Such a response rate is "unheard of," according to Friest.

The 2004 Watershed Survey designed for this project saw a 13% return rate. The mailing of the survey was aimed for late February to take advantage of farmers' increased free time, but was delayed until funding was secured, and then delayed further by other changes. It was finally mailed in June, and because of poor weather (making farmers' moods not ones for completing surveys) and timing concerns (both for farmer's job and deadlines for this report), the decision was made to pass up on attempts to increase returns. As such it is necessary to consider whether those who chose to respond can be considered a random sample of the farmer population in the UIRW, or that it might be skewed by the propensity of a certain type of farmer to respond. A number of facts indicate that the results are a fair representation of the population at large.

First, the farmer forums held for this project attracted a variety of farmers, from those who were appreciative of government agencies and very concerned with conservation to those who were upset with government rules and regulations and less committed to conservation. As the forums were publicly publicized as having the same purpose as the survey, it seems doubtful that survey respondents would differ greatly from forum participants.

Second, survey responses varied. Some respondents used none or very few of the twelve conservation practices listed, while others used nearly all. One farmer wrote "I don't care [about conservation]," and another even wrote that a major concern with conservation was "too many people like you getting paid to do little or nothing." When noted alongside the largely supportive and conservation-minded results of the survey, this indicates that a wide variety of farmers responded.

2002 UIRWP Survey

The Upper Iowa River Watershed Project mailed a survey regarding environmental issues and conservation management to landowners in the Watershed in 2002. One thousand surveys were mailed to random landowners. Farm residents returned 163, making a 23% response rate. The survey addressed a few demographic issues. Table 2 describes the demographics of respondents.

Table 2: Survey Demographics

Average Age	56.8 years
Age Range	23 – 84 years
Winneshiek County	56.2%
Allamakee County	24%
Mower County	6.5%
Fillmore County	6.5%
Howard County	4.3%
Houston County	3.1%
Resident > 20 years	85.8%
Resident for 11-20 years	5.6%
Resident < 10 years	8%
Have water on property	60%
Treat their water to make it drinkable	11%

Environmental Issues

The first section of the survey listed twenty environmental problems and asked respondents to rate them as "not a problem," "slight problem," "moderate problem," or "serious problem." Table 3 details the percentage of respondents characterizing a problem as "moderate" or "serious," the highest of four possible ratings.

Table 3: Severity of Environmental Issues

Problem	**% Labeling as "Moderate" or "Serious" Problems**
Soil erosion	71%
Agricultural chemical runoff	52%
Water quality of streams, rivers, and lakes	51%
Groundwater quality	51%
Erosion of stream banks	50%
Quality of fish habitat	48%
Frequency and extent of flooding	46%
Effects of feedlots on groundwater	45%

Barnyard runoff	43%
Lawn chemical runoff	43%
Industrial wastewater	41%
Sinkholes	40%
Loss of forest	39%
Manure application to fields	34%
Municipal wastewater	34%
Quality of wildlife habitat	32%
Loss of wetlands	31%
Livestock in surface waters	27%
Siltation of lakes	23%
Residential septic systems	21%

N=163

Residents were also asked what they thought were the two largest environmental problems of those previously listed; results are shown in Table 4.

Table 4: Largest Environmental Problems

Issue	Farmers Citing as Largest Problem	Farmers Citing as 2nd Largest Problem	Total
Soil Erosion	19.1%	14.2%	33.3%
Groundwater Quality	13.0%	7.4%	20.4%
Ag. Chemicals	8.0%	7.4%	15.4%
Feedlots	8.6%	5.5%	14.1%
Bank Erosion	6.2%	6.8%	13.0%
Lawn Chemicals	4.9%	6.8%	11.7%
Sinkholes	8.0%	1.2%	9.2%

N=163

These tables clearly show that a large majority (71%) of farmers in the UIRW consider soil erosion to be a problem; one-third of them cite it as a leading problem. Half of farmers also cite stream bank erosion as a problem, 13% as a leading problem. There was no correlation between having water on one's property and seeing stream bank erosion as a problem. This indicates that farmers are still concerned about issues that may not be directly affecting their property.

Groundwater quality is a leading problem for one-fifth of farmers and acknowledged by an additional 31% as a problem. This is not surprising, as water quality is greatly influenced by erosion levels. Water quality concerns are general; that is, there is little distinction made between ground and surface water. No one who characterized either surface or groundwater as a serious problem failed to qualify the other as at least moderate, and the majority gave each the same label.

Perhaps most surprising is that 52% of farmers acknowledge agricultural chemical runoff as an environmental problem and 15% as a leading problem. This means that a majority of farmers are not only aware of, but also concerned about, the potential harmful effects of the chemicals they use.

Finally, note that 46% of farmers view the frequency and extent of flooding as a problem, but only 31% would agree that loss of wetlands is a problem. It seems odd that farmers would cite one issue as a problem but not be concerned about the loss of a solution. This incongruence may indicate that some farmers are unaware of the natural role of wetlands as crucial instruments of flood control.

Conservation Barriers

The survey asked respondents to check each of five barriers to greater conservation that they considered "major." 86% of respondents said "cost" was a major barrier, and 48% cited "confusion about conservation programs." 34% consider "lack of information on appropriate conservation practices" a major barrier, and 33% feel the same about their "lack of knowledge of the beneficial effects of conservation practices." 19% cited a "lack of technical assistance on how to implement conservation practices.

Table 5: Major Barriers to Implementing Additional Conservation Practices

Barrier	% Labeling it "Major"
Cost	86%
Confusion about CPs	48%
Lack of information about CPs	34%
Lack of knowledge of the beneficial effects of CPs	38%
Lack of technical assistance on how to implement conservationpractices	19%
Other	13%

Cost was also repeatedly cited in forums, often as straightforwardly as "cost. Cost is a big one," or "funding. Federal funding. Or state, either one." While one conservation-minded farmer wrote "every conservation practice we have implemented has resulted in increased economic benefits," others cited the massive start-up costs as the biggest obstacle. One talked about the difficultly family farmers have to just make ends meet, let alone practice more conservation:

> There's a number of farmers who are running over 1,000 acres right now and are still putting in a 40-hour workweek for someone else, and then the wife's probably working that many hours herself. So, I

> mean, it has to be a real love of the land to want to come out every weekends and nights to the farmstead to put in that many hours.

This same issue came up at every forum and interview. Often farmers stated that because of low prices and competition from larger farms, government payments are the only reason some farmers profit. One stated, "You hate to think that you're only farming because of your government payments, but I think for a lot of people, that's the difference."

One farmer with smaller economic concerns spoke of the sacrifices he makes to reduce his environmental impact:

> We don't use herbicides, in answer to that. And it costs you something, but we don't spray, and the weeds come up in the rows, making a lesser crop. I mean, its an economic trade-off. I mean, if I was doing corn to make a living, yeah, I'd do that. But I only have to do it every five years…usually its hay.

Finally, 13% cited other obstacles, and wrote responses varying from "lack of community concern like Pastor Engelbretson was able to achieve" and "cooperation of adjoining neighbors" to "don't care" and "be realistic."

One large pattern did emerge from "other" responses: nearly a quarter of written responses addressed rules and regulations. They cited the "fear of having to comply with specifications or qualifications that are too high and costly to implement" and "stringent governmental rules, some of which are unreasonable/impractical," saying that there is "so much red tape on some government programs [that] small farmers are unable to comply." While this was noted on only about 5% of total responses, it is likely that a much larger percentage would have chosen "regulations and red tape" if it had been a prompted response.

Management of Conservation Efforts

Part of the 2002 UIRWP Survey measured farmers' views of conservation programs and public land managers. It found that farmers feel they are working well to protect the environment and recognize the importance of public discussion of conservation issues, but also feel that they need more help to become as effective as they would like to be.

By a margin of 75% to 15%, farmers feel that "private landowners currently work to effectively protect the environment." By a similar margin, 73% to 20%, they agree "landowners are being recognized for being conservation-minded." Also, when presented with the statement "an important step in maintaining environmental quality in our area is to develop community goals for the environment," 74% of farmers agreed while only 8% disagreed.

These statistics can be interpreted to mean that a large majority of farmers realize not only that they have an impact on the environment and have taken steps to alleviate it, but also that community-minded measures are important in ensuring that conservation efforts are effective. Farmers in the UIRW realize that their efforts will have little effect if their neighbors do not pitch in.

Farmers also feel, however, that there is much more that should be done to increase conservation levels; this applies to conservation advocates. While 55% agree, "private landowners and public land managers currently work together effectively to protect the environment," 25% disagree. 81% agree, and only 7% disagree, that "there needs to be more coordination among public programs providing assistance to private landowners for land management activities." The variation between these statistics shows that, while about half of farmers believe the farmer-land manager relationship is at least somewhat effective, the vast majority believes it still needs improvement.

Once again, the cost of and knowledge of conservation programs and practices were cited as issues. 89% of farmers feel "more incentives need to be made available for private landowners to adopt practices that benefit the environment," and only 21% think "landowners know all the different federal, state, and county programs available to them for implementing conservation practices on their land."

Knowledge of Area Water Quality Facts

A final segment of the survey questioned respondents on their knowledge of the area's water quality issues. While only 34% said "the boundaries of the UIRW are clearly defined in my mind," 82% understood that the surface and groundwater in the UIRW are interconnected. The results show that farmers understand that any effects they have on either surface or groundwater eventually will affect the other.

Seventy-five percent agree with the statement "I influence the water quality of other residents in the watershed," while 9% disagree. This is a high percentage, but considering that it is such a fundamental issue it should be higher.

Fifty-four percent of farmers believe that "the majority of residents in the UIRW can drink water from their tap without treating it," while 14% disagreed. This statement, at least for rural residents, is false. Recent sub-watershed surveys indicate that up to 70% of rural residents treat their water, and many of their wells are too shallow,

making contamination more likely. The fact that only 11% of respondents treat their water may partially explain this; they may assume that others do not either. Regardless, it indicates that they may not be aware of the scale of water quality problems.

Finally, 43% agreed, and only 11% disagreed, that "most of the individual septic systems in the watershed are functioning properly." Unfortunately, county sanitarians in the watershed estimate that 70-90% of septic systems in the UIRW are not functioning properly.

The trend indicated by responses to these last questions is that farmers underestimate the scope of the water quality problem in the UIRW. By and large, they profess concern regarding it, and wish to see it improved; yet they are unaware of just how severe the problem is. Perhaps an increase in awareness would result in greater efforts to maintain or improve the area's water quality.

Generational Differences

Conventional wisdom holds that while the field of agricultural conservation advances more and more rapidly, many older farmers are stuck behind in stubborn ruts and refuse to adopt newer practices and viewpoints. In an attempt to see if this was a valid stereotype, I divided the sample into halves on each side of the mean age and compared responses to various questions.

There were few statistically significant differences in responses between farmers aged under 57 and those 57 and older. This applies to all the sections already discussed: being young or being old had no affect on likeliness to name specific issues as problems, judging conservation barriers, one's level of criticism of public conservation management, or on one's knowledge of water quality facts.

There were only two exceptions to this. First, older farmers refuse to recognize that they have an effect on the quality of others' water. Farmers 57 and over are twice as likely to disagree with the statement "I influence the water quality of other residents in the watershed" and 20% less likely to agree with it (p=.004).

Cross-Tab 1: Effects of Age on Recognizing Personal Influence on Water Quality

		I influence the water quality of other residents of the Upper Iowa River Watershed		
		Disagree	No Opinion	Agree
Age 57 and Over	Aged 56 and Under	6.2%	8.6%	85.2%
	Aged 57 and Over	11.1%	23.5%	65.4%
Total		8.6%	16.0%	75.3%

Results statistically significant at *p=.004*

Older farmers are also five times less likely to treat their water (p=.003). This could be a prime example of older farmers refusing to adapt to new practices, since effective water treatment practices and the demonstrated need to treat one's water are relatively new.

Cross-Tab 2:Effects of Age on Decision to Treat Water

		Treat Water	
		No	Yes
Age 57 and Over	Aged 56 and Under	81.5%	18.5%
	Aged 57 and Over	96.3%	3.7%
Total		88.9%	11.1%

Results statistically significant at p=.003

Yet, there were no other differences in responses from farmers divided by age. This seems to indicate that the stereotype of older farmers as more rigid and stubborn in their views and practices than younger farmers is invalid. As such, they should be targeted equally with younger farmers in program and practice awareness initiatives if they are not already.

There is one more issue somewhat related to age. Farmers who are relatively newer to the area are, like younger farmers, more likely to treat their water. 38.5% of farmers who have lived in the area for less than 11 years treat their water, compared to 8.8% of farmers who have lived in the area for over 11 years (p=.001).

County-to-County Results

On the following page are tables of responses to certain questions that are important to measuring the effectiveness of conservation promotion in each county. In table 6, each figure denotes the number of respondents agreeing with the statement first and those disagreeing second. It is important to note that only the figures in **bold** deviated enough from the survey at large to be statistically significant. Those should be particularly noted, while the rest can serve as general reference figures, though for Houston County and perhaps Howard, the sample size is probably too small to be relevant.

Table 7 reflects the percentage of respondents agreeing that the corresponding issue is a major barrier to increased conservation.

Table 6: Conservation Management Results by County

County	Private landowners work effectively to protect the environment	Private landowners and public officials cooperate effectively	Landowners know all conservation programs available to them	More coordination and assistance is needed for public programs
Alla., IA	78-14%	**43-41%**	21-72%	82-10%
Howard, IA	71-0%	71-0%	43-43%	86-0%
Winn., IA	76-13%	**58-16%**	20-70%	80-7%
Fillmore, MN	63-27%	64-27%	18-82%	82-9%
Houston, MN	60-40%	40-40%	20-80%	100-0%
Mower, MN	50-30%	50-40%	30-50%	70-10%

Results in **bold** are significantly different from average ($p<0.1$).

Table 7: Conservation Barriers by County

County	Lack of Information	Lack of Knowledge	Cost	Lack of Tech. Aid	Confusion
Alla., IA	33%	39%	92%	15%	46%
Howard, IA	29%	43%	71%	14%	29%
Winn., IA	34%	31%	85%	21%	46%
Fillmore, MN	18%	**9%**	100%	**0%**	55%
Houston, MN	60%	40%	100%	40%	60%
Mower, MN	40%	40%	70%	30%	60%

Results in **bold** are significantly different from average ($p<0.1$).

2004 Watershed Survey

The 2004 Watershed Survey was designed for this project. It was mailed to 800 rural landowners and residents, of which 400-500 are estimated to have been farmers. The introduction stated that the survey was intended for those who farm more than 15 acres and/or 15 head in order to exclude "hobby" farmers, or those who do not make a living by farming. The survey addressed conservation concerns, public policy awareness and support, and conservation program and practice awareness and usage. It also requested rankings for conservation barriers, but only 25% of returns responded correctly to that section. 70 surveys were returned, bringing the sample size to 2.3% of the population.

Conservation Concerns

This segment of the survey asked respondents to code their agreement with each statement on a 10-point scale, with 10 being the highest level of agreement. It found that farmers massively agree "soil and water conservation is important," giving a response of 9.5 on average. The results show with 95% confidence that farmers in the UIRW would rate their agreement with this statement between 9.28 and 9.72 on average, demonstrating that farmers agree conservation is important.

Despite feeling that conservation is important, farmers averaged a 7.06 response to "I practice enough conservation," with 95% of responses most likely to fall within and 6.52 and 7.60. If farmers rate conservation's importance 2.5 points above their own efforts, there is obviously room for improvement in this statistic. One farmer stated, "I tried to do the best I could, I was raised with it when my dad started strip cropping in '48 when everyone thought he fell out of a tree." The disparity seems to indicate that farmers would like to increase their conservation efforts. As discussed earlier, increased publicity and funding for conservation programs is critical to closing this gap.

Respondents however, seemed to be even more critical of their neighbors' efforts. The statement "farmers in my area practice enough conservation" received an average response of just 5.19, and it can be said with 95% certainty that all farmers in the UIRW would rate this from 4.67 to 5.71. Clearly, most farmers feel they are doing more conservation than their neighbors. There are a few possible explanations for this. First, it could be that the sample was not random; perhaps the few farmers who returned it were those who practice more conservation and are disappointed with their neighbors' efforts. Second, it could simply be the often-cited desire of respondents to appear the way the researcher would like them to appear; in this case, perhaps as being conservation-minded. Third, it could simply be a demonstration of the old adage "a few bad apples makes the whole bushel look rotten;" farmers may notice steep slopes being farmed without any conservation efforts or a field full of gullies, and this may be the first image entering their mind when reading the statement. As surveys responses are probably fairly random, it is most likely a combination of the latter two.

Finally, farmers were asked to rate their agreement with the statements "I am concerned about the health of the environment in our area" and "I am concerned about the health of our area's population." The purpose of this part of the survey was to determine which method might be more effective in marketing new programs and practices. If health concerns topped environmental ones, then conservation advocates would know they should emphasize the health concerns related to agricultural pollution, or vice-versa.

The survey showed an insignificant difference in responses. The "health" statement responses averaged 7.55, and the "environment" statement averaged 7.83. But when one notes the standard errors of each response, the upper bound and lower bound overlap past the other statement's average. This makes the likelihood of environmental concerns being any higher than health concerns quite unlikely and, if true, not significant enough to acknowledge. Knowing this, conservation advocates should stress environmental concerns and potential health concerns equally when addressing farmers.

Public Policy Awareness and Support

The next segment of the survey was designed to assess the awareness and support of two major, cutting-edge public policy pollution solutions. The first is the Total Maximum Daily Load (TMDL) program, included in the 1972 Clean Water Act but not effective until a court interpretation of its founding clause in July 2000 made their developments a requirement. TMDLs would place a cap on pollutants allowed to run off in each watershed so that the applicable water quality standard is not exceeded, allowing for seasonal variation and a margin of safety. At this point, TMDL development is still in a very bureaucratic stage, as evidenced by the low percentage of respondents familiar with the programs- only 33.8% of respondents stated they were aware of TMDLs. Of those respondents who were aware of TMDLs, 63.2% were supportive of their development and implementation.

Table 8: Public Policy Support

Policy Issue	Farmers Familiar With	Farmers Supportive Of
TMDLs	33.8%	63.2%
"Credit" Systems	41.8%	75.0%
Gen. Incentive Pgms.	-	100%

The major drawback associated with TMDLs is their cost, estimated at $4,000 to $1 million for each watershed. And because the TMDL only declares a maximum acceptable pollution level and has no means to reduce runoff, greater incentives need to be made available to farmers to improve conservation levels.

One very promising method is the use of "nutrient market" programs, wherein nutrient producers are allotted a number of "shares" that determines how much they can pollute. Those who can reduce their nutrient production can sell their credits to those who cannot or conservation groups eager to reduce nutrient production. Nutrient run-off credit programs in Idaho and Maryland have been effective- they can reduce the cost of keeping one pound of phosphorus out of the water from $24 to $2. In addition, coupling them with TMDLs will make for easier monitoring and enforcement.

Not surprisingly, these innovative and farmer-friendly nutrient market programs have a greater level of familiarity and support among farmers. Within the UIRW, 41.8% of farmers are familiar with them and 75% of those familiar are supportive of them. These results indicate that pursuing nutrient market programs as a public policy solution may be a popular political move and even, if coupled with the development of TMDLs, an effective one to make the Watershed a cleaner and healthier place to live.

Conservation Program Familiarity and Support

The survey also presented respondents with a list of ten government conservation programs, and asked them to check one box if they were familiar with a program or another if they had or were currently participating in it. The results of this segment of the survey are detailed in the table below, with programs listed in order of familiarity.

Table 9: Awareness of Government Conservation Programs

This table should be useful in assessing the effectiveness of these programs; there are a number of them that have high familiarity levels and low participation and vice-versa. This can be helpful in deciding which programs should be prioritized in terms of both funding and publicizing. At the same time, it is important to remember that other issues factor into these numbers. For example, while many farmers are aware of the Wetland Reserve Program (WRP), few may be farming land that qualifies for it. One farmer noted that, "I am aware of most of these, but most of them are too difficult to follow!" Some discussed disappointment with lack of funding, which leads to few farmers being accepted in the program. An older farmer, for example, stated:

> We've put in a lot of [grass] waterways, again, with the generous financial support from the government. That was all with great assistance and encouragement of NRCS; they've been good, very good. The only shortcoming is that there's never enough money from this so-called EQIP. There would be a lot of applications for that, which would do a lot of good.

Reviews of program from farmers, once participating in a program, were mixed but very largely positive:

> Well, I've overseen the planting of 50 acres of riparian buffers and [grass] waterways, in the last 3, 4 fours. And that is a good conservation act…but that's been a very aggravating, difficult operation to do. I've enjoyed a lot of financial support from doing it, but not entirely, so its cost me a lot too. But the government has been very generous and supportive of doing this.
>
> Because a lot of times, with this riparian buffer program, you can get more money per acre than you can get if you try to plant corn right up to a creek bank. And that'll guarantee you every year- just back your planter away from it and let in the grasses, and you'll get more money off it than even with a bumper crop of corn.

Program	Familiar With	Participant of
CRP	100.0%	62.9%
CCRP	94.3%	35.7%
WRP	80.0%	2.9%
WHIP	64.3%	5.7%
EQIP	61.4%	24.3%
CREP	52.9%	7.1%
REAP	51.4%	14.3%
IPF	51.4%	8.6%
IFIP	30.0%	2.9%
OTHER	4.3%	2.9%

Two specific complaints were raised regarding the Conservation Reserve Program. Praise for the program was nearly universal, even by those with these complaints, offered as ways to improve the program. The first was that hay, a good crop for conservation, until recently was not counted in one's crop history when determining eligibility. With that now resolved, only one other specific concern was voiced:

> The one little, technical thing that I've always been disappointed with is you can't put field borders in CRP, where you'd make a border of CRP all the way around your field, and they have not accepted that concept. I've always favored that because end-rows on a field inevitably end up going up and down the field, I don't care if the field is contoured. So my idea has been to put a border around the field in CRP, like a 50-foot strip or whatever they need to turn around in. If you were to ask the ASCS, they might say that there's some circumstance where you can do that, but not in general. I've tried to do that. Field borders are not eligible.

Other farmers expressed concern about program participants not following the "farm plan" prescribed and required by the program, saying things to the effect of, "I think the government, NRCS, should enforce farmers' farm plans and if they don't comply, they should not receive any government payments!" Another farmer stated, "If I was in the right position, I'd tie subsidy payments to something so that if you aren't doing well you'd miss a payment." Others noted the importance of funding for conservation personnel to ensure proper enforcement. For one farmer, the importance of personnel funding went beyond enforcement:

> Sometimes you'll get funding for a project, but they've laid off the technician that was supposed to design the whole thing and oversee the project, so then you've to get back in there and find out where you can get the money to get the person who can really implement it.

The largest problems with government programs cited by farmers were the sometimes reactive nature of benefit distribution and the basing of payments on a farmer's corn base.

Reactive attention to conservation problems was a serious source of discontent for farmers.

> The ultimate irony of current government policy is that those who refrain from tearing up highly erodable land are unrecognized while those who tear it up are rewarded by being paid to not do it again!

Many farmers voiced similar disappointments, saying "too bad those who farm the heck out of the land are rewarded for stopping and those who have practiced conservation their whole life aren't," or "so the farm that's taking care of the soil, less erosion, is not rewarded. To put land in the CRP, well the farmer that went up and down the hills and put corn in, that would qualify." Some also told stories of farmers purposely cutting conservation efforts so that they would be rewarded for implementing them later. This was a source of much disappointment for farmers, and steps must be taken to correct this injustice. If more proactive measures can be implemented, it would restore a great deal of trust and faith in the reward system.

The other major concern voiced repeatedly regarding government payments was that they were based on a farmer's corn and soybean production rather than hay production or conservation efforts:

> They got to reward the farmer that does proper soil conservation to prevent erosion, and puts hay in, and no crop every so many years. Reward those that are preventing erosion with pasture or hay ground. But that's not the way it is, its based pretty much on soybeans and corn base all the way.

While this makes sense in order to encourage more production, it has the negative effect of upsetting farmers who have been better stewards of the land than many who might be bigger producers.

> Farmer #1: I think one flaw in the system, seems like, is that the profit for a number of farmers is the government payments. Direct payments, or whatever you want to call them. And to get a higher payment you have to have
> more corn base.
>
> Farmer #2: The bigger the farmer, the bigger the payment.
>
> Farmer #1: So years ago, what a number of them did was bulldozed out woods, streams, and went right up over the hills and down the hills with corn. The bigger the corn base, the more money you got. They didn't reward the farmer for conservation practices like you do. You put in a lot of conservation, you put in a lot of hay, you know that won't wash so much [soil]- but you aren't rewarded for that at all. You got a bigger corn base, you got a bigger
> payment.

If the system rewards production rather than stewardship, increasing fertilizer and chemical loads meant to increase production and payments may drown out the importance of conservation and environmental protection. While encouraging production is important, conservation must not be left by the wayside; a balance must be struck between rewarding production and rewarding stewardship and conservation.

Conservation Practice Familiarity and Usage

Farmers were also asked about their awareness and use of twelve key conservation practices. They are detailed in the table below, and it should again be noted that, for some practices, different issues factor into their usage levels. For example, filter strips are not needed by farmers without water on their property, which the 2002 UIRWP survey put at 40% of farmers. Likewise,

terracing is unnecessary for those who farm level land.

Table 10: Awareness of Conservation Practices

Practice	Familiar With	User
Grass Waterways	98.6%	85.5%
Conservation Till	94.2%	78.3%
Crop Rotation	92.8%	79.7%
Strip Cropping	89.9%	65.2%
No-Till	88.4%	58.0%
Cover Crops	87.0%	47.1%
Terracing	85.5%	33.3%
Filter Strips	81.2%	46.4%
Organic Farming	79.9%	10.3%
Manure Mgmt/Credits	70.6%	39.7%
Spilt Dressings	69.6%	30.4%
Other	2.9%	1.4%

There is a somewhat exponential relationship between farmers' familiarity with a practice and their usage of it; the results show usage increasing more rapidly when awareness levels are higher. Terracing and organic farming are the only major exceptions, but terracing is rarely necessary and organic farming requires a complete overhaul of techniques, practices, and market contacts. One farmer also looked past the commonly-argued benefits of organic farming to see a possible downfall:

> Organic farming, we question that a little bit yet because they don't use herbicides to kill the weeds so they use cultivation and work up the soil ahead of time- it isn't no-till, you know. And so you have a certain amount of soil loss there, you know. Organic farming isn't good for [soil] conservation.

It also seems that some farmers who use "no-till" also claimed usage of "conservation till" because it is a less-advanced version of "no-till."

This exponential relationship indicates that as a practice becomes more common, more farmers become aware of it, accept it, and begin to use it themselves. This would mean that there is a certain amount of time necessary for new practices to become widely used, as it will take positive results from early users to convince more skeptical farmers of the practice's viability. One farmer agreed, saying, "that's the way that strip farming, when they started that, that's exactly what happened."

There is a great discrepancy, however, between high levels of practice usage and lower program participation. These results reveal that many farmers are so committed to conservation that they will bear conservation costs and start-up expenses on their own, either without being aware of programs, applying for them, or if they failed to qualify. One farmer related his experiences:

> "We've farmed on contour for 70-plus years, strip crops, etc. I hate seeing erosion but I plant buffer strips on my own and have waterways and rip-rap. I just bought a no-till drill and when I hired someone do the work they charge me more because of strips . And if I rent my land out they want to do away with strips and give $25 an acre less. I think the government should pay for continuous conservation on its own and not everything else.

As such, the importance of funding for government conservation programs should not be underestimated. While some farmers are willing to do it without a government cost-share, there are undoubtedly many who want to but simply cannot afford to without government support.

No-Till: The Next Big Thing?

> Yeah I'm a firm believer in no-till. I don't do it [because of start-up costs] but, you don't get the wash, like this year you get wash on the sidehills.

If this exponential trend is valid and applies to all practices, the data alone predicts that "no till" farming is on the edge of a massive expansion in usage. This assertion is supported by county and state breakdowns, with the single exception of Winneshiek County.

"No till" farming is effective in greatly reducing run-off from heavy rainfall events. Coupling the data with the numerous heavy rains of early summer this year makes this expansion seem even more likely. Rains have been so heavy that one farmer complained, "there's tremendous erosion and there's areas where there's two foot of gray silt in the ditches and in the farmyards that has been washed out of the fields."

Another farmer was so impressed with the effectiveness of no-till that he said "[I'd] like to see the moldboard plow banned from the state." At a different forum, an elderly farmer spoke about his last experience with a moldboard plow:

> We plowed the bottom ground one year… Floods came through, can't remember what year it was, but you could see where the bottom of the moldboard went through- all the topsoil was gone. And it deposited rock and sand in there.

One more stated:

> My farm south of here is pretty much no-till, and boy, that works … you cut the corn high, and then plant beans right over the rows, and get hardly any erosion.

Yet no-till also means that the rich, black earth indicating world-class soil is not overturned

before planting, and often times farmers feel it makes fields look 'ugly." One farmer who was quick to accept the practice noted "old-timers look out at a no-till field and just shake their heads and think 'lazy farmer.'" But economics and conservation concerns should trump aesthetic concerns. While there is no data available to predict the timing of the beginning of the expansion nor its length, the better yield and condition of no-till fields after this year should expedite the awareness-acceptance-usage process for "no-till" farming.

Farmers at different forums also voiced their feelings that no-till was about to explode in usage:

> And we're trying to sell no-till here now, you know. They can save half their fuel, save half their work, and uh, save their soil on top of it. I think this is going to be a big year…If they hadn't decided before, this'll probably be enough to make it easier to sell conservation,
> because they'll actually see it.

Farmer Forums:
Additional Concerns

As one farmer put it, "You can talk to 100 different farmers and get 100 different ideas." Yet there were a small number of issues that were raised repeatedly in multiple forums and interviews that were not assessed by either survey. They included the possible ramifications of increasing absentee landowners and poor conservation by renters, the problems presented by big machinery, and the need for funding for the Bear Creek Watershed Project.

At some forums, farmers expressed concerns that "renters are not using conservation practices." This is likely because the farmers do not own the land and thus will not have to suffer the consequences of a few years of poor land management. One farmer noted:

> As you have an increasing amount of renters- money is tight, money is always tight- there's a tendency to perhaps want to plow up existing [grass] waterways, because the waterway doesn't make the renter any money. And many of the landowners are absentee, and don't know or don't insist on what's happening to their land.

Another farmer expressed the same concern, but also said that he knows of a landowner who, after renters had mismanaged his land, "told his renters that there'll never be another soybean raised on another one of his ridges [because it was irresponsible conservation-wise]." A public-awareness campaign to encourage landowners to demand proper conservation practices from their renters could do well in raising awareness of this issue. Doing so should not adversely affect their ability to rent, as renters are likely willing to practice conservation but some will simply take the easy way out if not required to:

> I would encourage landowners to, uh give some thought on the people to whom they rent so that their land is not needlessly abused… that takes a landowner that cares as well.

Another issue raised was "the use of too big machinery which does not work with buffers that were made years ago, or with grass waterways." A discussion of the issue raised in one forum follows:

> Farmer #1: Well... the biggest problem is to get something that works with this big machinery, you know. They come out with strip cropping and terraces and all that for smaller machinery a few years ago, and now all the sudden these
> guys are going with big machinery.
>
> Farmer #2: Yeah, yeah, yeah, now you've got to redo things to fit the big machinery. And you might as well do it because that's the way the future is, you know. And these [grass] waterways too, they usually cut diagonally across the field. And now you've got these big sprayers with floatation tires that are running at a high rate of ground speed, that have maybe 65, 70 foot booms. And for them to be able to shut those down and stop the drift to not burn the grasses off, and then reactivate on the other side of the waterways is tricky. So it's getting more complicated for them to keep the waterways in place that are really necessary to filter out that-
>
> Farmer #1: And that's exacerbated in practical terms, just by the increasing size of machinery. You approach a [grass] waterway, and if its on an angle, as it should be- or inevitably you wind up coming at them from not straight, in many many cases—you wind up, with this wide machinery, either plowing into the waterway or leaving a spot which doesn't get planted and turns into weeds…and there's just less money to be made.

Another farmer shared his thoughts on a recent machinery demonstration:

> But if you go to the Farm Progress show, the last time I was down there they really liked to show off the high-horsepower tractors doing the heavy, heavy tillage. I mean, it's still a fairly impressive sight to see, that much work being done. And there's still some people who think that tillage is a form of recreation. I mean, its enjoyable- its something fun that they can actually see some progress- the earth's not brown anymore, it's black. And you can just see that people are being impressed by the size of the tractors and the horsepower that was being used on some of these machines, and they have impressive names like "Soil Tamer" and "Master" and "Regulator" that's stenciled on the side of the steel of this massive machinery.

There is, perhaps, little that can be done to resolve this issue beyond lobbying farm equipment manufacturers to make smaller or more specialized machinery. But if program administrators and conservation officials are aware of this issue, they may be more understanding of and helpful with the adjustment of terracing, buffers, or waterways to help farmers' fields better fit their machinery.

The Bear Creek Watershed Project

Finally, three different data gathering meetings addressed the need for greater federal funding for the Bear Creek Watershed Project. The project is a Minnesota-Iowa partnership intended to put fifty-two small, unobtrusive streambank dams along North and South Bear Creek. The dams, surrounded by native grasses, would act as filters during massive event rainfall to prevent runoff, including fertilizers, chemicals, and soil, from flowing directly into the water system, thus enabling soil recovery and keeping surface and groundwater supplies cleaner. The dams are engineered to last for fifty years, and to keep them from silting in sooner landowners are required to have 75% of their land above the dam in conservation practices [defined as losing less than three tons of soil per acre]. This requirement does precisely what was suggested earlier- proactively reward proper conservation practices. The dams are 100% cost-sharing for landowners, meaning, as one advocate put it, that "All they got to do is nod their head and they will put one in." And, "even if you have to have 75% of the land above the pond in conservation practices, there's a waiting list just waiting for the federal funding."

An advocate stated that "the federal government was going to give us $5.7 million to put fifty-two dams in the North and South Bear Creek here, and we're having a hard time getting it funded." Every structure is supposed to be completed in ten years, but the program has been running for about four and only five dams have been constructed. It is certainly not for lack of interest by landowners: "Because the engineering's been done, and its proven to be saving soil, and the farmers are willing to put in applications to have the work done for them. They're just waiting." Another advocate noted that construction is waiting for funds as well:

> If we had the funding, we could go a lot faster than what we are. There's contractors and machinery that are waiting to do that. If they knew that there were 4 to 5 structures that they could count on being built every year, they'd have that machinery ready to go.

Advocates say "the two states have worked very well together" on the project. This is a fantastic program: it proactively rewards conservation and stewardship, landowners are excited about it, engineers and construction crew are ready to go, and it will have an extraordinary impact on soil conservation and water quality. If federal funds can simply be made available, it could be completed within a decade. Funding this project should be a priority for every U.S. Congressman and Senator that represents Northeast Iowa and Southeast Minnesota.

Other Issues

There were a number of other concerns and issue that, although mentioned by just one individual apiece, were quite relevant, provocative, or helpful. They will be presented here without commentary simply for the value of their being heard.

> We have a sod-busting rule. What we really need is a timber busting-rule, to make it hard to destroy a stand of timber.

> NRCS uses RUSLE2 to plan for average soil losses across a rotation. Lately the bulk of erosion occurs during heavy rainfall events, and minimal soil conservations measures do not hold. Landowners and NRCS should plan for "event" storms to obtain maximum protection of cropland. Also, more emphasis should be placed on promoting no-till practices. Those farmers' fields hold up well to event storms while fields with no residue have washed away. The government agencies have not promoted tillage measures in the recent past and should devote more resources to it.

> For years the government subsidized corn to encourage farmers to plant corn. Why not subsidize hay, or other programs to encourage farmers to grow more hay?

> And then what we're talking about is one of Paul Johnson's ideas to have a user fee on all these disposable water bottles that don't have a nickel deposit, hoping to get a one-cent charge on every bottle that goes out of a store…that isn't recyclable with a nickel deposit. And, you wouldn't have to turn that bottle back in, you'd never get the penny back if you did, but it'd be a one-time fee just to generate some money for the REAP program.

> There's been a worry in this area, I know, from people who have cattle, that maybe the government would stop them from letting their cows cross the river. They have pasture up real close, and it's a big concern they have. And we're not one. But the folks I've talked to, any idea of any restrictions on cattling crossing the river or having free access to the river, they worry about that.

Conclusions

Farmers are committed to conservation, but feel more can and should be done. The results indicate that increased assistance from conservation advocates will enable them to improve their own conservation efforts, but that their economic concerns must also be addressed. In addition, they are not adverse to major public policy solutions to conservation issues.

It is clear that farmers are concerned about conservation and wish to do more. Fifty-two percent of respondents recognize agricultural chemical runoff as a "moderate" or "serious" problem for "the environmental health of the watershed;" 15% named it a leading problem. "Soil and water conservation is important" has an average rating of 9.5 on a 10-point scale; farmers could hardly agree more. Yet on average they rate their own conservation efforts 2.5 points below this. This clearly shows that conservation levels have great room to improve if farmers are given the right knowledge and incentives.

The largest barrier to greater conservation is economic concerns. Yet the 2002 UIRWP Survey shows that nearly half of farmers rate "confusion about conservation programs" as a barrier, and around one-third cite "lack of information about conservation practices" and/or "lack of knowledge about the benefit of conservation practices." Only 21% said they feel they know all the programs available to them. This corresponds well with the findings of the 2004 Watershed Survey that more farmers use conservation practices than are familiar with the programs designed to promote them. This illustrates a gap between widespread practice usage and isolated program knowledge; closing this gap is crucial to improving conservation in the UIRWP.

It is easy to imagine why farmers might be more familiar with practices than programs. They can see practices everyday in the fields they drive by, but awareness of programs can only come from public conservation managers or participants.

The 2002 UIRWP Survey results show that erosion is widely considered to be the most serious problem facing farmers. As most conservation practices are aimed at reducing erosion, perhaps more public awareness of this fact could be helpful in further increasing practice usage.

Yet the survey results clearly show that farmers are using conservation practices on their own, even if they are not receiving benefits from the programs that are designed to encourage such practices, such as EQIP. This shows that farmers are willing to make changes in their farming, once they see that those practices are effective and economically sound. It also supports the survey results that farmers see conservation as very important. If program awareness and participation can be increased, then farmers will see greater benefits from increasing conservation, and perhaps additional farmers will decide to use new practices as well.

Another less likely, but perhaps more effective avenue to bring conservation levels to new heights would be the coinciding implementation of TMDLs with a credit-based market system. When the TMDLs are set, the load can be broken up into credits to be distributed within the target area. Both systems would be very popular with farmers in Iowa, but less so in Minnesota. As the UIRWP lies in both states, either a great amount of cooperation or federal intervention and assistance would be required.

A TMDL/credit approach, though, would be lengthy and costly in its development and implementation. This report shows that there is still great room for improvement with the current system, and those improvements could be made in a fraction of the time for a fraction of the cost. As such, it would be best to redouble efforts on improving conservation program awareness and participation, in part by making it easier for farmers to participate. Coupling this with full funding of the Bear Creek Watershed Project would be an excellent focus for conservation efforts in the near future; farmers are excited about the Project and it has much promise to efficiently and unobtrusively improve water quality. This approach has great potential to lower economic barriers, increase conservation, and reduce pollution within a decade, making for a healthier population and environment in the Upper Iowa River Watershed, as well as for all living downstream.

As one 85-year old farmer said, "I don't think the rivers get as muddy as it used to when they used to plow corn up and down the hill both ways and everything else. It doesn't wash away like it used to." Major advancements have been made, but there is still great room for improvement.