# Agricultural and Conservation Policies: 2002 and Beyond

*A Workshop in Honor of*
*Norman A. Berg*

*July 24, 1998*

American Farmland Trust
Center for Agriculture in the Environment

Working Papers

# Agricultural and Conservation Policies: 2002 and Beyond

*A Workshop in Honor of*
*Norman A. Berg*

*July 24, 1998*

*Views expressed are those of the author(s) and not necessarily those of American Farmland Trust.*

CAE/SP 98-2

# Table of Contents



## Appendices

## Acknowledgements

These proceedings are dedicated to Norman A. Berg in grateful recognition for his life long service to the U.S. soil conservation movement and his dedication to the protection of America's natural resource base.

We would like to thank the speakers, panel participants and audience for their thoughtful and lively discussions. We would also like to thank Doug Dashner, executive director, DeKalb County Farm Bureau, for use of their Center for Agriculture facilities.

Funding and support for the Agricultural and Conservation Policies: 2002 and Beyond workshop, in honor of Norman A. Berg, was provided by: USDA Natural Resources Conservation Service, USDA Economic Research Service, Farm Foundation, Henry A. Wallace Institute for Sustainable Agriculture, Leopold Center for Sustainable Agriculture and DeKalb County Farm Bureau.

# Executive Summary

On July 24, 1998, American Farmland Trust hosted the *Agricultural and Conservation Policies: 2002 and Beyond* workshop. The workshop brought together influential agricultural conservationists to honor Norman A. Berg, senior adviser to AFT and former USDA Soil Conservation Service chief, now Natural Resources Conservation Service. Academic speakers, agricultural producers and former NRCS (SCS) chiefs presented their views on where U.S. agriculture and conservation policies should head for the next millenium. The conference was designed to give AFT and other interested parties new ideas about how conservation policies might be changed to be more consistent with changes in public attitude. Findings include:

- Historical issues which still need to be addressed even today: Getting soil conservation applied in a reasonable time on all the farms and rangelands that need it. Dividing conservation responsibilities between federal, state and local governments and private citizens in the most effective way to get the work done. Finding a way to finance investments in conservation so they can be treated as such and not as current expenses that threaten us with bankruptcy. Achieving our goals democratically with a minimum of restraint on individual liberties.

- Performance standards, which can be applied either on a farm-by-farm basis, or at the watershed level. Watershed level regulations would hold both point sources and nonpoint sources in the watershed collectively responsible for their aggregate pollution emissions.

- Similarities and differences between agriculture and forestry with a focus on interagency disagreements and vastly different regulations with respect to production and harvests.

- Green payments and the Environmental Quality Incentive Program as a possible but probably inadequate means to approach the traditional issue of income support concerns and conservation programs. Although EQIP is General Agreement on Tariffs and Trade-legal, it needs to be more targeted, tailored and transparent.

- Public-private partnerships and the role they can play in conservation: Partnerships need to set clear outcome-based objectives and measurable performance standards, grant broad flexibility to producers and build operator skills for managing integrated systems to achieve economic and conservation objectives simultaneously. However, transactions costs can be considerable as parties struggle to understand one another, their respective responsibilities and monitor their progress. The National Buffer Strip Initiative is a good example of a successful partnership.

- Most farmers receive information about pesticide and fertilizer applications from the chemical companies or dealers, rather than from local agencies. Conservation efforts must target land managers and landowners in program design and education.

- Since most of our land is privately owned, farmers and others should begin making a case for the role private landowners could have in addressing the most pressing environmental issues.

## Opening Remarks

*Dr. A. Ann Sorensen, Director, Center for Agriculture in the Environment, American Farmland Trust*
I'd like to welcome you to a very special facility. This is the second time we've had a meeting here at the DeKalb County Farm Bureau. We thank Doug Dashner and his staff, and we appreciate their hospitality. We hope you enjoy this facility as much as we do. I'd also like to add my welcome. I'm Ann Sorensen, the director of the Center for Agriculture in the Environment. We're the research center for American Farmland Trust. We're also based here in DeKalb, Illinois, and we're affiliated with Northern Illinois University. The Center for Agriculture in the Environment precedes the Center for Agriculture; Doug borrowed part of our name for the county farm bureau building.

A few housekeeping remarks: We have a very full schedule today. I apologize for starting early, but this is an agricultural meeting so we start early, and we keep speakers on time! Bryan and I will be sitting down here. For the speakers we will cue you when you have 10 minutes left and five minutes left. This is a state-of-the-art podium, however, so you also have a time clock. If our speakers can stay within their time limits, we will entertain questions; otherwise, we do have a 45-minute question and answer session scheduled.

We encourage audience participation. We have tried to the best of our abilities to build in as much time as possible so that everybody can participate. Lunch will be served in this building. The lunch area is a huge room over to my right.

With that, it is a very great honor for me to introduce the president of American Farmland Trust, Ralph Grossi.

## Welcome and Introduction

*Mr. Ralph Grossi, President, American Farmland Trust*
Thank you, Ann. Let me add my welcome to all of you today. The Center for Agriculture in the Environment is a division of American Farmland Trust, and we've been very pleased and privileged to have a person like Ann Sorensen running this division since its establishment eight years ago. We've also had a wonderful partnership with Northern Illinois University. I just wanted to point out Dick Esseks, who is here in the crowd, has been a great partner for AFT. He and NIU and Steve Kraft, from Southern Illinois University, have been wonderful partners over the years. The partnership goes back to the early '80s, doing soil conservation surveys and analyses for us. They've overseen and directed the numerous farmer and landowners surveys that we've conducted over the years. These have been an important part of AFT's work and policy development and, we hope, a contribution to the whole development of the public policy process.

In fact, Dick has just completed a survey that was released about two weeks ago on property rights. I won't go into that today, except we know that that is a very important piece of this whole discussion. I only suggest to you that if you would like to see that report, you can find it on our web page or you can call us, and we'll get you a report. We surveyed 1,700 landowners across the country on their views about rights and responsibilities and the appropriate role of government in interacting with private landowners.

We have assembled a great deal of brainpower here today. As we look around the room, we have a wonderful collection of folks, some of them who have been at this for many, many years and have seen and watched the transition of farm policy over the years. Others are relatively new to it and bring new ideas,

new energy and enthusiasm to the process. The brochure talks about looking toward farm policy in 2002. It's important that we think about the next big horizon for the development of policy, and we start early; but I think we all understand that it doesn't happen that way. Farm policy is evolving as we speak. It's happening every year. It's happening in different ways. It's not just through farm bills but through appropriations processes, which we had the opportunity to watch with some dismay last week in Washington. I think you might say that farm policy really is in transition right now. Some might call it a paradigm shift. I'm not sure if that is the right word, but I do think it is in transition, and has been for some time. Where are we going? How does the public view farmers? How does the public view how their dollars are used to support agriculture? It goes back to the mid '80s with the inclusion of the conservation title into the farm bill in a major way for the first time. That signaled the beginning of this transition.

Transitions are paradigm shifts. One of the unique characteristics of these periods in time is that you don't really understand that you are into a paradigm shift until you're well into it, and you don't really know what it is going to look like at the other end. All you really understand is that change is occurring. The opportunity before us today, next week, next month and right on through this process is to influence this change in the most positive way.

At AFT, of course, we have strong feelings about how that process should be influenced and changed, and we think it's consistent with the change in public attitude. Farm policy ought to be more closely aligned with the broad concerns of the society that's paying for it. That might be something new to some people in farm policy, but that is clearly what the public is telling us. The continual changes that we've seen in the last three farm bills are important to note, particularly the 1996 Farm Bill when we had a pretty dramatic change. The decision to decouple farm support from commodities was dramatic and unprecedented. There was an attempt last week to roll the clock back on that, and Congress resisted. When Congress resisted, the print media immediately jumped in and said that was the right thing to do.

If you get the chance to read the *Washington Post,* the paper actually complimented the Republicans – that in itself is earth shaking. There was also an editorial in the *USA Today*, titled "Put the Sickle to Farm Subsidies." It was pretty critical, but it suggests that if the media is representing the public at large, we don't want the old programs to come back. We want some new kinds of programs to evolve through this transition in farm policy that are more reflective of the needs of society. That might be built around the kinds of things that a lot of the people in this room are working on, things like protecting the environment and conservation. That is where, of course, it dovetails with the kind of work that Dick just did on property rights. He said, "When you begin to talk about achieving public goals on private lands, you have to talk about whose responsibility is it, what are the goals, how are we going to achieve these and above all, who is going to pay?"

In farm policy and in the farm programs, we have, we believe, a unique opportunity to address that last question. There is still broad and fairly strong support across America for farmers. The question is "for what?" One of the answers clearly could be for protecting the environment, which also helps us deal with some of the conflicts over property rights. That's one of the ideas that we want to continue to float out there.

I think that there are two other things we need to keep in mind today. One is that part of the process is to continue to improve and develop the actual programs that will help to achieve that. We have seen this continuum of programs developing over the years from the conservation reserve to a refined conservation reserve to the Conservation Reserve Enhancement Program this year. On the technical side, we need to develop, evaluate and improve new programs and keep that process going. In this discussion today we want to hear what kind of ideas need further development, analysis, research and support. That's one side of it.

The other side is we have to be realistic. It's the political side. The agricultural committees who write policy and the appropriations committees who fund these programs are not directly aligned with the needs and contemporary concerns of society. So we have a disconnect, and that political disconnect is a big part of our problem. We saw that last week in appropriations when, on the Senate side, money was moved out of conservation programs to fund what might be considered more historical or typical farm support programs, like the insurance program.

Having said that, I have an even greater privilege, because one of my mentors, since I moved from the farm to Washington, D.C. 13 years ago, has been Norm Berg. He has been with AFT as a consultant all this time as our senior adviser. This conference, of course, is being held in honor of Norm's lifelong commitment to conservation. He has more knowledge and history about these issues in his nearly 60 years of working in the conservation field than any of us can imagine, and we have asked Norm to share a bit of that with us this morning.

## Opening Remarks

*Mr. Norman A. Berg, Senior Adviser, American Farmland Trust*

Good morning. Thank you, Ralph. Ruth and I thank the people who put together the event last evening. It was very, very pleasurable in every way. We were really honored and are very grateful. Ruth and I prefer that, at our age, we have appellations such as "recycled teenager" or "chronologically gifted," but we do accept that our nation is a youth-worshipping culture. Why? Because Ruth and I are blessed with, from our four daughters and their spouses, 10 grandchildren. They are in that phase that we see on TV and in the advertisements. They and their fellow citizens, however, deserve to have a very sound natural resource base that will give them the options for their future decisions for its best use that we have enjoyed.

Professor Sandra Batie, in her text of 1983, "Soil Erosion, Prices in America's Cropland," dedicated that good document to her son Neil with the quote, "For it is his generation that will inherit the earth we leave." But what do they and their friends know of the issues that we'll discuss here today? In truth, very little. A long-term environmental friend talking to a large group told me that he was very dismayed by a lack of hands when he asked for their knowledge of names like Hugh Bennett, Gifford Pinchot, Aldo Leopold and others. A university professor in soils asked his class: "How many of you are with a farm management or forest background?" Very few. "How many with a backyard?" About half. "How many even have a live plant someplace in the home?" And again, less than half.

Well, in March of 1991, the American Farmland Trust sponsored a major national conference in Washington, D.C., to examine the issues at that time regarding farmland conservation. At an evening banquet, they gave me a salute. It was a great event, and I want to be remembered, of course, as being part of that network of co-workers throughout the country. That network is concerned about the issues surrounding farmland conservation. I think there was a slight hint that maybe I should consider retirement; but now seven years later, I am again honored by this event here, and we are really, as I said last night, humbled by it. The network of co-workers for conservation, including farmers and ranchers, does continue to grow.

In a 1939 essay on the farmer as a conservationist, Leopold wrote, "It is the American farmer who must weave the rug on which America stands." And W.C. Laudermilk in 1953, he's a former SCS assistant chief who passed away very recently, nearly 108 years old, "It is a very real sense the land does not lie. It bears a record of what man writes on it. In a larger sense, the nation writes its record on the land."

In February of 1994, AFT held a daylong meeting in DeKalb, preparing for the next farm bill at that time. Ralph led the discussions on the emphasis of the potential of the greening of U.S. agricultural policy. Many of you who were at that session are here today. Obviously, the 1996 Farm Bill with its Title 3 Conservation did continue to strengthen the conservation provisions of the '81, '85 and '90 bills. These are good authorities; but, again, we have a severe limitation on the resources needed for adequate implementation at the field and community watershed level.

Today, as we peer into the next century and see additional policies to the continuing agricultural conservation challenges, and some are very chronic in nature, I'm reminded of what has been said before that I think is still relevant. In 1973, Purdue professor Don Palberg, then serving as USDA's Director of Economics, in addressing that year's national cultural outlook conference, began by saying, "In the early days of our country, there arose a great debate. What kind of agriculture should we have? Should it be like the farming that developed in New England; individual, relatively small farms? Or should it be in the larger units as they were developing in the South and the areas settled in this nation by the Spanish? We chose to be a nation of predominantly family-sized farms with the decision-making responsibility in the hands of those who till the land. This issue was written into law in a variety of governmental actions: the ordinance of 1787, the Homestead Act and many others. We congratulated ourselves as a nation on this decision, which perhaps achieved a greater degree of consensus than any other area of agricultural policy since." "But now," as he was talking in 1973, "we are told this family-style of organization is in jeopardy, threatened by scientific and technological developments." Dr. Palberg's talk examined the pros and cons of the changes that agriculture was going through at that time, ending with the questions: "Who is going to control agriculture? Will it be the bankers, the food chains, the processors, or government with its massive commodity programs? Or will the people themselves be able to retain control of the operation, the right of decision making?"

In 1990, the U.S. Environmental Protection Agency, under then-administrator Bill Reilly, now chairman of our American Farmland Trust Board of Directors, released a publication, "Paying for Progress: Perspectives on Financing Environmental Protection." The articles therein served to stimulate a dialogue on environmental financing, and one stressed, "Incentives can perhaps best be addressed in terms of government policies that provide motivation."

I'm sure you, too, look forward to this workshop as we again examine opportunities and options for future agricultural policy to foster innovative public and private sector approaches to natural resource conservation on this nation's privately owned and operated agricultural land. Those on the agenda and all participants here today represent the most talented people that I have been privileged to know. In my roughly 55 years of experience, however, in too many cases the quest of seeking answers to problems is usually more satisfying than the solutions.

Thanks for coming, and best wishes for today.

*Dr. A. Ann Sorensen*
Thank you, Norm. I neglected to say at the outset that we will be doing proceedings for this meeting, and they will be available, full text, up on the web. Our speakers this morning have also written white papers. With that, I will turn it over to Dr. Otto Doering from Purdue University.

# An Overview of Conservation and Agricultural Policy: Questions From the Past and Observations About the Present

*Dr. Otto Doering, Purdue University*

*This paper will be printed in the Journal of Soil and Water Conservation, the issue number is not known at this time.*

***Abstract***

This paper addresses conservation policies and conservation problem areas from the past and present. It begins with an overview of the challenges facing conservation during the 1930s and 1940s. The paper continues by tracking the emergence of the Soil Conservation Service. As SCS began taking over functions of other agencies, turf battles began. SCS broadened its mission, leading to conflicts with extension, interior and Forest Service, among other agencies. Conservation at that time was defined as what SCS decided to do. Gradually conservation districts developed and evolved, their importance and role in conservation and democracy intertwined. The issue of property rights emerged as some saw individual rights pitted against other people's proposition to use the land for soil conservation purposes. The final sections in the paper take the issues of conservation to the present and discuss the relevance of questions from the past to issues of the present and future.

## An Overview of Conservation and Agricultural Policy: Questions From the Past and Observations About the Present

We tend to look at the past to judge the present and to project the future. From this comes the adage that those who do not learn history are doomed to repeat it. However, we can also learn from the dilemmas of the past and the present what difficulties should be addressed in the future. In this instance we will be considering unresolved questions raised in the past that will need to be dealt with in the future if we are going to overcome the roadblocks of the past that are still with us today.

Howard Tolley noted three conditions of American agriculture: 1) there are more people who want to farm than can adequately be supported by farm income alone, 2) the market for agricultural products is not unlimited - supply tends to outrun demand and 3) that American agriculture is incredibly diversified by region, commodity, and class of producers. He pointed out that within these conditions our agricultural policy has articulated three basic objectives.

1. To increase the incomes of farmers who produce commodities for sale on a commercial scale.
2. To raise incomes and improve the living conditions of those at a disadvantage within agriculture itself - this would include migrant laborers, sharecroppers, subsistence farmers and victims of drought or flood.
3. To encourage better land use (conservation) and more efficient production.

Tolley goes on to say that "Most governmental programs of both the distant and the recent past have been directed toward improvement in the conditions of commercial agriculture. It appears now that the last two of the groups of activities just listed will receive increasing attention in the immediate future, but to a considerable degree all three are interwoven. The problems of none of these will be solved separately; to some extent whatever approaches are made to solutions will be interdependent."(1)

I have been struck by the relevance of Tolley's statement, especially during the discussion leading to the 1996 Farm Bill. I first came across this statement in the late '80s and applied it to the 1990 Farm Bill. Tolley wrote this in 1940 to apply to future policy. Our focus here will be on conservation and the attempts at increased attention that Tolley called for.

In a recent television ad, David Brinkley intones that "ADM is supporting soil conservation so history does not repeat itself." This points to one very specific view of conservation referenced by the dust bowl of the 1930s that has become emblematic of the role of the U.S. Department of Agriculture. The scope of conservation seen as a public responsibility has changed over time and has been intertwined with price and income policy for farmers, property rights and a host of other things. While the initial view was focused narrowly, it has broadened over time.

**The Breadth and Depth of Conservation**

Bennett's view of conservation was often task limited to his central concern of soil conservation, but he had a broad view of the institutional and policy initiatives that might be required to combat soil degradation and a broad view of its root causes - believing that many of the most difficult problems were economic, and that the solution to the problem extended far beyond the techniques of soil management.(2) Bushrod Allin and Ellery Foster believed "conservation in a democracy means wise use of resources for the greatest good of the greatest number in the long run. This objective means that conservation must be concerned with more than the physical condition of natural resources themselves. It means relating the management of resources to the welfare and betterment of the people as a whole."(3) Tolley had an

equally broad view and a belief that government policy needed to encompass concerns of tenure systems, credit, education, tax policy and land use planning. Again in 1940, he also notes that "current policies designed to relate conservation with the acreage allotment and conditional-grant approach to income raising and crop control have met with favorable popular response. *Perhaps the national interest will require that those obtaining benefit or price adjustment payments in connection with the allotment program follow a system of farming that will more fully conserve the soil or control erosion than do their present systems.*"(4)

While Tolley's suggestion for conservation compliance has been adopted in our era, we need to recognize that the era of the New Deal reflected a public desire for a broad view of public responsibility where private responsibility was seen to have failed. Now we have been moving away from a broad view of public responsibility to a much narrower one. Part of the tension in the planning and administration of soil conservation has been in the scope of the definition. The broad scope view of the New Deal led towards the administration of the Agricultural Conservation Program for productivity enhancement and more direct farm income support.(5) This stemmed from the politically astute judgments by Bennett and other proponents of soil conservation to successfully link their more specific concerns about conservation to the national imperative of transferring income to the rural sector in the 1930s. It also stemmed from the concern that those using the land for their livelihood who are under economic pressure will stress or degrade the resource to maintain or improve their position.

The 1940 view was that "North America has seen a swift and spectacular wasting of resources on a grand scale . . . The western range lands have been ravaged and gullied as a result of overgrazing. Rivers have been contaminated by the dumping of filth until they are no longer habitable for fish or useful for recreation or fit for domestic water supply. Torrents of water rushing off stripped hillsides have intensified the savagery of floods, destroying property and lives and choking stream channels and costly reservoirs with sediment."(6)

The problems of soil conservation were seen as maladjustments between the soil and the farming system. According to this view, "obstacles to conservation are rooted deep in the political, economic, social and institutional structure. Unsuitable tenure relationships, uneconomic sized farms, lack of adequate credit, inappropriate taxing formulas, unstable economic conditions, absence of needed skills - all are formidable obstacles to the achievement of conservation."(7) In this view, dealing with conservation requires a total remedial agricultural program.

Allin and Fuller identify the problems needing solution to include the following:

1. Getting soil conservation applied in a reasonable time on all the farms and range lands that need it.
2. Figuring out how to divide conservation responsibilities between federal, state and local governments and private citizens in the most effective way to get the work done.
3. Finding a way to finance our investments in conservation so they can be treated as such and not as current expenses that threaten us with bankruptcy.
4. Doing all these things democratically, with a minimum of restraint on individual liberties.(8)

If one adds to soil conservation in number 1 above the broader concerns of water quality, wildlife habitat and open space, then this list from 1940 encompasses much of the challenge we have before us today.

**The Organizational Dilemmas**

Since the beginning of soil conservation programs there have been continuing organizational dilemmas. Part of this results from the broad functional mandate wanted by Bennett and the department in the con-

servation area. Bennett desired a broad mandate for Public Law 46 (the Soil Erosion Act of 1935) to include control of soil erosion, preservation of natural resources, control of floods, protection of reservoirs, maintenance of navigability of streams, protection of public lands and relief of unemployment.(9) An additional confounding factor evolved over time as Bennett and others in the Soil Conservation Service came to believe that SCS was the repository of the full range of the department's conservation concerns. The Pope-Jones Act (Water Facilities Act of 1937) and Norris-Doxey Act (Cooperative Farm Forestry Act of 1937), the growing technical advisory role of SCS through the districts, and the transfer of functions from the Bureau of Agricultural Engineering to SCS, encouraged SCS in this encompassing view of their mission. The breadth of mission brought conflict with extension, interior and the Forestry Service among others.(10)

There were at least three critical points of contention. One was competition with extension involving farm bureau and the land grant colleges. Another was the conflict with existing agencies and departments like the Forest Service, the Corps of Engineers and Interior. Another was the arrangement with the Agricultural Adjustments Act that was both a source of initial strength and organizational reason for SCS's existence which evolved into a long term bone of contention.

In the 1930s, moving cash to rural areas was a major goal of the Roosevelt administration and of Congress. In 1933 rural incomes were 40 percent of urban incomes, and this was when there was 30 percent unemployment in urban areas. When the major mechanism for doing this under the Agricultural Adjustment Act of 1933 was struck down by the Supreme Court, soil conservation payments became the major vehicle under the Soil Conservation and Domestic Allotment Act of 1936. However, the payments were administered through the local offices established earlier by the AAA to administer the price activities under the original 1933 act. SCS was in the position of responsibility for much of the function under which cash was to be dispensed, but the dispensing of the cash was to be done by the operational arm of the AAA, be it the Production and Marketing Administration, Agricultural Stabilization and Conservation Service or the Farm Service Agency. There was no way this could be anything but a continuing bone of contention over roles and responsibilities.

**Resulting Turf and Organizational Battles:**
The federal/local problems stemming from the growth of New Deal programs were well described by Milton Eisenhower and Roy Kimmel when Eisenhower was land use coordinator in USDA. Prior to the New Deal, USDA and the state agricultural colleges and universities worked well together. "The tasks in which they cooperated had been largely noncontroversial; the occasional differences that had arisen were over minor jurisdictional matters. Now, new and powerful federal agencies were barging into almost every local community, administering action programs that strongly affected local affairs and dealt with things which were far from being noncontroversial. It was not surprising that some state officials did not always agree with the concepts or purposes of the programs. Some felt that the federal workers were encroaching on the traditional functions of the state workers, were not acquainted with local conditions and could not adapt national programs to specific local needs. Some state workers could perhaps see themselves gradually falling into what Grover Cleveland once called a condition of innocuous desuetude. The federal agencies, meanwhile, were under a congressional mandate to attain certain objectives. They felt their responsibility keenly. They did not believe they could or should divest themselves of the responsibility the Congress had assigned. They knew that many of the problems were national in scope and could not be dealt with piecemeal on a purely local or state basis. Stresses and strains developed out of this situation which was in fact a phase of the old typically American problem of federal versus state jurisdiction."(11)

The turf issues were the source of unending skirmishes in Congress and in the field as well as within and between departments and agencies, state and federal organizations, and all of the above and private organizations like farm bureau, the National Association of Soil and Water Conservation Districts, and oth-

ers that backed one side or another. The 1948 presidential election was a watershed event given the farm bureau's preparation for a Republican win and therefore a USDA that would side more with its axis including extension and Production and Marketing Administration aligned against SCS after the election.(12) In 1948, the Association of Land Grant Colleges and Universities warned Congress "to beware of a philosophy of permanent crisis which calls for a line of federal authority from Washington to the individual farm, factory or school."(13) In 1949 there was a drive by PMA to gain ascendancy by taking over expanded functions in many states. This was fought out bitterly in the states and in Congress. Finally, Secretary Brannon issued Memorandum 1278 in 1951, to try and deal with the turf issues on the USDA side. It delineated responsibility for conservation within the department and assigned responsibilities in the states that required face to face meetings of PMA, the Forest Service, SCS and the extension service in order to recommend practices and specifications for state and county conservation programs.(14)

However, the turf battle with extension continued about who should be responsible for the conservation help given to farmers. The issues of conflict were laid out by Milton Eisenhower, now president of Pennsylvania State College at the 1951 meeting of the Association of Land Grant Colleges and Universities. He also recommended that there be a merging of SCS and extension.(15) With something of a stalemate between the various warring parties, Secretary Benson eliminated the reason for regional offices and forced more consultation among the parties at the local level. Between Brannon's and Benson's actions to quell the strife and restore order, the farm bureau and extension lost the chance to take over the functions of soil conservation. The extent of these various conflicts and the seriousness with which the battles were waged is hard to imagine today. Now such issues are seen as politically much less important at both the state and federal level given the decline in the political importance of rural areas and agriculture.

**The Sole Mandate**

There developed under Bennett a sense that SCS was the keeper of the conservation flame, that it had the mandate and mission to plan and execute a national program of soil and water conservation.(16) Conservation was defined as what SCS decided to do.

After World War II, SCS took on more activities on a project basis. These included the Missouri Basin Program, the Small Watershed Program and the Great Plains Conservation Program. Project-based programs like the Small Watershed Program, under PL 566, were treated in Congress like public works programs and a growing proportion of SCS activities were funded by members whose primary goal may have been obtaining benefits for their home districts.(17)

The Great Plains Conservation Program was in reaction to the serious drought there in the 1950s. This program included cost sharing on a long term contractual arrangement based on a conservation plan for a given producer with the program being administered by SCS. One of the early concerns was the initial take resulting in large contracts with a high proportion of funds going to irrigation. Limitations were placed on this expenditure and on contract size. The GPCP was also made more attractive in 1960 with a change to allow the protection of cropland history for twice the length of the contract. One key to GPCP was the cooperation often achieved between different agencies like Farmer's Home and ASCS so that other forms of assistance could be brought to bear on achieving the goals of the GPP contract with a participating producer. (18)

As the various post World War II programs evolved, there arose more disagreement about what conservation was and what functions were appropriate. As the keeper of the flame, SCS often perceived outside critics as non-believers, but doubts grew. Circumstances and generations also changed. The generation of farmers that came of age in the 1940s who were actually touched by the dust bowl or driven by its message began to leave farming in the 1970s. Many of these individuals believed not only in the necessity of stewardship and conservation, but also in the public good aspect of conservation practices. These

individuals had been engaged by the programs of the 1930s; the conservation works on the land, the allied Civilian Conservation Corps activities, and service on the soil and water conservation district committees, among other things.

By the time of the Russian grain purchases in the 1970s, the next generation was managing much of the nation's farmland. In the area of the GPCP, a Congressional study in 1977 found that 26 percent of the farmers in the program had plowed up their newly established grasslands for wheat production after their contracts expired. Allin and Fuller in the 1940s identified getting soil conservation established where needed in a reasonable time as a critical problem. With the experience of three generations we now can add the problem of maintaining conservation once it is established. In the mid 1990s, a commentary on this was provided by former Chairman of the House Agriculture Committee Congressman de la Garza during a discussion of conservation land retirement programs. When an argument was being made for more funds for conservation based cropland retirement he asked why the public should be asked to purchase the land for the third time - didn't the public own it already? The public had paid to put it into grass in the 1930s (it was then plowed up for World War II). The public put it into the soil bank in the 1950s (and it was plowed up again with high prices in the 1970s). The public put it into the CRP in the mid-1980s, and was now being asked to buy it back into the CRP so it wouldn't go under the plow. The response to his question was mostly silence - he was clearly asking the right question.

**Why Districts?**

The lore of the American Soil Conservation movement features the district as the core entity. The districts evolved from Bennett's search for an institution to carry out the program of soil conservation he had in mind that required a linkage to some local unit of government to go beyond the demonstration projects. In 1935, the Soil Erosion Service had demonstration projects on both private and public lands and those on public lands were administered by federal agencies. Interior required that public works funds be allotted to state and local units of government. If these funds and the manpower of the CCC were to be a core resource for soil conservation, there had to be a local vehicle to receive funds. There was also the belief that those receiving benefits ought to be organized collectively and assume critical responsibilities like enforcing the agreements the service made with landowners and operators. The enforcement of such contracts was also not a rewarding function politically for a federal agency.(19) The initial intent was to organize districts on the basis of watersheds - originally 76 major drainage basins. Part of the push for newly created districts rather than counties, was the conviction that counties were mostly poorly administered and that extension and other county-based interests were not sufficiently concerned with erosion and soil conservation to take charge of a major program with such goals. The department also believed that it would be unable to hold existing local organizations, like extension, accountable for funds and program specifications.(20) The design and composition of the conservation districts and the standard district law was strongly influenced by the turf war with the AAA, the Land Grant Colleges, extension and the farm bureau.(21)

The Standard State Soil Conservation Districts Law was a delegation of the state's police power which by local referendum enabled districts to enact and enforce land use regulations in the district to meet the soil conservation purposes of the district. Up to World War II, the land use regulation power was adopted by most states. This was not so during the war, and after the war a number of states deleted the power.(22)

At various times the SCS, the districts themselves and the NACD may have had somewhat different views of what the district was and what it was to do. At the height of USDA's land use planning movement, Washington probably had a more expansive view than most districts. More recently, obtaining constructive response through the districts to Section 208 of the 1972 Federal Water Pollution Control Act Amendments was a long process. While the districts are celebrated for their democratic role in the decision process, they also can cause heartburn within a strong line oriented federal agency.

There has been a closer link between the national and local entities for the ASCS which led Hardin to observe that the PMA was in some ways a publicly supported farm organization.(23) While there have been times when the conservation districts have acted to mobilize political support for SCS, sometimes at the urging of Washington, their purpose has generally been narrower. The soil conservation districts have clearly been political at times, but have not engaged as broad a spectrum of activities and interests as their competitors like farm bureau and the PMA.

**Planning for Everyone**

In the depths of the depression many put the blame for difficulties on the lack of planning. An individually driven market system was seen both as the cause of problems and as incapable of solving them. This widely held view held up centrally planned economies by the virtue of their ability to mobilize resources and put people to work. There was so strong an infatuation with the progress in economic mobilization made by the Soviet Union that the violence and pathologies of the system were overlooked. Many in the United States feared that government could become totalitarian as it had in the large number of European countries. Henry Wallace, and others in the Roosevelt administration, believed that it was important to mobilize citizens in a democratic and constructive way and reach to the grass roots not necessarily represented by existing establishment organizations, the most powerful of which were lining up strongly against administration programs. This was one reason for the creation of soil conservation districts.

The most direct and impressive democratic planning effort occurred in the late 1930s and early 1940s in the form of the cooperative land use planning effort. An agreement was made in 1938 between the Association of Land Grant Colleges and the Department of Agriculture (the Mount Weather Agreement). By 1940, there were 70,000 farm men and women cooperating as members of county and community committees covering 1,120 counties in 47 states.(24) While leadership for this effort was provided by the Bureau of Agricultural Economics, its thrust was central to the long term goals of the SCS. The farm bureau perceived the public mobilization for this effort as a dangerous political threat to their dominant position and they were instrumental in having the effort killed in the early 1940s.

As one comes away from the discussions of planning, there is the sense that planning was acceptable when the wolf was at the door, but once immediate danger was past even voluntary local planning was a hard sell. Aldo Leopold described the situation thus; "We the public will furnish you free technical assistance and loan you specialized machinery, if you will write your own rules for land use ... But, after a decade of operation, no county has yet written a single rule."(25)

**Property Rights**

In 1940, the department took the position that

> "in popular opinion, in custom, and in the attitudes of legislatures and courts, landownership acquired a degree of absolutism which still puts the burden of proof on the public agency that would seek to restrict the employment of the rights of ownership." However "as our economic and social life have become more and more complex the broad public interest has been found to be increasingly affected by the unrestrained exercise of individual or corporate property rights in land. There is a growing opinion that land is vested with a paramount public interest, that private landownership is granted by society rather than being an inherent individual right, and that when it comes into direct conflict with the general welfare it must be restrained or the land must be converted with due compensation, into public property."(26)

The attempts to extend planning drew a reaction that at times pitted property interests and local business against operators who favored it for soil conservation. An advertisement placed in Eastern Colorado responding to controls against sod-busting illustrates this conflict;

"This is your opportunity to break the shackles that have retarded the growth, development and prosperity of the eastern half of Cheyenne County. You can do this by voting against these unfair, un-American, dictatorial rules that prevent land owners from using their own land. Before these land rules were adopted, land owners had "marketable title" to their land. Now, through no action of their own, no matter how long they have been paying taxes, a serious encumbrance has been placed on their titles. They simply cannot farm their land unless they have farmed it during the last three years ... When a hungry world is asking for bread and meat is not the time to preach the doctrine of scarcity advocated by these proponents of these land use rules! All we ask is that other folks can use our good land as Directors of the Soil Erosion District use it themselves... . Just because they were fortunate enough to acquire some of the land that has been under cultivation for a long time is no reason why they should deny others the privilege of plowing enough of their land so that they, too, can establish homes and make a living out of their investment."(27)

With battle lines drawn, soon after the disillusionment with private action in the Depression, it is not surprising that the momentum for planning died. Suggestions have been made for tempering the opposing views with a land use ethic of informal rights, responsibilities and obligations on the part of both the landowner and government. These don't appear to be practicable given the swinging of the political pendulum more towards enforcing individual rights and the increasingly litigious nature of our civic interaction.

**Politics, Interest Groups and Policy**

Conflicts are argued out in different forums and decisions are made at different levels. These may be determined by the breadth of the question involved - narrow questions being heard and decided in limited forums. Agricultural policy in the 1940s was to a good extent in the hands of pressure groups, or at least kept in the bounds where pressure groups operated comfortably. During such times, individuals come to personify interests or policies. Bennett certainly personified soil conservation, in like manner Robert Kerr from Oklahoma personified the development of water resources (especially in his home state), and Jammie Whitten personified other agricultural interests. In contrast, Hardin explains how the Brannon Plan "broke farm policy out of the hands of the "insiders" in agriculture and made it the subject of a general - and quite profound – debate."(28) One way to look at the development of soil conservation policy as well would be to identify those periods when such policy was in the hands of insiders and those instances when policy was at least partially broken out of the hands of insiders. A major shift, almost by definition, represents the influence of a different group or public goal. It is in these breakout periods when policy is in the much less comfortable world of broader national politics, and it is usually then when substantial changes are made.

Centralization or decentralization of power is a broad political question, and attracts a wide audience for discussion and decision. The pressure to move away from a distribution of projects covering particular congressional districts to more targeting on the basis of conservation need was a political decision. The original decision to take on more projects and see their location drift towards political alignment was also a political decision, but easier to slide into given the style and pressure of Congress.

There has been more broad "political" debate about conservation programs and the role of SCS since the mid-1980s. Some of this is certainly the result of new interests approaching the table, who, once they get inside, would be more comfortable acting as insiders with a narrower focus of debate. The new insiders often want to close the door after them.

My observation would be that much of the making of the 1996 Farm Bill was in the hands of insiders and that much of the process was in fact an insiders' process.(29) However, the 1996 act represents a complete departure from the method and structure of the old programs. The intriguing question is whether

this departure from the existing structure will change the nature of and participation in the process. It certainly brings about a decline in the relative usefulness of commodity groups as compared with the more general farm groups. In retrospect, much of the period from the Brannon Plan to the 1996 act, domestic commodity policy was not much more than jiggering loan rates, target prices and set asides.

**Questions From the Past and the Present**

Our list certainly must start with those identified by Allin and Fuller

1. How do we get soil conservation applied in a reasonable time on all farms and range lands that need it?

I would also include the range of additional concerns here such as water quality, wildlife habitat, etc. We also found that we need to add a new second question;

2. How do we maintain the applications of conservation, etc. on the landscape?
3. How do we divide conservation responsibilities between federal, state and local governments and private citizens (and NGOs) in the most effective way to get things done?
4. How do we finance our investments in conservation so they can be treated as such and not as current expenses that threaten us with bankruptcy?
5. How do we do all these things democratically, with a minimum of restraint on individual liberties?

These are the questions that come to us from past history - questions seen as critical in earlier days that were not solved then. The kind way to view them is as legacies passed from one SCS or NRCS Chief to the next. Happily, some of the questions asked in the past have been answered or resolved, but we are certainly left with enough to deal with over the next few years. I would also note that the service and the department are addressing a number of these. The Conservation Reserve Program, the Environmental Quality Incentive Program and the "Locally Led" effort are attempting to address aspects of questions 1, 3 and 5. My own belief is that questions 2 and 4 also need special attention.

On the broader stage we need to go back to Howard Tolley and extend his statement that most efforts of government directed at agriculture from his day to ours have been directed towards the improvement of commercial agriculture. In addition, we have not had the increasing attention to either raise the living conditions of those at a disadvantage within agriculture itself or to encourage better land use. These are the broader political issues that Hardin refers to that have less often been the focus of a general debate. I would hope that conservation would gain from such a debate.

## References


1. Tolley, George, "Some Essentials of a Good Agricultural Policy," in Farmers in a Changing World; The Yearbook of Agriculture 1940; United States Department of Agriculture, Washington, 1940, p. 1169.
2. Bennett, H.H., "Our Soil Can Be Saved," Ibid., pp. 439-40.
3. Allin, Bushrood W. and Ellery Foster, "The Challenge of Conservation," Ibid., p. 421.
4. Tolley, op. cit., pp. 174-75.
5. Sampson, R. Neil, Farmland or Wasteland; A Time To Choose, Rodale Press, Emmaus, Pa, 1981, pp. 264-265.
6. Allin and Fuller, op. cit., p. 416.
7. Parks, Robert W., Soil Conservation Districts in Action, Iowa State College Press, Ames, 1952, p. 142.
8. Allin and Fuller, op. cit., p. 426.
9. Morgan, Robert J., Governing Soil Conservation: Thirty Years of the New Decentralization, Johns Hopkins Press, Baltimore, 1965. P. 22.
10. Ibid., pp. 98-103.
11. Eisenhower, Milton S. and Roy I. Kimmel, "Old and New in Agricultural Organization," in Farmers in a Changing World, op. cit., p. 1131.
12. Morgan, op. cit., pp. 139-41 and 143.
13. Parks, op. cit., p. 182.
14. Morgan, op. cit., pp. 152-53.
15. Ibid., pp. 158-60 and 164-65.
16. Ibid., pp. 99 and 107-108.
17. Ibid., pp. 194-95.
18. Helms, Douglas, Readings in the History of the Soil Conservation Service, Historical Notes # 1, Economics and Social Sciences Division, Soil Conservation Service, U.S.D.A., Washington, Sept. 1992, p. 140-157.
19. Morgan, op. cit., pp. 38-39.
20. Ibid., pp. 46-47.
21. Ibid., pp. 42-48.
22. Parks, op. cit., pp. 148-51.
23. Hardin, Charles M., The Politics of Agriculture, Free Press, Glencoe, 1952, p. 260.
24. Foster, Ellery A. and Harold A. Vogel, "Cooperative Land Use Planning - A New Development in Democracy," in Farmers in a Changing World, op. cit., p. 1144.
25. Sampson, op. cit., P. 290.
26. Gray, L.C., "Our Major Land Use Problems and Suggested Lines of Action," in Farmers in a Changing World, op. cit., pp. 401-402.
27. Parks, op. cit., pp. 155-56.
28. Hardin, op. cit., p. 266.

Schertz, Lyle and Otto Doering, The Making of the 1996 Farm Act, forthcoming, Iowa State University Press, 1999.


*Dr. A. Ann Sorensen*

Thanks, Otto. Our next speaker will be Dr. Brent Sohngen, from The Ohio State University. Brent is going to talk about incentive-based conservation policy and the changing role of government.

# Incentive Based Conservation Policy and the Changing Role of Government[1]

*Dr. Brent Sohngen, The Ohio State University*
*Michael Taylor, The Ohio State University*

***Abstract***

This paper addresses how tradable pollution programs can be applied to provide private funding for agricultural conservation practices. It begins by discussing the difference between performance and technology standards and argues that government cost-share programs follow the traditional technology-based approach. It then describes how performance standards can be applied to water pollution problems through pollution trading programs in general, and tradable pollution permit markets in particular. These programs can encourage point sources of pollution to provide private cost-share assistance to farmers for the adoption of new pollution reduction practices. Several different examples of existing programs are discussed to illustrate how these programs have been implemented in recent years. By shifting some emphasis from traditional cost-share approaches to trading arrangements, government agencies may help encourage additional farmers to adopt new conservation practices with private funds from other sources.

[1] While the views expressed in this paper are those of the authors alone, they would like to thank Alan Randall for comments made during discussions on this topic.

## Incentive Based Conservation Policy and the Changing Role of Government

### Introduction

With the Clean Water Act of 1972, the United States began setting goals for improving water quality in lakes, streams and rivers. This Act has two key components. First, it sets goals for water quality by directing the U.S. Environmental Protection Agency to designate particular uses of stream segments and other water bodies. Second, it calls for the elimination of all discharges of pollution (Freeman, 1993). In order to meet these goals, the EPA has concentrated efforts on regulating point sources of pollution, mainly industrial facilities and municipal sewage treatment plants.

While it is difficult to determine the exact extent of water quality improvements over the last 26 years, most believe that water quality has improved considerably (Rankin, et al, 1996). However, even though the National Pollution Discharge Elimination System requires permits for over 200,000 point sources of pollution nationwide, the goals of fishable and swimmable waters (in all streams and rivers) and zero discharge have not been met. In 1996, 56 percent of streams surveyed met their water quality designations, 8 percent were threatened and 36 percent were in fair or poor conditions (U.S. EPA, 1998).

As government agencies think about how to improve water quality in the 36 percent of streams, lakes or estuaries that are not meeting their goals, it is becoming more apparent that pollution from nonpoint sources must somehow be addressed. The EPA's National Water Quality Inventory (U.S. EPA, 1998) suggests that nonpoint source pollution is primarily responsible for the approximately 40 percent of surveyed rivers, lakes and estuaries that are not meeting their goals. Several problems with nonpoint source pollution, however, have so far prevented direct regulation. These include their diffuse nature, difficulties in measuring and monitoring pollutants from nonpoint sources, and the relationship between nonpoint source pollution and unpredictable events like weather. Traditional command-and-control regulation is difficult in these circumstances, but there are few well-accepted alternatives in use at this time.

To begin to address nonpoint source pollution, federal and state agencies have focused on voluntary participation programs, particularly with agricultural nonpoint sources. In particular, cost-share programs became the policy institution of choice in the 1980s and they continue to dominate today. Cost-share programs essentially transfer funds from public agencies to agricultural practitioners who install conservation practices or new waste management structures on their farms. As with the best available control technologies of command-and-control regulations, payments are tied to the installation of specific practices or structures that are expected to reduce off-site effects of land management. In recent years, these practices have been termed "Best Management Practices," or BMPs.

The financial scale of cost-share programs is quite large. Section 319 of the 1986 reauthorization of the Clean Water Act, for example, authorizes the EPA to spend approximately $130 million annually on nonpoint source pollution programs. Between 1996 and 2002, the U.S. Department of Agriculture will distribute over $1.6 billion to farmers through the Environmental Quality Incentive Program and the Wildlife Habitat Incentive Program. In addition to these new programs, the USDA was authorized to maintain 36 million acres of land under contract in the Conservation Reserve Program, and the Wetland Reserve Program was authorized to enroll up to 975,000 acres. Cost-share funding does not stop at the federal level; many states are now allocating large sums of money as well. The Natureworks program in Ohio, for example, provides $1.5 million per year for different watershed projects that install BMPs, particularly for riparian zone enhancement.

While cost-share programs provide important financial resources for land based conservation, and federal and state resources for these programs have "bucked" the trend by continuing to grow, it is not clear that they alone will be sufficient to meet the goals of the Clean Water Act. Instead of requiring specific levels

of pollution reduction associated with installation of new practices, cost-share payments require only the installation of BMPs. Programmatic success is determined by the number of different practices that were installed rather than actual gains in water quality. Even if cost-share programs help improve water quality in certain watersheds, programs that focus on inputs rather than outputs are not likely to be the cheapest way to improve environmental quality (Tietenberg, 1985).

The government potentially has a more important role to play in promoting conservation practices in farming. In particular, this paper focuses on the creation of regulatory institutions that allow for various forms of pollution trading. These programs, some of which are already underway, provide an exciting opportunity for government to achieve water quality goals while at the same time minimizing costs to society, industrial point sources and farmers. To develop these institutions, however, requires substantial changes in the typical way that government addresses nonpoint source pollution control for agriculture.

While pollution trading systems are often touted by economists, they are more often misunderstood by the public and regulators. This paper seeks to clear up some of these misconceptions by providing a basic background on how concepts from pollution trading systems may be applied to agricultural issues. It begins with a discussion of performance versus technology standards. Economists generally agree that performance standards are more cost-effective than traditional technology standards, and it is important for conservation practitioners, government agencies and industry to understand the differences when exploring the possibility for new institutions or systems. The paper then discusses how tradable pollution permit markets might be applied to agricultural nonpoint source pollution issues. This section concentrates on identifying some of the important components of trading systems and some of the issues yet to be resolved. The paper then describes several instances where trading mechanisms have been implemented for nonpoint source pollution. This is an exciting development in recent years, and it suggests that the role of government is already changing to consider performance standards. Our final section provides some discussion of potential next steps, in research and policy.

**Technology Standards vs. Performance Standards**

Most environmental regulations since the early 1970s have relied on command-and-control regulations. Because command-and-control regulations dictate not only the level of abatement that must be met, but also the technology that must be used to achieve such abatement levels, they are called technology standards. One of the most widely cited examples of this type of regulation is the "best available control technologies" required in the Clean Water Act of 1972 (and most subsequent amendments). While regulating technology may provide some assurance that firms are complying with regulations, these benefits can impose excess costs on both individual firms and society. Because there may be a more efficient method for the firm to use to achieve the same results, such as re-engineering the entire process, technology standards are not likely to minimize pollution abatement costs (Tietenberg, 1985).

Most existing cost-share programs mimic this technology-based approach because they dictate specific BMPs, and they often use particular technical guidelines. From the agencies' perspective, BMPs are desirable because regulators generally understand the practices. However, this fails to address whether or not the practice is effective and for how many years it will remain effective. Further, the important question to ask is not whether the regulators understand the practices, but whether the farmers implementing them do. Performance standards rely on the notion that farmers are in a better position to understand the effectiveness of different practices on their farms than regulators. In fact, it is likely that farmers could devise better alternatives if given the correct incentives.

Unlike technology standards, performance standards applied to cost-share programs would dictate the level of pollution abatement required by farmers signing up, but not the methods used. Farmers then have the option to adopt whichever practices are most economical for them to meet the standard. Because production systems vary widely from farm-to-farm, there are likely to be many different ways to meet

cost-share requirements which stipulate pollution reduction goals rather than mandated technology. Given the opportunity, farmers would choose the technology that minimizes their costs for reducing the specified amount of pollution.

In theory, performance standards can be applied in different ways, either on a farm-by-farm basis, or at the watershed level. Watershed level regulations would hold both point sources and nonpoint sources in the watershed collectively responsible for their aggregate pollution emissions. If any one source pollutes too much, and ambient water quality goals are not met, all firms would be held liable. Several different schemes have been suggested to enforce such regulations, including the full marginal damage scheme of Segerson (1988), the random fine mechanism of Xepapadaes (1991), the nonpoint source tournament of Gouvindasamy et al. (1994) and environmental bonding. While several alternative liability mechanisms have been suggested, it remains a rich area of research in economics to develop a scheme that is both economically and politically feasible.

An example of a performance standard that is applied to a group of polluters is the sulfur dioxide trading program initiated by Title IV of the Clean Air Act Amendments of 1990. Economic theory suggests that firms with high costs of abating their own emissions of sulfur dioxide will purchase additional allowances from firms with low costs of abatement. These purchases will reduce the overall costs of complying with regulations intended to reduce the damages caused by acid rain.

The role of performance standards is well illustrated with the first phase of trading in this program (trading started in 1994). Burtraw (1996) argued that moving from a technology standard, which required each source of sulfur dioxide to install scrubbers, to a performance standard, may have been the most important component of the dramatic cost savings seen in the sulfur dioxide permit trading market in the early 1990s. While predictions of the marginal cost of sulfur dioxide reduction with scrubbers was over $1,000 per ton of sulfur dioxide in the 1980s, the price of a permit for sulfur dioxide in the 1990s has been approximately $130 to $150 per ton. With the implementation of the trading market came the performance standard: firms no longer had to install technology to "scrub" sulfur from emissions. They instead could substitute other forms of abatement, which included importing low sulfur coal from western states. To be fair, these low prices were aided by deregulation in the rail industry which reduced the price of coal transportation. Without a performance standard, however, these benefits may never have been realized.

**Agriculture and Pollution Trading**

While pollution trading appears to be successful with sulfur dioxide, could systems be designed for nonpoint sources as well? What should these systems look like? Is there any potential for trading between point and nonpoint sources of pollution? How would agencies deal with the inherent uncertainty involved with nonpoint source pollution? These and other questions must be addressed before trading markets for nonpoint source pollution become more prevalent.

There is no single recipe for developing a trading scheme that would involve agriculture. In fact, as the examples below suggest, rather than installing a widespread, formal trading structure like sulfur dioxide trading, it instead may be entirely possible to develop institutional arrangements that are less formal. These arrangements would nevertheless include concepts from trading programs that foster private incentive payments to farmers for conservation. Perhaps the most important aspect of any potential program is that it must embrace the notion of a performance standard.

In this paper, we discuss mechanisms in terms of formal and informal. A *formal* mechanism would involve bringing nonpoint sources under the same regulatory umbrella as point sources. In this case, the nonpoint sources would be assigned limited property rights to pollute. They would be required to hold enough discharge permits to cover the effluents discharged in their runoff. Nonpoint sources would then

be treated in the same manner as point sources. Although it may be costly and difficult to monitor pollution for all permit holders, it may be entirely possible to include certain agricultural sources in these markets, particularly concentrated livestock operations. However, given that the size of the institution necessary for keeping track of the over 200,000 NPDES permits now is already burdensome for the EPA, it is unlikely that formal arrangements such as this would be introduced in the near future.

Even if nonpoint source pollution is not permitted as NPDES, there are opportunities to institute trading arrangements. A *less* formal arrangement would allow nonpoint sources to be invited into the trading regime on a voluntary basis. The incentives for nonpoint source participation rest on the assumption that agricultural practices that reduce pollution are less expensive than additional direct point source control. In the less formal arrangement, nonpoint sources are an additional supplier of pollution abatement. Participants would not hold the actual discharge permits, but they would enter into contractual arrangements with point sources to provide reductions in pollution discharges. It is this less formal arrangement that is currently employed within the U.S. environmental policy, and discussed below.

Whether a formal or informal arrangement is developed for trading, several key steps must occur before trading can occur. The first step is that the goals of the program must be clearly defined. Often, goal setting may begin by developing pollution load analysis for a watershed. Such analysis would allow regulators and stakeholders to learn how much each source is contributing to pollution in the basin. This will provide the baseline information from which goals for improving water quality can be developed, and improvements in water quality can be measured. With this information, standards can be set for different sources of pollution, perhaps through the Total Maximum Daily Load process.

The second step is to allocate the rights to pollute. This means that the loads for different sources must be constrained to ensure that total pollution in the watershed remains below the constraint. These rights might be called permits to pollute. Under the formal arrangement above, both point and nonpoint sources would be allocated a given number of permits, while under the informal arrangement, permits would be given only to the point sources. Allocating permits involves not only determining the overall quantities of pollution that will be allowed by point and nonpoint sources, but also distributing these permits to the individual sources in the watershed. Thus, each polluter would obtain the permit to pollute X kg of nitrogen. Initially, these permits can either be given away for free, as occurs in the sulfur dioxide market, or auctioned to raise revenue.

The third step is to allow the permits to be divided so that polluters can trade individual pieces of their permits. For example, polluter A might find that it is too costly to pollute less than their initial permit allows, but that polluter B will sell them part of their permit. After the trade, the polluter A would have a large enough permit so that they are within the law, but polluter B has a smaller permit and must abate the given level of pollution. The fourth step is to develop an institution that allows individuals to trade these rights. This may involve licensing a set of brokers to facilitate trading, or it may involve developing an annual (or even more frequent) auction where buyers and sellers meet. Individual firms must be allowed to trade their allocated rights freely. Since the total number of permits remains the same, the overall constraint placed on pollution will not be violated. It is important to realize that trading such as this does not mean that firms shirk their responsibility, but it instead means that firms switch the responsibility of pollution abatement to someone else, using a market arrangement to facilitate this transition.

The question of whether or not there is scope for trading systems to provide funding for land conservation can be considered from several different angles. Between 1972 and 1992, the costs of water pollution control in the United States are estimated to have been $735 billion (1992 dollars), and in 1992 alone, they were $57 billion (Jaffe et al. 1995). If trading systems were implemented and industry was allowed to purchase pollution control on farms, they may re-allocate some of these expenditures to farms. If only 1 percent of these compliance costs were re-allocated in this fashion, it would provide an additional $570

million per year in **private** incentive payments for farmers. In reality, the value of trades may be more or less than this, but the scale of financial resources currently devoted to pollution control suggests that there are potentially large sums of money available for private incentives.

The motivating argument for pollution trading rests not on the total sum of pollution expenditures, but instead on the fact that farmers may be able to reduce pollution at a lower cost per additional ton than regulated industries. Along a given stream segment, or within watersheds, this means that the costs for point sources to reduce an additional ton of effluent need only be higher than the costs for agricultural sources to reduce the same ton. Early economic studies suggest that potential cost savings for water pollution trading programs between point sources relative to command-and-control lie between 12 percent and more than 100 percent (Tietenberg, 1985). Although these savings represent an upper bound (Teitenberg, 1985), they provide evidence to support the idea that point sources have some scope for trade.

One way to see if there is scope for trading between point and nonpoint sources is to consider the marginal costs of pollution abatement. If these costs differ dramatically, then there is likely to be some scope for trade. Henschel (1995) suggests that the marginal cost of pollution abatement in pulp plants in the Great Lakes ranges between $18 and $100 per kilogram, depending on the level of abatement. In contrast, Hopkins et al. (1996) estimate that the marginal costs of pollution abatement on two Ohio farms ranges from $2 to $4.50 per kg of nitrogen. A recent study by Nakao (1998) suggests that the cost of reducing a kilogram of soil erosion in the Maumee river basin of Ohio is less than $1 per kg of gross erosion. These data on cost differences, although not complete, suggest that there is likely to be considerable scope for trading between point and nonpoint source pollution.

The most contentious issue associated with the prospect of point-nonpoint source trading involves the issue of uncertainty: what happens if the nonpoint source pollution reductions are ineffective? Since regulators are already uncertain how much pollution abatement results from the implementation of these practices, pollution levels may then rise above existing levels, and therefore cause backsliding. This issue has been raised by many environmental organizations who have commented on the EPA's "Draft Framework for Watershed-Based Trading" (U.S. EPA, 1996).

Existing technology standards are preferred by many because they provide some measure of certainty that point sources are reducing their pollution. Allowing these same firms to purchase BMPs that are subject to considerable uncertainty, can raise red flags for regulators, firms and environmentalists. For trading systems to satisfy societal demand for improved water quality, they must somehow find ways to reduce this uncertainty.

The method most employed in practice for reducing uncertainty in trading programs is the trading rule. The trading rule follows from the theory of safe minimum standards (Ciriacy-Wantrup, 1968). The regulator wants to ensure that after all trading has occurred, pollution is at least as low as before. However, if conservation practices are uncertain, and regulators do not monitor the reduction in pollution loading from the practices, regulators cannot be certain that total loadings will be reduced. The trading rule is a relatively simple way to safeguard against these uncertainties. Firms are required to offset more pollution by purchasing conservation practices in case the conservation practices are not as effective as predicted. A trading rule may state that a firm must purchase five tons of pollution reduction from farms in lieu of reducing one ton of its own pollution.

The problem with a trading rule is that it may discourage trading altogether. If it is set too high, it will discourage trading because it may no longer be cost-effective for firms to purchase conservation practices, and if it is set too low, the environmental goals may not be met. The trading rule must be carefully set to encourage trading and to ensure compliance with environmental standards. Dealing with uncer-

tainty such as this remains one of the biggest obstacles to successfully implementing programs on a wider basis in the United States.

Uncertainty may not be as large a problem as it seems. There are two reasons. First, farmers are the individuals who have the greatest ability to deal effectively with it. They understand better than others how their farms operate and what can be done to reduce pollution to the levels desired. Second, uncertainty will not be constant over time as more information is revealed about the effectiveness of different technologies (i.e., through research at Land Grant Universities). This information can be more effectively introduced into trading programs because farmers have the ability to choose from a wide range of alternatives rather than the alternatives used in technical guidebooks.

This second issue suggests another important aspect of trading programs. They are potentially better suited to allow markets to adjust freely over time without undue constraints from government. For example, economic conditions may change in the watershed as firms and farmers enter and exit. As the mix of firms changes, the mix of pollution will change, as will the overall quantity. Trading systems give those involved in the market the best opportunity to adapt to these changing conditions.

**The Changing Role of Government: Examples**

The role of government in agricultural pollution trading is dramatically different than its role in cost-share programs. Rather than providing direct financial assistance to farmers, the government provides the institutional framework for the private firms to purchase pollution abatement from others in lieu of more costly pollution reductions within their own plants. State and federal agencies still must develop water quality standards to meet goals set forth by legislation. However, rather than regulating particular technologies used by point sources, or purchasing particular BMPs from farmers, regulators focus on designing systems that give incentives for point sources and farmers in watersheds to choose effective technologies in the most efficient manner. In the case of water pollution trading programs, private entities are free to choose the particular set of methods that will allow them to mitigate or offset pollution most cheaply.

While pollution trading may provide a feasible alternative to public cost-share programs, they have only recently begun to attract attention. Nevertheless, the "Draft Framework for Watershed-Based Trading" (U.S. EPA, 1996) suggests that the institutional support for these programs is gaining momentum. To date, there have been no formal watershed based trading programs (i.e., programs that involve both point and nonpoint sources through the permitting process). However, several informal arrangements have been developed. Two of them, the Dillon Reservoir program in Colorado and the Tar-Pamlico program in North Carolina, involve point-nonpoint source pollution trading. Although minimal trading has occurred in either market, they do provide an opportunity to examine alternative institutional frameworks for permit trading markets. Another interesting arrangement to consider is wetlands mitigation banking, which is occurring in several different states. Two additional programs are discussed that show how government agencies have begun to adopt informal arrangements by trading among themselves.

**Dillon Reservoir, Colorado**

The Dillon Reservoir trading program for the control of phosphorous from point and nonpoint sources began in Colorado in 1984. Lake Dillon faces various competing uses including recreational activities, drinking water supply and waste assimilation. Anticipated increases in phosphorous loading from development and growth within the Lake Dillon watershed led to the development of a permit trading market. The trading market is composed of four publicly owned waste water treatment works and all surrounding point sources (EPA, 1996). Only nonpoint sources that were established within the watershed prior to July of 1984 can generate phosphorous credits for point sources (Apogee Research, 1992). More recent nonpoint sources are subject to new command-and-control phosphorous control regulations.

Point sources can purchase nonpoint source pollution abatement according to a 2-1 trading ratio (Apogee Research, 1992). This means that the point source must arrange for two units of nonpoint source phosphorous reduction for each unit of phosphorous it discharges above its allocated limit. The trading ratio was chosen based on the modeling of projected nonpoint source phosphorous loadings (Zander, 1997).

Trades are monitored and enforced through linkages to the NPDES permits of the point sources required by the Clean Water Act. While all trades are arranged by the parties involved, they must be approved by both the State Water Quality Control Commission, as well as the federal EPA regional office (Zander, 1997). Because nonpoint sources do not typically come under the restrictions of the Clean Water Act, point sources are held responsible for the compliance of all trades. Thus, if a nonpoint source is not in compliance, the point source is held in violation of its NPDES permit, and it falls under the penalty structure of the Clean Water Act (Zander, 1997). To date, there have been very few trades in the Dillon Reservoir system. Perhaps the main reason for this is the switch to the performance standard, inherent in trading programs. This led to the unexpected discovery of low cost direct control methods for point sources, and it allowed the use of these methods. Even with the buildout of the watershed basin, the point sources are not expected to reach their allocations (Apogee Research, 1992).

Since point sources of phosphorous are no longer considered to be a major threat to the watershed, the attention of regulators has switched to nonpoint sources. Local officials developed a phosphorous mitigation policy that requires new nonpoint sources to offset their expected phosphorous impact. This is done by reducing the impacts of existing nonpoint sources, in addition to meeting the existing command-and-control requirements for new nonpoint source control.

Three trades have occurred to date. The first trade was between a point and nonpoint source, and it was initiated solely to test the administration of the project. A local publicly owned treatment work in the Breckenridge Sanitation District replaced the septic systems of a local subdivision with a connection to the sewer system. In return, the point source received 11 pounds of additional phosphorous credit (Apogee Research, 1992).

The other two trades were between nonpoint sources. The city of Frisco experienced storm water drainage problems that resulted in phosphorous runoff. Concrete manholes were constructed to increase drainage and trap sediments, thus reducing phosphorous loadings (EPA, 1996). The earned credits were applied to mitigate the construction of a new town golf course (Zander, 1997).

In the second nonpoint-nonpoint trade, the Snake River wastewater treatment facility built a discharge structure to reduce the nonpoint source phosphorous loading from a stream entering Lake Dillon. Although the trade was initiated by the point source, it did not need the additional discharge credits. The earned credits were then applied to offset an increase in phosphorous loadings anticipated by a stream diversion proposed by the Denver Water Board (Zander, 1997).

**Tar-Pamlico River Basin**

High nitrogen and phosphorous levels within the Tar-Pamlico river basin led to eutrophication and fish kills. As a result, a permit trading system was created to reduce nitrogen and phosphorous loadings at low cost. The participants in the trading markets consisted of both point (12 Publicly Operated Treatment Works and a single private firm), and numerous nonpoint sources within the watershed (primarily cropland and livestock). The point sources were organized into a single group, referred to as the Association. The Association places all individual point sources under a single "bubble." If the total loadings of the Association exceed the allowable nutrient load, then they must purchase offsetting nonpoint source abatement.

As opposed to the Dillon Reservoir market, the regulatory agency, in this example, plays a more active role in the trading process. The first step was to conduct a total maximum daily load analysis to determine the allowable levels of nitrogen and phosphorous discharge in the basin. A t-ratio of 3-to-1 for cropland BMPs and 2-to-1 for livestock BMPs was set in the market (Apogee Research, 1992). Based on a computer simulation of potential trades, the price of a tradable permit was set for the market at a weighted average of $29 per kg. This price includes the projected per kg costs of both livestock and crop nutrient abatement, including the required t-ratio. Trades are not negotiated by the participants in the market directly. Instead, if the Association's total loadings exceed the allowable aggregate level of the point sources, they are required to purchase offsetting nonpoint source abatement at the set price of $29 per kg. (Gannon, 1997). The trade is arranged by The North Carolina Department of Soil and Water Conservation through the Agricultural Cost-share Program in the Tar-Pamlico Basin. The Association is required to maintain a $500,000 annual reserve in the Agricultural Cost-share Program. This ensures the availability of funds for the implementation of any potentially required trades. Since the Association is not involved in the implementation of trades they do not carry the responsibility of ensuring compliance of the nonpoint source trading partner (Gannon, 1997). Instead, the state, through Soil and Water Conservation District officials, bears the cost of inspection and enforcement of compliance. This arrangement is thought to relieve the point sources of bearing excessive risk through trading.

To date, no trades have occurred within the Tar-Pamlico market. During Phase I of the market's formation, each point source was required to perform an engineering analysis of their management and operation practices for pollution abatement (EPA, 1996). As a result of these analyses, many new low cost methods of pollution abatement were discovered. In response to the flexibility derived from the switch to a performance standard the point sources were able to abate nitrogen and phosphorous discharge directly, and trading was not required. Association members still remain well below their allowances. Therefore, trades are not anticipated for a few years (Gannon, 1997).

**Wetlands Mitigation**

The preservation of wetlands has gained attention in recent years, as the acreage of natural wetlands has declined. There are essentially two types of wetland policies in the United States. The Wetland Reserve Program serves the traditional role as a federal incentive system that attempts to increase the area of wetlands. Section 404 of the Clean Water Act provides legislation that limits the loss of remaining natural wetlands. However, Section 404 contains an interesting provision that allows individuals who wish to remove wetlands in one region, to mitigate these wetlands in another region. Wetland mitigation banking provides another example of innovative government policy based on performance rather than technology standards. It also can be applied directly to land conservation policy.

Land developers must apply for a permit to alter any existing wetland. The Army Corps of Engineers evaluates the physical qualities of the wetland and determines whether the applicant must minimize the impact of development, or avoid impact altogether. Mitigation banking provides an off-site compensatory option in minimizing impact.

**Ohio Wetlands Foundation**

In response to concerns regarding the loss of wetland habitat, the Ohio EPA has actively pursued a "no net loss" policy for wetlands. This policy requires that development does not result in a loss of total wetland acreage. Any land development project which may impact wetlands quality must first obtain a permit. When a permit is granted for land development, it may include restrictions on the project to offset or minimize negative impacts on wetlands. Onsite offsets include setbacks and filter strips designed to minimize degradation of the directly impacted wetlands. However, it can often be more effective to require offsets to be carried through offsite. One form of off-site offsets is mitigation banking, where the developer will pay to create new wetlands, or improve an existing wetland in some other area. Such banking programs allow developers to impact certain wetlands in exchange for developing or improving

existing wetlands elsewhere. An informal performance standard exists in this trading scheme. In order for a developer to qualify for wetland mitigation banking, the impacted wetland must be offset by a wetland of higher ecological quality. In most cases, the offsetting wetlands are larger in size and are of better ecological quality.

The effectiveness of constructed wetlands are uncertain. Therefore, a mitigation ratio is used. This ratio is determined by the regulatory agency (i.e., EPA and Army Corps of Engineers), and dictates that more than one acre of constructed wetlands be created to offset a single acre loss of existing wetlands. The most common mitigation ratio is 5:1 in Ohio. However, this ratio can be even greater if the impacted wetlands are of a higher quality. The mitigation ratio is determined on a case-by-case basis during the permit process.

The Ohio Wetlands Foundation is a nonprofit organization which creates constructed wetlands banks and sells acreage to land developers for offsetting purposes. Since 1993, the foundation has sold out three separate banks ranging in size from 33 acres to 330 acres (Sutliff, 1998). The incentive of a low cost offsite alternative allows marginal wetlands to be put to more valuable uses, while maintaining, and in some cases increasing, the amount of high quality wetlands in existence.

**Other Trading Systems**

Various less formal trading schemes have been introduced throughout the United States to deal with diverse pollution problems. These trading systems are less formal in the sense that they are more case specific in arrangement, and are directed to a narrower class of trading partners. The city of Providence, Rhode Island has instituted a trading arrangement between the city's Department of Water and the Department of Transportation. The Department of Water was required to meet specific sodium standards within the supply source recharge area (EPA, 1996). Faced with costly in-plant treatment, the Department of Water agreed to subsidize the use of non-sodium based road deicing chemicals by the Department of Transportation. This allows the Department of Water to meet its sodium standard at minimum cost.

Laguna de Santa Rosa, California, is the site of another informal trading arrangement. The City of Santa Rosa faced difficulties in meeting water quality standards during the summer months. Instead of increased abatement efforts, the city shipped treated wastewater to area golf courses, as well as dairies and farms for application to pasture and some food crops (Smith, 1997). No overall trading mechanism exists, and trades are not reflected within the City of Santa Rosa's NPDES, but they are accounted for within the TMDL (Smith, 1997). The city initially paid dairies to take the water, but payments are no longer made due to the desirability of the nutrient content (EPA, 1993). Noncompliance problems are enforced against the farmer or rancher who applies the wastewater to fields by local governments (Smith, 1997).

**Conclusion**

Regulatory institutions for the provision of private incentives hold the potential for improving land based conservation management. Rather than the traditional public provision of cost-share assistance, innovative pollution trading programs may allow point sources of pollution to provide private incentives for pollution abatement on farms. This shift in regulatory focus, however, would first require a change from technology-based standards to performance standards. The institution for pollution trading can vary greatly to fit the problem at hand, as illustrated by the brief overview of ongoing pollution trading programs. These programs suggest that trading regimes are not only possible, but that they have been implemented successfully over the past several years.

Although existing cost-share programs can change farmer practices, they rely heavily on traditional technology approaches. Rather than focusing on the performance of BMPs in reducing the quantity of pollution that moves off-site, cost-share programs focus most heavily on the technological presence of BMPs.

One distinguishing feature of tradable pollution permit programs is that they require regulatory agencies to focus more attention on performance rather than the installation of abatement technology.

Performance standards shift the burden of uncertainty from regulators to farmers. Under the current regime, where cost-share incentives are based on technological inputs, the regulators face all of the uncertainty of BMPs. If they spend a given amount of money in a certain watershed and the resulting practices are not effective, the blame is placed on the regulator, not the farmers. Under a tradable pollution permit system, however, the individual parties involved in the trade would be held liable for non-compliance with water quality standards. This places the burden of uncertainty on the parties involved to ensure that they use the most effective BMPs given the problem at hand.

While farmers do not currently face this type of uncertainty, a central premise of the trading regime is that they are most suited to accepting it, given that they have the best ability to respond. In the economic literature and within the examples of nonpoint source trading programs discussed above, regulators have provided an additional measure of certainty by incorporating trading ratios. Trading ratios are introduced to ensure that minimum standards are met when pollution trading occurs.

As seen in the examples above, trading regimes do not necessarily have to be developed in the traditional sense discussed by economists, or as set up under Title IV of the Clean Air Act Amendments of 1990. There are opportunities for trading to occur at many different levels and scales. For example, point sources may trade with other point sources or with nonpoint sources, nonpoint sources may trade with nonpoint sources, or government agencies may trade with other government agencies. Trading is therefore seen to be a means to an end, not an end in and of itself.

There may be other ancillary benefits of tradable pollution permit programs that have not been discussed above. Perhaps the most interesting of these is that trading markets may provide incentives for innovation in pollution abatement technology. For example, if a farmer contracts for a given level of pollution reduction, he/she has the incentive to provide this pollution abatement in the cheapest manner possible. The traditional cost-share program provides little incentive for farmers to find cheaper methods because they are highly prescriptive. Although there is some disagreement among economists about the extent of this "induced" innovation (see Porter and van der Linde, 1995, and Jaffe and Palmer, 1994), trading markets provide the proper framework to encourage these new innovations.

Tradable pollution permit programs suggest a very different role for government in encouraging alternative land management practices to reduce pollution than the cost-share programs currently used. Rather than directly providing financial incentives, the government would facilitate new trading institutions that allow private incentives to promote conservation. While several trading programs, or at least informal programs that contain aspects of trading, have begun in the past few years, it appears that there is substantial scope for them to flourish in the future.

## References


Appogee Research, Inc. Incentive Analysis for Clean Water Act Reauthorization: Point Source/Nonpoint Source Trading for Nutrient Reductions. EPA Contract 68-CO-0083 April, 1992.

Ciriacy-Wantrup, S. von. Resource Conservation: Economics and Policies. 3rd Edition. Berkeley, CA: University of California Division of Agricultural Sciences. 1968.

Batie, Sandra and Ervin, David E. "Flexible Incentives for Environmental Management in Agriculture: A Typology. Unpublished Manuscript. 1997.

Burtraw, Dallas. "The SO2 Emissions Trading Program: Cost Savings without Allowance Trades" Contemporary Economic Policy. Vol. 14 (April, 1996): 79-94.

Freeman, A. Myrick. "Water Pollution Policy" Chapter 3 in Public Policies for Environmental Protection. Edited by Paul R. Portney. Washington, D.C.: Resources For the Future. 1993.

Gouvindasamy, Ramu; Herriges, Joseph A.; and Shogren, Jason F. "Nonpoint Tournaments" Chapter 4 in Dosi, Cesare and Tomasi, Theodore. Nonpoint source pollution regulation: Issues and analysis. eds. Fondazione Eni Enrico Mattei Series on Economics, Energy and Environment. Dordrecht and Boston: Kluwer Academic. 1994.

Gannon, Rich. Personal Telephone Conversation. North Carolina Water Quality Commission. May 13, 1997.

Henshel, Eva. Enforcing Pollution Control Regulation. Unpublished Ph.D. Dissertation. The Ohio State University. 1995.

Hopkins, Jeffrey; Schnitkey, Gary; and Tweeten, Luther. "Impacts of Nitrogen Control Policies on Crop and Livestock Farms at Two Ohio Farm Sites." Review of Agricultural Economics. Vol. 18 (1996): 311-324.

Jaffe, Adam B; Peterson, Steven R.; Portney, Paul R.; and Stavins, Robert N. "Environmental Regulation and the Competitiveness of U.S. Manufacturing: What does the Evidence Tell Us?" Journal of Economic Literature. 33: 132-163.

Jaffe, Adam B. and Karen Palmer. "Environmental Regulation and Innovation: A Panel Data Study." Resources for the Future Discussion Paper 95-03. October, 1994.

Malik, Arun S., David Letson, and Stephen R. Crutchfield. "Point/Nonpoint Source Trading of Pollution Abatement: Choosing The Right Trading Ratio." American Journal of Agricultural Economics. Vol. 75 (November, 1993): 959-967.

Nakao, Megumi. 1998. Costs of Using Riparian Forest Buffers for Soil Erosion Control. Unpublished Master's Thesis. The Ohio State University. 1998

Oates, Wallace E., Karen Palmer, and Paul R. Portney. "Environmental Regulation and International Competitiveness: Thinking About the Porter Hypothesis." Resources for the Future Discussion Paper 94-02. November, 1993.

Porter, Michael E. and Claas van der Linde. "Toward a New Conception of the Environment-Competitiveness Relationship." Journal of Economic Perspectives. Vol. 9 No. 4 (Fall, 1995): 97-118.

Purvis, Amy, William G. Boggess, Charles B. Moss, and John Holt. Technology Adoption Decisions Under Irreversibility and Uncertainty: An Ex Ante Approach. American Journal of Agricultural Economics. Vol. 77 (August, 1995): 541-551.

Rankin, Edward T., Chris O. Yoder, and Dennis Mishne. "1996 Ohio Water Resource Inventory Volume I: Summary, Status, and Trends." Ohio Environmental Protection Agency Technical Bulletin. April 22, 1997.

Segerson, K. "Uncertainty and Incentives for Nonpoint source Pollution Control." Journal of Environmental Economics and Management. Vol. 15 (1988): 87-98.

Smith, Dave. Personal Telephone Conversation. Region 9 U.S. Environmental Protection Agency. May 19, 1997.

Suttliff, Jim. Personal Telephone Conversation. Ohio Wetlands Foundation. June 19, 1998.

Tietenberg, T.H. Emissions Trading: an exercise in reforming pollution policy. Resources for the Future, Inc. Washington, DC. 1985.

United States Environmental Protection Agency. Draft Framework for Watershed-Based Trading. EPA-800-R-96-001. May 1996.

United States Environmental Protection Agency. National Water Quality Inventory: Report to Congress. EPA-841-F-97-003. April 1998.

Xepapadaes, A. "Environmental Policy under Imperfect-Information: Incentives and Moral Hazard." Journal of Environmental Economics and Management. Vol. 20 (1991): 113-126.

Zander, Bruce. Personal Telephone Conversation. Region 8 U.S. Environmental Protection Agency. April 18, 1997.

*Dr. A. Ann Sorensen*
Thank you, Brent. One of the things we've done today is ask our speakers to be thinking about dealing with private landowners and conservation issues. Neil.

## Farm and Forest:
## Which Way to Sustainability?

*Mr. R. Neil Sampson, The Sampson Group, Inc.*

***Abstract***

This paper addresses the different conservation policies governing timber versus all other crops. As a result there are two different institutional approaches to conservation - one for forests and one for farms. The first section reviews conservation policies for forestry from 1900 to 1930 contending that the federal agency had exclusively served private landowners to assist them in better timber management. The next section covers 1930 to 1960, addressing the changes in both forest and farm policy due to the Great Depression and the Dust Bowl, adding programs for both through the New Deal and struggling with turf wars. In the Environmental Era from 1960 to 1985, the paper addresses the subsiding interagency turf battles, the approach with which the agencies handled the depletion of forests due to the war machine and changing public opinion of forestry from viewing it as farming to seeing forestry as an industry with "big business" controlling the policies affecting timber and it's products. In the New Environmental Era from 1985 to 2000, the paper talks about the emergence of the soil and water conservation, including wetland protection, conservation compliance, etc., to slowly eliminating subsidies. The report concludes with an explanation for the decline of landownership of forests and how to manage forests in a sustainable manner as a question for the next century.

## Farm and Forest:
## Which Way to Sustainability?

**Introduction**

The 20th century in the United States has seen a growing and changing conservation movement responding to public demands that have dramatically changed how landowners are expected to treat and manage their private property. As the nation has changed from a rural to an urban society, from a land ethic dominated by the sense of empty frontiers to one dominated by a recognition of limited space and resources, and from a national government that did little to affect land management to one where involvement has become so intense that charges of political micro-management and procedural gridlock are increasingly heard, the compact between the public and private property owners has been significantly altered. As the search for sustainability continues, that compact will almost certainly continue to change, perhaps in revolutionary ways.

It is interesting to note, and perhaps instructive, that private landowners have not been affected in a similar manner during this past century. You could own about the same amount of land, live in the same community, operate under the same umbrella of general civil laws and go to the same church, but if the principal crop from your land was timber, the chances were that you dealt with a significantly different conservation program than if you ran a grain or dairy farm. There would be some institutional similarities and some agency overlap, but the differences probably outweighed the similarities. And, when it came to the state and local laws you operated under, the differences were even more significant.

If you are a farmer who has wheat or a steer to sell, you can load it in almost any kind of truck or trailer and, if you are lucky enough to have a market, haul your crop to sale. If your crop is a log, you can't put it on your farm truck and transport it legally in many states. That comes under a different law. If you harvest a crop of wheat or corn, you are free to use about any technique you wish, then handle the stubble or stover however you like. If you harvest trees in any of 38 states, you will come under one or more state law(s) that regulate how you will carry out that operation. In an increasing number of states, a "state forest practices act" will establish fairly comprehensive guidelines for you to follow.

As a result, we arrive at the dawn of the 21st century with two different institutional approaches to conservation, one for forests and one for farms. Driving both are a public demand for sustainable management – for operating today's forests and farms in ways that meet today's needs without compromising the ability of tomorrow's citizens to meet their own needs. And challenging both are changes in land ownership patterns and community structures that render many 20th century approaches to conservation programs increasingly obsolete and ineffective.

As we search for ways to meet these challenges, it may be instructive to take a moment and look back to see how and why these two programs developed in divergent ways over the past century – to see what that may illustrate in terms of ideas about where we go from here.

**The Conservation Century Begins: 1900 -1930**

In 1880, Congress created the USDA Division of Forestry to produce information about forests and the forest industry. In locating the program in USDA, Congress clearly viewed the federal role in forestry as an integral part of agriculture, not public land administration. In 1891, the first American to study forestry in Europe – Gifford Pinchot – joined the staff of the Vanderbilt estate near Asheville, North Carolina, to guide the creation of a working forest out of run-down, cut-over farms and forests that were in deplorable condition.[1]

When Pinchot was named to head USDA's Division of Forestry in 1898, he wanted to change it from a "bureau of information" that produced reports into an active, on-the-land participant in forest management. The target was private lands, almost entirely in the hands of farm families. The challenge that drove Pinchot – and the emergent Forest Service – was to help those owners learn and implement better management on private forests. His annual reports listed the division's accomplishments in terms of how many owners and acres they had assisted, and how the owners had responded with private investments to improve their own forests.

By the time the administration of the federal forest reserves was transferred to the Forest Service in 1905, almost a decade had gone into serving private forest owners. Their annual reports expressed concern about the possibility of a timber famine unless improved forest conservation and use could be achieved on those private lands. The modern Forest Service has become so entirely consumed by the management of the National Forests in recent decades that this early heritage is easy to overlook.

At the time, a fledgling U.S. industrial economy was being constructed mainly from wood and driven largely by wood energy. President Theodore Roosevelt told the 1905 American Forest Congress that: "If the present rate of forest destruction is allowed to continue, with nothing to offset it, a timber famine in the future is inevitable."[2] The idea of a "timber famine" may have been more of a rhetorical device than an economic reality, but the concern was real when wood was a mainstay in the nation's development. Pinchot's Forest Service worried about how to reach the private owners who were the key to future forest conditions and timber supplies. The Office of State and Private Cooperation was created in 1908 to focus the agency's efforts.

Some of the terms that we use today emerged as foresters tried to convince farmers that trees were not just an impediment to farming, but an economic opportunity of their own if managed properly. Today, we say "tree farm," "crop tree" and "timber harvest" without thinking what special meaning they portrayed when used by early foresters in an agricultural society.

One of the themes that emerged from Pinchot and his European-trained foresters, who had observed systems where government regulation was common, was the need for some form of federal regulation of private timber harvesting. From his Forest Service post, and for many years after he left the agency, Pinchot advocated direct federal regulation of private timber cutting – an idea that drew the intense opposition of the timber industry, private landowners and conservation organizations like the American Forestry Association. This battle, which resulted in several failed attempts in Congress to impose federal regulation of private forests, was a significant force in shaping the ultimate conservation program for forestry.

Meanwhile, the federal government was increasingly involved in cooperative programs with the states. Fire suppression programs, driven by the enormous 1910 fires in Idaho and Montana, brought federal,

state and private forestry interests together to fight a common enemy. The National Association of State Foresters was created in 1920 to help states communicate more effectively between themselves, and between states and the federal government.

Although wildfire control was the primary concern, the cooperation between the federal government and the states also began to respond to the increasing calls for technical assistance to work directly with landowners in solving forestry problems. In addition to helping with forest management, this approach offered a good political response to calls for federal regulation. A more effective state and local role could do the task, it was argued, if national policymakers would give it a chance. NASF provided a framework for developing and communicating that cooperative effort.

The Clarke–McNary Act of 1924 expanded the federal-state cooperative effort in several ways, including new federal funds to state programs for educational assistance and technical advice to farm woodland owners. The expanded program showed many successes. Between 1926 and 1931, the number of farms employing improved forestry practices was reportedly tripled, and over 600,000 acres of farm forests received technical management assistance. But these accomplishments paled in comparison to the enormous amount of farms and forests needing assistance. One report estimated that the federal-state programs had improved the forestry practices on less than 1 percent of the farms in the United States.[3]

Meanwhile, on the farm front, federal action in soil and water conservation was limited. Hugh Hammond Bennett began to raise the alarm about the loss of topsoil under cultivation around 1905, but official response was slow in coming. The land grant universities were promoting some soil conservation ideas, but the effort was fairly limited and uneven across the country. It was not until 1928 that the department printed Bennett's warnings in the bulletin *Soil Erosion: A National Menace.* And it wasn't until 1929 when Congress appropriated the first funds to do soil erosion studies.[4] A nation that had begun worrying about the future of its forests now began to question the future of the most basic natural resource of all – its soil. But as the social and economic euphoria of the 20's gave way to the despair of the 30's, the worries compounded. Could the nation survive, environmentally or economically? The answers were far from clear as the storm clouds spread from Wall Street to the Great Plains and California, then blew east again, laden with the soil of the nation's breadbasket.

**Reshaping the Institutional Map: 1930-1960**

The 1930s brought enormous change to all of the conservation programs of the United States. The Great Depression and the drought that was turning the Great Plains into the Dust Bowl was taking its toll on forests as well. Enormous forest fires overwhelmed state fire fighting agencies that were depleted by budget crises spurred by the business and economic depression. The nation was full of jobless people, often fleeing damaged landscapes marked by eroding soils, ravaged timber and range lands, and dysfunctional watersheds.

In 1933, President Franklin D. Roosevelt called for a Civilian Conservation Corps that would put people to work immediately, planting trees, stopping gullies, fighting forest fires and building dams. Congress passed the law in 10 days, and the program was launched. Young men went to work for $30 a month in salary plus board, room, uniforms and medical care. They lived in camps of around 200 men each, supervised by military officers. During the day, the work was supervised by a forester or engineer, usually from the Forest Service or the newly formed Soil Erosion Service.

And they made their mark on the land. In the nine years of CCC operation, some 3 million men were involved, for a total cost of some $2.5 billion.[5] They built 40,000 miles of telephone lines, 50,000 miles of roads and trails, and thousands of terraces, dams and reservoirs. They planted 1.25 billion trees and spent over 2 million man-days fighting fire. Many federal and state forests and parks still use roads, trails, buildings, dams and other facilities constructed by the CCC.

Also in 1933, the Department of the Interior created a "Division of Erosion," under the direction of Hugh Bennett. The division, known as the Soil Erosion Service, used WPA and CCC labor to install soil conservation practices on private farms in large demonstration projects. By 1934, the SES had established 41 demonstration projects and were involving about 50 CCC camps in the work.

In 1935, the Soil Erosion Service was transferred to USDA and renamed the Soil Conservation Service. Congress, in P.L. 46, declared that "the wastage of soil and moisture resources on farm, grazing and forest lands of the nation . . . is a menace to the national welfare . . ." Secretary Henry Wallace consolidated all soil erosion control work in the new agency, including the CCC camps previously operated on agricultural lands by the Forest Service. By 1936, the SCS was operating 141 demonstration projects and 450 CCC camps.

In another New Deal soil conservation program, Congress passed the Agricultural Adjustment Act in 1933 to provide financial support to struggling farmers. When the Supreme Court ruled the program invalid in 1936, Congress replaced it with the Soil Conservation and Domestic Allotment Act, which would meet the constitutional test by providing federal payments and cost-sharing on the basis that private landowners would replace crop acres with practices that would conserve soil and enhance productivity. The conservation practices that evolved under the program, long known as the Agricultural Conservation Program, included forestry practices such as tree planting, shelterbelts and windbreaks along with farm-related soil conservation measures such as terraces, waterways and range seedings. In a reflection of the development-oriented thinking of the times, the ACP also cost-shared in draining wetlands, chaining brushy rangeland and improving irrigation systems..

In 1937, USDA decided that demonstration projects, while proving that research-developed methods worked, would never reach all American lands, so a new outreach strategy was created. A "standard" state enabling act was drafted which would, if enacted by a state, create a local unit of special-purpose government called a soil conservation district. In sending the proposed act to the Governors, President Roosevelt indicated that, henceforth, all USDA assistance on soil and water conservation matters would be provided in cooperation with these local units. A USDA committee had recommended that soil conservation work be carried out through the state extension services, but Wallace rejected that idea on the grounds that there were inadequate control linkages between the national policy and the land grant institutions (Morgan 1965).

The department also opened the door for increasing regulation of farm land use and activity with a clause in the standard enabling act that would allow the new districts to enact and enforce land use regulations under state authority. That clause, while avoiding the political bombshell of federal regulation, did not escape the anti-regulatory mood of rural America. Very few states retained the enabling clause and, in those that enacted it, the result was an almost-total lack of regulatory activity by the new districts. Those that tried it, even tentatively, usually abandoned it quickly in the face of intense local opposition.

The fact that Wallace walked a tightrope between the politically explosive issue of direct federal intervention in private land use and the need to carry out Congress' wishes with some direct control could not forestall controversy, however. Major opposition from State Extension Services and the American Farm Bureau Federation held up the formation of conservation districts in many states for decades, and almost resulted in Congressional action to transfer SCS administration to the Extension Service.[6]

In 1937, the Norris–Doxey Farm Forestry Act gave USDA expanded authority to cost share with states to provide technical advice and service to farm woodland owners through farm forestry projects. By specifying that these projects should be done in cooperation with land-grant universities and state forestry agencies, this program set up additional interagency conflict, as it did not clearly define the roles and authorities of the universities in relation to the state agencies.

The controversies over program administration were heightened when, in 1938, Secretary Wallace assigned all farm forestry work under the Norris–Doxey Act to the SCS, instead of to the Forest Service, as the state and federal foresters had anticipated. This was a program, Wallace thought, that was best integrated within the SCS concept of "coordinated farm planning," since it focused on woodlands as an integral element in farm management. But the state foresters and the Forest Service disagreed, with the state foresters particularly adamant about the need for any such project to be done under state, rather than federal, management.[7] The Society of American Foresters weighed in on the issue as well, insisting that all forestry services should be delivered by professional foresters rather than farm planners trained in other disciplines, as a way to protect farmers from the "economic consequences of ill-planned and ill-applied practices."[8] SAF made it clear that its opposition was not to SCS providing professional forestry services, but in using non-foresters who were not qualified.

In the face of that controversy, Secretary of Agriculture Claude Wickard transferred all farm forestry programs back to the Forest Service in 1945. In the view of historian Robert Morgan, the action postponed indefinitely "any likelihood that soil conservation districts would become multiple-purpose conservation units" as some had envisioned.[9]

In the midst of all this interagency jousting for position, World War II called for all-out production of both farm and forest products, and the wartime agencies, although their manpower was depleted by the war effort, responded. At the end of that conflict, thousands of young men came home to find jobs in the conservation agencies, and the nation turned once again to the development of a conservation program. This time, however, it was a program dominated by two new trends that would affect it for half a century: the rise of technology and the tenacity of agricultural surpluses.

The changes came fast and furious. As the big machines developed for fighting a war were turned to civilian usage, land that was formerly too densely wooded or too rough to farm was cleared and put into production. Wet areas were drained, rough land was leveled, channels were straightened, streams were dammed, brush patches eliminated. Farm fields got bigger and more uniform as the machines got better. Instead of "using each acre in accordance with its capability and treating it according to its needs," which had been Bennett's credo, American agriculture now was hell-bent to "farm every acre that would produce a profit."

On the forestry front, fire became less of a threat as parachutists, air tankers, helicopters and big bulldozers replaced men with shovels and mule trains. With more incentive to risk the long-term

investment, large companies bought up thousands of acres of forest land, much of it cutover and worthless, and began to plant and manage forests for the long term.

One forest firefight that refused to die, however, was the battle over federal regulation. In a post-war study, the Forest Service found that the war effort had exhausted the nation's forests, which were being depleted at nearly 20 billion board feet per year. The reason, they concluded, was poor practices on private lands that could only be halted with federal regulation. The political alliance led by the American Forestry Association, the State Foresters and the forest products industry also recognized the problem, but called for more public aid to private forestry and regulations at the state, rather than federal, level. After the effort failed in Congress in 1949, feelings were bitter, and became a campaign issue for Dwight Eisenhower. In 1952, with Eisenhower's election, the federal effort to impose forest regulations was shelved, and the bitter feelings from the effort could begin to heal. (In an aside that may interest history buffs, Philip M. Glick, author of the original soil conservation district enabling legislation from his post in the USDA's Office of General Counsel, provided the author with his hand-annotated version of S. 1330, "The Forest Conservation Act of 1943," which he claimed to have drafted at the request of Forest Service Chief Ferdinand Silcox. This was, in all likelihood, the basis for the final thrust for federal regulation of private forest practices.)

Also, reaching accommodation were most of the battles surrounding the Soil Conservation Service. As time passed and people changed, the bitterness between many State Extension Services and SCS died down. Conservation districts were formed in almost every county in America, and the often-prickly relationship between the cost-sharing programs of Agricultural Stabilization and Conservation Service and the districts gradually improved. Competition was still strong, however, and reflected in such events as the 1956 passage of the Great Plains Conservation Act, where cost-sharing contracts were administered by SCS instead of ASCS, and the 1954 Small Watershed Program, to be administered by SCS in direct competition with the public works programs of the Corps of Engineers and the Bureau of Reclamation.

In retrospect, the period from 1930 to 1960 was one in which the nation's priorities were not seriously at issue. We would, it was agreed, overcome a Great Depression, win a war and develop natural resources. America was, one commentary noted, "unified behind a positive agenda that involved bulldozers and factories."[10] Where we were far from unified, however, was in how these things should be accomplished. In a reflection of FDR's approach to public management, the nation created many different approaches, agencies and programs to fight it out among themselves as to who was best suited for the tasks at hand. What emerged was a constant turf battle, derided by some as wasteful and inefficient, and applauded by others who saw virtue in a competition which, like the private sector, rewarded the most effective and penalized those that fell behind in the competition for good ideas and workable approaches.

**The Environmental Era: 1960-1985**

The next quarter-century, from 1960 through 1985, saw the interagency battles begin to subside, as agencies and programs found their "niche" and began to work together more comfortably. Turf battles still flared up, but less frequently. Now, instead of battling over how to achieve our common national goals, we increasingly discovered that we had no common goals. In agriculture, we couldn't make up our mind whether we were more intent on cutting production or promoting resource conservation. While conservationists strove to protect or restore the long-term productivity of the land, economists looked at

mounting farm surpluses and subsidy costs, and noted that the national policy made about as much sense as trying to drive by pushing on the accelerator and the brake simultaneously.[11]

When Rachel Carson's *Silent Spring* aroused public opinion about the environmental dangers in the new technologies being used to develop natural resources and enhance output, the national thrust to settle, develop and manipulate every acre was called into question. And the environmental questions only got more difficult. The straight-channel stream alterations of SCS drew a firestorm of criticism, as did the wetland draining that had previously enjoyed such strong support. Instead of applauding the direct (and usually private) benefits of development-oriented efforts assisted by public programs and dollars, Americans were increasingly critical of the indirect (and often public) costs incurred as a result.

In the forests, the depletion of private forests in the war effort spurred state laws designed to encourage proper harvesting and reforestation techniques. From seed-tree laws to strict reforestation standards, states increasingly strove to see that forests were managed sustainably, rather than mined of valuable timber and abandoned. The forest products industry, seeking a long-term supply of industrial wood for its factories, joined in encouraging good forest management through educational and technical assistance programs such as the American Tree Farm System. But those efforts were not enough to deflect criticism aimed at the clearcutting of public forests as those lands began to replace the timber supply which was regrowing, but not ready for harvest, on the private lands.

Concerns for adequate timber supplies and productive farmlands were being overshadowed by concerns over clean air and water, protection of endangered species, scenic vistas and safe food supplies. Technology and development were increasingly seen as the problem, not the solution, to dealing with our landscape. And it was not just in relation to natural resources that these public attitude shifts were being noted. It could be seen across most aspects of American life. As Strauss and Howe argue "Where we once unified behind a positive agenda that involved bulldozers and factories, we are now transformed into enervators who work to prevent the bulldozers and factories from hurting anybody or anything."[12]

The changing public values forced the conservation movement onto the defensive. Stung by the criticism that they were "anti-environmental," agencies and programs nonetheless found themselves opposing proposals for environmental action, not because of the goals sought, but because of the approaches being proposed. As the environmental political movement pressed for more federal regulation of private activity, the "pro" and "anti" forces on regulation found themselves once again at sword's point, but this time the public was more engaged and demanding. Opposing regulation increasingly sounded like opposition to good environmental practice, particularly when those charges were leveled as a political debating point.

On the farm front, regulation was still heavily opposed, and largely avoided. As the conservation program switched from a concern with retaining soil productivity through erosion reduction to attempts to reduce offsite environmental impacts through attention to water quality issues, the program approach was still one of education, assistance and incentives. Farmers were, it was argued, environmentalists at heart, needing only the information and capacity to provide the kind of land and water stewardship that the public increasingly expected.[13]

Forestry, on the other hand, carried no such cachet. Much of the private voice in the policy battles over forest issues was the voice of big industry, and many of the fights were about regulating the emissions from wood and paper factories. Forestry, in the public's view, was an industrial activity, not a private

farming operation, even though half of the nation's timber supply came from non-industrial private lands. As a result, policy makers at the state and federal level who were reluctant to impose regulations on farmers or suburban homeowners showed no such reluctance when it came to big business, which is where they viewed forestry.

The result can be seen in pesticide application bans or restrictions on forest management that are much stiffer in many places than those imposed on farmers, golf courses, or suburban yards, even though the application rates, runoff rates and pollution potential of the latter may be many times higher than are ever common in forest applications. Unprotected by either an agrarian myth or huge voting numbers, forest owners became easy targets for stiffer regulatory controls as the environmental movement matured and strengthened.[14]

**The New Environmental Era: 1985 - 2000**

The 1985 Farm Bill marked a turn in the soil and water conservation approach, as the agrarian myth began to crumble in the face of persistent evidence that America's farm practices were not achieving the kinds of environmental effects the public increasingly demanded. The widespread plow-out of marginal croplands spurred by high commodity prices and made feasible by the huge machinery and increasingly-large farm ownership structure of the 1970's resulted in Congressional action to preclude such lands from becoming eligible for future farm programs or crop subsidies. The destructive and expensive cycle of federal payments for putting erodible land into cultivation, paying to install conservation practices to try to protect it, paying again to retire it from production and return it to permanent cover, then continuing the cycle – and the payments – again after the retirement program ended, had finally worn out its welcome. The federal government, still unwilling to regulate such actions, was at least trying to keep from continually subsidizing it.

In a late move during the farm bill debate, the environmental community attached similar restrictions to the conversion of wetlands, and Congress made an across-the-board move to link conservation stewardship with farm payments to the conservation compliance program. Henceforth, farmers seeking federal subsidies would be asked to demonstrate a higher level of stewardship than they otherwise might. SCS, with considerable reluctance, was drawn out of its totally voluntary program into one where its field determinations meant real money – and sometimes, intense controversy – to the local cooperators in the conservation districts.

In small, tentative steps, the demands for land management that protected offsite, public interests were increasingly translated into stiffer requirements on farm practices. Iowa's soil and water conservation law, which allowed conservation districts to set soil loss limits, and neighbors to object if a landowner's actions harmed them, was in many ways closer to the forest practices acts in the western states than to the totally voluntary soil and water conservation programs of the past.

As the 20th century comes to a close, it seems that Americans have once again largely closed ranks around some major goals in regard to its landscape. We now generally agree that land should be managed in a sustainable manner; that it should not be destroyed by any generation. We believe farms and forests can be managed in ways that not only produce food and fiber, but which protect clean air and water, provide wildlife habitat, and support pleasant vistas and functional communities. We have pretty much decided that the conflict identified between economic viability and environmental sustainability was a false dichotomy – that we cannot long have one without the other – and that private and public values are, in the long run, pretty much the same thing. And we've generally agreed, much to some

people's consternation, that individuals won't always act in the public interest – even if they are yeoman farmers. Social goals are increasingly seen to require social controls.

A common language and some common concepts are emerging. Terms like "ecosystem management" and "ecosystem-based assistance" reflect a rapidly-expanding scientific consensus around the idea that we need to keep natural systems intact, and that areas such as wetlands once thought to be worthless may be part of larger cycles and processes that, if interrupted, can cause serious problems far away from the immediate site. We speak of "landscape-level impacts," and try to help people understand how the management of one plot of ground may, in fact, be important to an entire watershed or mountainside.

For the USDA soil and water programs, the era comes to an end with conservation compliance, sodbuster and swampbuster continuing to function, but perhaps losing most of their influence. As Congress increasingly turns farmers and their fate over to the private market, and eliminates the public subsidies that could be used as the lever to enforce conservation compliance, the effect of those programs will wane.

The result, it appears, is that we are once again at a point where the main question in conservation is not what we would like to achieve, but how we should go about it. The search for workable methods takes place, as it has in the past, in an era of great change in the way Americans own and manage land. The result is almost certain to change these programs dramatically.

Another change of massive proportions – the increasingly bipolar nature of land ownership in America – affects both farm and forest lands and their management in the late 20th century. While land ownership and use patterns may have more influence over the fate of these lands and the effectiveness of public conservation programs than any other single factor, it is not the result of, nor is it subject to, public conservation policy.

America's forests, for example, are now in the hands of almost 10 million owners, with almost 94 percent owning 100 acres or less. Recent surveys show that the fastest-growing segment is in the 10 acre to 100 acre sizes. It has been estimated that, given present trends, by 2010, a total of 150 million acres of America's timber lands –38 percent of its productive forest –will be held in ownerships smaller than 100 acres, averaging, in fact, around 17 acres per owner.[15] Landowner studies show convincingly that, as plot sizes get smaller, management attention wanes and the use of professional management advice declines.

Large ownerships, usually corporations, Indian tribes or institutions, have remained fairly stable, and are not expected to grow significantly in the future. What is being lost, rapidly, are the 100 acre to 500 acre ownerships that may have previously been a reasonably functional private forest management unit. The acreage in these plots is expected to decline by over 25 percent between 1978 and 2010, while the number of ownerships rises 10 percent. So, even within this category, more owners and less acres means that average size of ownership is rapidly declining.

Forestry is, therefore, entering the 21st century with less than 1 percent of the owners holding 43 percent of the forest land, while 95 percent of the owners hold 38 percent of the land in small plots. It is interesting to speculate on how ecosystem-wide consideration can be applied to a watershed full of 17 acre ownerships. And it is clear that one-on-one technical assistance programs, as well as many of the past cost-sharing programs, are increasingly inappropriate to the situation. The small landowners are too numerous, too inattentive to forest management, and too scattered for limited public programs to reach,

and the big owners either don't need or won't use them. The mid-sized ownerships, for which public assistance programs were designed, are disappearing.

In terms of private outreach programs, the most notable, long-lasting and successful has been the American Tree Farm System, which has been providing free forest planning assistance to its member "tree farmers" since 1941. Donated technical services from public and private foresters has involved thousands of professionals, and today the system counts around 70,000 members who have met its technical standards for sustainable forest management. But, to provide context, there are almost 150,000 additional forest landowners each year as land ownership fragmentation continues. Serving those owners with a Tree Farm-like program would take two complete new Tree Farm Systems each year!

On agricultural land, the bipolar structure is as evident, but somewhat more difficult to track. The increasing size and corporate nature of many aspects of farming are clearly shown in the available data, but the fragmentation into small ownerships is harder to illustrate. When a farm is divided into five-acre or 10-acre "ranchettes," the land is no longer classified as agriculture, nor are the owners any longer farmers. So, we can't identify trends in one-acre to five-acre grassland owners the way the data is collected for land in forest cover.

What we can tell, from the 1992 Census of Agriculture, is the trend toward larger and larger farm operations. Between 1982 and 1992, the number of fat cattle sold from operations smaller than 500 head declined by 30 percent to 40 percent, while the number sold from large operations increased 10 percent. In dairy, the number of milk cows in herds of 200 or less dropped 60 percent while the total in herds of 500 or larger rose 80 percent. By 1992, it was estimated that 82 percent of the nation's feeder cattle were held in operations holding 500 or more; 50 percent of the milking cows were in herds of 200 or larger; 80 percent of the swine were in operations that sold 200 or more per year; and 65 percent of the broilers came from operations that sold half a million or more birds per year.[16] As air and water pollution problems became increasingly traced to these highly-concentrated livestock operations, how effective is the argument that these are yeoman farmers, working in family operations and dedicated to being good stewards?

And what future is there for the historic USDA conservation approach through education, technical assistance and cost-sharing support?

**The Search for Sustainability - Conservation in the 21st Century**

If it is reasonable to suggest that, in spite of the often-raucous political fighting over conservation and environmental issues that still occurs, the United States is once again entering a period where there will be a reasonable social agreement on our conservation goals, it seems equally reasonable to suggest that we have a significant problem in agreeing on how to reach them. "Sustainability" in some context is likely to be the catch-word, as the public's demands revolve around the goal of keeping entire landscapes and watersheds healthy and functional.

But, as noted earlier, a landscape full of tiny land ownerships, whether in forest or not, is a complicated social challenge in which to achieve any kind of coordinated land management strategy. We may have the science to understand what needs to be done, but we clearly lack the social institutions needed to apply what is known. And many of the attempts to do so will likely fail on the political battleground of private landownership rights.

The vast majority of the land, in both agriculture and forestry, will be held by giant organizations, often corporations, which Americans do not trust to exercise good stewardship or to protect public values. As illustrated by the increasing trend toward state regulation of forest management practices, the public does not hesitate to impose regulations on these large corporate entities. And the trend is, if anything, continuing. Scarcely a year goes by without a new public initiative in California or a referendum in Maine, aimed at imposing rigid limits on how private owners can manage or harvest the timber they own.

As Maryland faces the challenge of regulating fertilizer and manure applications to address the water pollution problems in the Chesapeake Bay, the situation looks similar. Big companies will have more regulations imposed on them, and the little farmers caught up in the swirl, while they may be the most seriously impacted, will have the least effect on the political outcome.

On the rapidly-expanding margins of population centers, the increasingly-fragmented land ownership patterns will interfere significantly with both commercial agriculture and forestry, and much of the role of encouraging good conservation management will shift to local general government and its land use regulations. USDA's technical and financial assistance programs are overwhelmed by the sheer numbers of owners involved, and all indications point toward a worsening, not improving, situation in that regard.

One prospect lies in the creation of enhanced opportunity for private service providers. That is already a viable option in regard to forestry; it may become increasingly viable for soil and water conservation as well. As opposed to public programs, where the supply of assistance is set by political decisions in a highly competitive public policy setting, private supply can respond to increased demand and higher prices.

Where local erosion and sediment control legislation demands a plan prepared by a qualified professional before permits are allowed, a thriving private consultant business exists. Those demands aren't filled by NRCS technicians, whose numbers couldn't begin to respond to the need. How long before that situation begins to exist in some of the more rural areas, as they begin to be marked by an overwhelming proliferation of small owners whose actions are causing local or regional environmental problems?

Both the state forestry agencies and the NRCS face a similar challenge here. Both have been providing free technical assistance for decades. They have a loyal, but shrinking, audience of forest and farm owners who effectively utilize those programs – and who, in most cases, so fully utilize all the available service that the agencies have little, if any, capacity to reach out to new clientele.

Meanwhile, most of the people and land are shifting into the very small and very large ownerships that can't or don't use the public services. Seen in this light, the future for the publicly-funded technical assistance programs looks increasingly limited.

And there are patterns that indicate that this isn't necessarily as bad as many have painted it to be. In New Hampshire, for example, the public forestry program has never provided free technical assistance. It has been operated for almost 75 years as an educational program, run by the University of New Hampshire. The state forestry agency does fire management, state land management and program administration. Landowners who want to develop a conservation plan to qualify for a federal program are referred to private consultants. One result is that New Hampshire boasts a very high ratio of professional forest advisers to the amount of forest land, even though the state is not a large timber producing area at this time. Private consultants serve landowners whose main goal is wildlife habitat and

water quality protection, largely, many people feel, because landowners have not been trained to anticipate that such assistance should come free of charge.[17]

In 1965, President Lyndon Johnson proposed a "user fee" for technical assistance services.[18] He thought the technical services were so valuable that they should be paid for by the landowner. The proposal died in a firestorm of political opposition, but one wonders what might have emerged if it had been accepted. Would we have a "New Hampshire effect" in the technical assistance program today, after 30 years? Would we have more land care professionals, and a system that could respond to increased demand more flexibly? One wonders ...

What is clear is that while the political opponents could prevent a market-based structure for professional assistance, they have never been able to mount an equally effective campaign for the public budgets needed to sustain the existing system. Shrinking agency professional ranks coupled with rapidly-increasing numbers of small landowners, increasing concentration into huge production units, and growing public demand for more effective control of off-site environmental impacts simply does not add up. The situation is going one way, and the system is going another.

Both soil and water conservation and private land forestry need a new strategy for the 21st century. Increasingly, it looks like that will be a strategy that is not designed by conservation policy, or by landowners. Instead, it looks like tighter environmental regulations aimed at large producers and a more complex land use regulatory scheme aimed at small landholders. Getting either of these audiences to utilize professional technical assistance, to prepare and implement plans for their own operations that are reasonably consistent with the needs of the whole watershed or landscape in which they exist, and to follow reasonable rules of conduct, looks increasingly beyond the capacity of a voluntary system whose supply of assistance is set by political priorities rather than by consumer demand. In the 21st century, the consumer demand will be established by the community rules set down by general government, and the response to that demand will be by private businesses who can grow and shrink in response to the market. The challenge for conservation public programs and their supporters, in my view, is to figure out how to facilitate that coming transition and retain the role of public voice and quality control expertise that will be so seriously needed. Lyndon, where are you when we need you?

**Endnotes**

1. For a brief review of the forestry programs and their emergence, see Sampson, R. Neil and Lester A. DeCoster, *Public Programs for Private Forestry* (Washington: American Forests, 1997), pp. 1-21.

2. American Forestry Association (1905). *Proceedings of the American Forest Congress*. Washington: H.M. Suter Publishing Company.

3. Pinkett, Harold T. (1985). The Soil Conservation Service and Farm Woodland Management, 1938-1945, in Helms, Douglas and Susan L. Flader (eds.) *The History of Soil and Water Conservation*. Washington: The Agricultural History Society, pp. 178-187.

4. A brief overview of this history is contained in Chapter 1 of Sampson, R. Neil (1985) *For love of the Land*, League City, TX: National Association of Conservation Districts, pp. 1-25.

5. CCC statistics taken from Zimmerman, Eliot (1976), *A Historical Summary of State and Private Forestry in the U.S. Forest Service*, Washington: USDA Forest Service, State and Private Forestry, 119 pp.

6. These battles are reviewed briefly in Sampson, *For Love of the Land*, chapter 5, and discussed in Hardin, Charles M. (1952), *The Politics of Agriculture*, Glencoe, IL: The Free Press.

7. Zimmerman, p. 64.

8. Clepper, Henry (1971). *Professional Forestry in the United States*. Washington: Resources for the Future, Inc.

9. Morgan, Robert J. (1965), *Governing Soil Conservation: Thirty Years of the New Decentralization*. Baltimore: Johns Hopkins Press.

10. Strauss, William and Neil Howe (1997). *The Fourth Turning: An American Prophecy*. New York: Broadway Books. p. 215.

11. Held, R. Burnell and Marion Clawson. 1965. *Soil Conservation in Perspective*. Baltimore: Johns Hopkins Press, p. 74.

12. Strauss and Howe, p. 215.

13. Several excellent essays on the shifting cultural situation affecting farmers and environmental responsibility are found in Swanson, Louis E. and Frank B. Clearfield (eds.) (1994). *Agricultural Policy and the Environment: Iron Fist or Open Hand*. Ankeny, IA: Soil and Water Conservation Society. 206 pp.

14. Ellefson, Paul V., Anthony S. Cheng, and Robert J. Moulton (1995). *Regulation of Private Forestry Practices by State Governments* (Bulletin SB-605-1995). St. Paul, MN: Minnesota Agricultural Experiment Station, University of Minnesota. 225 pp.

15. Sampson and DeCoster, *Public Programs for Private Forestry*, p. 71.

16. U.S. Department of Commerce, Bureau of the Census (1995). *1992 Census of Agriculture, AC92-S-1.* Washington: USGPO. 204 pp.

17. Sampson and DeCoster, *Public Programs for Private Forestry*, p. 49.

18. Sampson, *For Love of the Land*, p. 158.

*Dr. A. Ann Sorensen*
Thank you Neil. We have one more speaker before the break. I would remind you that we will have all the speakers back up here before lunch to take questions. Our next speaker is Sandra Batie from Michigan State University talking about Green Payments.

# Green Payments as Foreshadowed by EQIP

*Dr. Sandra S. Batie,[1] Michigan State University*

***Abstract***

This paper addresses the potential of the Environmental Quality Incentives Program to become the first true green payment program, one which is not directly linked to farm income goals as all conservation programs have been in the past, even in contrast to the Conservation Reserve Program and the now obsolete Agricultural Conservation Program. EQIP is thus discussed as a new generation of conservation programs which are General Agreement on Tariffs and Trade-legal (no payments to farmers which may influence trade) and more targeted to actual agro-environmental problems than the traditional conservation programs. In the next sections, the paper raises two important questions: First, to what extent should green payments substitute for traditional commodity payments, as they are being phased out? If taking water quality problems into account, EQIP does not reach the geographic areas of the highest commodity program payments, although substitution was never intended and has inherent problems. The paper then looks at EQIP as a green payment program, discussing to what extent EQIP reflects the desired characteristics of a GATT-legal green payment program. Three such characteristics are discussed as hurdles for a successful EQIP implementation: a program has to be targeted, tailored and transparent. Additionally, rent-seeking by various private interests, lack of science-based data, agency and farmer inertia and the complexity of the program are all challenges which must be faced. The study concludes with a discussion of the future of green payments.

---

[1]Sandra S. Batie is the Elton R. Smith Professor in Food and Agricultural Policy in the Department of Agricultural Economics at Michigan State University (batie@pilot.msu.edu). This paper was prepared for the American Farmland Trust Conference, July 23-24, 1998, Sycamore, Illinois. (Helpful review comments from Steve Davis, Otto Doering, Larry Libby and Mary Schulz are acknowledged with thanks.)

## Green Payments as Foreshadowed by EQIP

The Environmental Quality Incentives Program[2] is the most current of a long list of conservation programs stretching back to the 1930s. Under the auspices of the 1996 Farm Bill, EQIP replaced several older programs: The Agricultural Conservation Program, the Water Quality Incentives Program, the Great Plains Conservation Program and the Colorado River Basin Salinity Control Program. The ACP program had been the program that allocated USDA cost sharing funds at the county level for soil erosion control, water quality protection practices and forestry management. It was administered by the Agricultural Stabilization and Conservation Service, now referred to as the Farm Service Agency. The ACP has been criticized for its high costs, inflexibility and "top-down" nature, as well as for not being targeted to achieve environmental outcomes. EQIP was, at least in part, a response to these criticisms. It is designed to be cost-effective, locally-driven and targeted to agro-environmental problems.

In one sense, EQIP follows a long tradition. The Soil Conservation and Domestic Allotment Act of 1936 provided for payments to farmers for "soil building" and "soil conserving" practices and paid farmers to shift lands away from "soil-depleting" to "soil-conserving" crops (Batie, 1985). However, in another sense, EQIP is a new generation of conservation programs which are designed to be more flexible and better targeted to environmental issues; EQIP can even be thought of as a "pilot" green payments program. That is, EQIP is a green payments program designed to pay farmers to "produce" environmental outcomes.

**EQIP as a Traditional Program**

First, consider EQIP as a traditional conservation program. Conservation programs have always been designed to add to farmer income; indeed, the original 1936 act was a constitutional way to support farm income and provide supply control – because "soil-depleting" crops were defined to be those crops in surplus (Batie, 1985). The political objective of farm income support has been embedded within all conservation programs since 1936 (Batie and Kramer, 1985).

However, starting with the 1985 Farm Bill and its conservation programs of the Conservation Reserve Program, Swampbuster and Sodbuster, farm income support program objectives have increasingly, but begrudgingly, given ground to environmental protection objectives (Batie, Shabman, and Kramer, 1986; Kramer and Batie, 1985).[3] Not only were environmental programs added, traditional commodity

---

[2]EQIP has an authorized budget of $1.3 billion over the seven year period ending in 2002, with annual amounts of $200 million per year and the lead agency is the Natural Resources Conservation Service. EQIP provides technical, financial and educational assistance to farmers and ranchers to prevent and control nonpoint pollution; one-half of the funds are directed toward livestock production and the remainder to more general agricultural priorities.

[3]This period of immense transition in conservation programs – as they began the difficult swing to more environmental objectives – can actually be dated from the 1970s. Starting in the 1970s, information on agro-environmental problems became more readily available, thanks, in part, to the rise of environmentalism and USDA's response to environmentalist's demands. The National Resource Inventory is one example of a new information base that was so persuasive that it swayed policymakers to move in new directions. Of course, such use of this information required excellent policy entrepreneurs. (See Porter 1998 for a good review of much of this period.)

programs were remodeled to require "cross compliance," that is, farmers had to show evidence of "good conservation behavior" before having access to other program benefits (Kramer and Batie, 1985).

The Conservation Reserve Program is an example of the evolutionary changes that occurred. CRP has served the twin goals of farm income support and environmental protection since 1985, but has, over time, been fine-tuned to better meet environmental targets. Initially focused on soil erosion, it changed with the 1990 Farm Bill to give more consideration to water quality concerns. An Environmental Benefits Index was used to prioritize contract offers (Batie, Schulz and Schweikhardt, 1997). Most recently, farmers can add parts of fields into the Conservation Reserve Program as buffer or filter strips rather than whole fields, gaining more environmental protection for each CRP dollar spent (Batie, Schulz, and Schweikhardt, 1997).

It is not difficult, therefore, to perceive EQIP as the next step in the tradition of adding programs and program elements to better protect the environment. Indeed, EQIP, by not requiring land retirement to obtain program benefits, complements the CRP program which does require such retirement.

**EQIP as a New Generation Program**

There is another way to view EQIP – not as a traditional conservation program, but as a new generation program that reflects the needs of the new global economy. Thus, we find that, historically, farm income support goals have been tempered not only by environmental objectives but also by budgetary constraints, by loss of rural political power, and by the need to maintain global competitiveness. As Potter (1998) notes with reference to both the United States and European agricultural policy reform:

> The budgetary crises of the mid-1980s were absolutely critical in changing the dynamic of the debate about agricultural policy reform. Without this spark, it is unlikely that the greening of farm policy would have ignited when it did (though agri-environmental policies would have emerged eventually) (p. 128).

It is the policy objective of global competitiveness that promises to make EQIP standout as something other than the next step in a long tradition of conservation programs. In pursuit of global markets, the United States had pledged itself in trade agreements – particularly the General Agreement on Tariffs and Trade – to liberalize trade and to remove subsidies to farmers that are coupled to farm production. This liberalization trend was one of the motivations for the decoupling of the farm program payments from production that occurred in the 1996 Farm Bill. Participating farmers now receive farm income payments as direct payments, but these payments are not tied to the quantity of program crop they produce. Such direct payments are "GATT-legal."[4]

When direct payments are substituted for commodity program payments however, they are readily perceived as welfare payments – transferring money from taxpayers to farmers. Neither farmers nor taxpayers are overly fond of such direct payments, and one might expect increasing political pressures to justify why the farm sector should continue to receive public support (Potter, 1998). Paying farmers to

---

[4]Even coupled payments would be "GATT-legal" at this time because the United States has already reduced coupled payments below those required by the GATT. However, it is realistic to assume that there will be, in time, trade agreement pressures to reduce coupled payments to farmers to zero. If that occurred, countries wishing to subsidize farmers would need to use direct payments to be "GATT-legal."

produce desired environmental outcomes is far more politically palatable and defendable. As Potter (1998) noted with respect to agricultural policy reform:

> The effect, arguably, was to make national policy makers much more receptive to the dispositions of environmentalists... Far from challenging their traditional policy entitlements, arguments in favour of an expanded system of green payments offered the farm lobby a means of defence, provided agri-environmental reform could be presented as requiring a redirection rather than a net withdrawal of farm support (p. 128).

Furthermore, such subsidies – or green payments – to farmers to maintain environmental amenities or to reduce agro-environmental problems are also "GATT-legal."

Thus, EQIP, which is a decoupled payment for environmental protection, can be considered the first green program of any significant magnitude in the United States that is not a land retirement program.[5] Since EQIP can be viewed as our first serious green payment program, it is particularly worthy of careful analysis. At some future date, it may be that both U.S. environmentalists and producers will be searching for just such a well-designed green payment program. Presumably in a free trade world, producers will see an advantage to additional public payments – even if they are supporting environmental outcomes rather than commodity production. Environmentalists may turn to green payment programs as a politically acceptable method of achieving agro-environmental objectives.

Some questions that appear to be policy-relevant with respect to green payment programs are:

(1) To what extent could (or should) green payments substitute for traditional commodity payments?
(2) To what extent does EQIP reflect the characteristics of a well-designed GATT-legal green payment program?

**Green Payments vs. Commodity Payments**

The answer to the first question, "To what extent could (or should) green payments substitute for traditional commodity payments?" requires some assumptions as to objectives.

If the agro-environmental objectives of public policy are to improve those agro-environmental outcomes that are mostly related to water quality or which are closest to large populations, then there is a "disconnect" between green payment programs and traditional farm income support programs. In general, the geographic areas in the United States which have the greater agro-environmental problems as measured by a composite environmental index[6] which tends to emphasize water quality concerns, do not

---

[5]Many environmentalists appeared to recognize this significance of EQIP as the first green program when they so fiercely debated the size of the livestock operations that would be eligible for EQIP. Many did not want to set the precedent that green payments would go to the larger scale, industrial operations.

[6]The composite environmental index was comprised of 11 factors – potential soil productivity loss, sediment production, air quality, pesticide exposure, wildlife habitat improvement, nitrogen runoff, nitrate leaching, filter strips, pesticide leaching, flood-peak reduction and endangered species habitat (Heimlich, 1994).

correspond well to the historical distribution of government support payments (Lynch and Smith, 1994). Much of the historic farm program payments were concentrated in the Great Plains and the wheat growing areas of eastern Washington and Oregon. However, most of the agro-environmental problems as defined by the index, are concentrated in the water-rich eastern part of the United States.[7] Overlap between traditional commodity program payments is limited and is concentrated mostly on acreage near the Mississippi River (Lynch and Smith, 1994). A conclusion stands out from these comparisons: *Green Payment Programs, if targeted at water-related agro-environmental problems, will not substitute well for traditional income support payments.*[8]

On the other hand, if the agro-environmental objectives of concern are wind-blown dust and prairie land habitat, there is a better match between traditional and green payments. Wind-blown dust problems are found in the northern and southern plains; the same areas also have received high total farm program payments. Similar conclusions apply to the grassland bird habitat associated with the Great Plains and Mississippi Watershed (National Audubon Society, 1995).

Of course, there is little reason to assume that green program payments should replace income support payments, nor any reason to believe the public would demand such replacement. There is every reason, however, to believe that there will be political rent-seeking forces from affected farm interests to preserve previous income entitlements. Also, agencies can improve their political environment and assure their survival by spreading payments to many rather than target payments to a few (Skees, 1994). One way to restore income protection is to redistribute green payments toward the geographic patterns associated with traditional commodity program payments (Potter, 1998), but such a redistribution comes at the cost of reducing the cost-effectiveness of tax dollars spent for water-related environmental protection.

However, using green payments in lieu of traditional income support payments is difficult for at least three reasons. First, national level data is now available to identify when and where such a redistribution of green program payments would reduce overall environmental protection. If little environmental protection was the perceived outcome of a redistribution, environmental interest groups would predictably direct the general public's attention to this outcome. Indeed, if a significant redistribution of green payments to achieve income support goals occurs at the cost of neglecting important agro-environmental problems, the political acceptability of such subsidies will most likely evaporate, probably to be replaced with demands for regulation of farms to meet environmental goals.

Second, redirecting green payments to be income support payments appears to violate the GATT agreement which requires that green payments be part of clearly defined government environmental programs, have no or minimal trade distorting effects, and be limited to subsidizing the added cost or lost income from the practice adopted or technology shift accomplished (Potter, 1998). And, while the United States is currently in compliance with the GATT agreement, increased income support

---

[7]In addition to Lynch and Smith (1994), see the NRCS site maps of the location of various agro-environmental problems (based on 1992 Natural Resource Inventory data) at http://www.nhq.nrcs.usda.gov/land/index/intro.html.

[8]See Ervin 1997 and Batie 1997 for a discussion of how agro-environmental problems will not be resolved by agricultural policy reform by itself.

"disguised" as green support payments could, if large enough, result in exceeding the GATT guidelines for such support payments.

And, third, such redirection could put a strain on federal budgets, since targeting programs to carefully selected environmental problems should be more cost-effective and less expensive than broadly distributing payments in lieu of traditional income support payments.

Thus, assuming that the agro-environmental problems of most interest are those captured in an water-related environmental benefit index, the answer to the question of whether green payments could substitute for commodity program payments appears to be: "not well." Furthermore, this discussion suggests that as the fledgling EQIP program develops, we can expect to see it caught in a swirling set of political forces ... some pulling it to duplicate the old commodity program payment distributions, some to target certain agro-environmental problems, some to target other agro-environmental problems, some to target certain types or sizes of farms, some to spend money, and some to save money. Also, there is, and will continue to be, conflict as to who should be administering the program – Farm Service Agency, Natural Resources Conservation Service, extension or consultants.

**EQIP as a Green Payment Program**

EQIP, as currently designed, is not intended to replace traditional commodity program payments, but rather is an environmental protection program. Thus, the second question of "To what extent does EQIP reflect the desired characteristics of a 'GATT-legal' green program payment?" is appropriate. A recent Organization for Economic Co-operation and Development publication (OECD, 1997) listed three such characteristics: targeted, tailored and transparent. That is, as a green payment program having improved environmental outcomes as its ultimate goal, ideally one would want EQIP to be focused in a cost-effective way on achieving important agro-environmental outcomes (i.e., be targeted); to be designed to create effective positive incentives for landowners to take actions that will create these outcomes (i.e., be tailored); and to have accountability[9] (i.e., be transparent).

The EQIP legislation, as written by Congress, encompasses most of these objectives. The general goal of EQIP is to "reconcile productivity and profitability with protection and enhancement of the environment" (16 USCA 3830(2)(B)(ii)(West Supp. 1998)) and "to maximize the benefits per [program] dollar expended" (16 USCA 3830(c)(3)(B)(West Supp. 1998)). There are multiple ways to read such legislation, but one way, arguably the most accurate way – is certainly consistent with a well-designed, targeted, tailored, transparent green payment program.

Assuming that a well-designed green program was the legislative intent there is, nevertheless, a long road from legislative intent to successful implementation. The political forces to pursue objectives other than environmental improvement; rent-seeking by various private and agency interests; lack of science-based data; administrative problems of communication and coordination; lack of resources; agency and farmer inertia; and program complexity can all interact and result in inadequate incentives for EQIP to reach its purported goal. While EQIP is a young, emerging program, preliminary evidence suggests that numerous implementation hurdles remain.

---

[9]Accountability includes assuring that programs are transparent in their objectives and operation, evaluated as to their environmental outcomes, and monitored to assure compliance (OECD, 1997).

The analysis that follows examines these hurdles, mostly in the context of the Michigan EQIP program. It is my opinion that, in Michigan, most agency personnel in charge of implementing the program are seriously endeavoring to do an excellent job, faithful to the administrative intent of the law. Yet the hurdles associated with targeting, tailoring and achieving transparency are high. Should the United States design and implement larger and more comprehensive green payment programs, understanding the nature of these hurdles and Michigan's responses to them foreshadows potential future problems.

**Targeting – The Devil is in the Details**

The first criterion of a well-designed program is targeting. Here the issue is whether those farmers who receive EQIP funds are farming the land which is significantly contributing to priority agro-environmental problems. While the EQIP legislation laid out general principles, the rule making for EQIP implementation added the details that are crucial in determining the actual impact of EQIP. Implementation details, such as the allocation formula, the short time for implementation, pressures to spend the funds, agency inertia and interagency coordination, all have made targeting difficult.

*The Allocation Formula.* While the general legislation allocated funds for the program, the rule-making process developed the allocation formula that determined how much each state would receive in EQIP funds. It was also a means to deliver the message that EQIP was different than ACP.

The development of the allocation formula however, was constrained by the requirement that half of EQIP funds must go to livestock concerns, that no less than 65 percent of the funds in any state could be allocated to priority areas, that tribal areas would have higher priority and that limits were set on the dollars per participant. Such constraints are typical of those imposed by Congress interested in spreading benefits more evenly across congressional districts (Wu and Boggess, 1998).

The formula was designed around an environmental benefit index oriented to water quality problems, so that states with significant water quality agro-environmental problems would get the larger share of the funds. However, strictly following the formula would have meant massive redistribution of funds away from those states with historically high ACP payments toward those states that had historically received much smaller funding amounts. Thus, the allocation application was altered so that states would not be overwhelmed by large non-incremental changes from historic funding and agency staffing levels. The reason behind this rule-making may have been fear of inadequate institutional capacity at the state and local level (Doering, 1998). Large (small) influxes of funds into states with small (large) programs and agency staff might be problematic. Another possible reason may have been political, that is, massive redistributions of funds may have been politically unacceptable.

Once the formula allocations were altered so as to make the program less of a radical change from previous programs, future allocations of a more radical nature were compromised, due to the existence of new multi-year contractual obligations. That is, during EQIP's first year, many multi-year contracts were signed, creating a continued obligation for funds into states regardless of their re-ranking on the allocation formula in future years.

*Speed of Implementation.* Also, in the first year, the speed of implementation was, from the states' point of view, quite challenging. EQIP was law on April 4, 1996, but the implementation rules were not available to the states until May 22, 1997, due to numerous design delays and disagreements between USDA and the Office of Management and Budget. Yet EQIP started in fiscal year 1996. States had little time to understand the program, to personalize the program to their state, to gain final acceptance from headquarters, and to implement the program.

In most states, there was also no time to have a truly locally-driven process, at least in the first year (FY 1997). The implementation rules contain a process whereby local conservation districts convene local work groups to propose Conservation Priority Areas. For the first year in Michigan, CPA's were largely identified and designed from the state NRCS staff level since the late publication of the rules did not allow sufficient time for local conservation districts to take the necessary action. In addition, there was inadequate time to let farmers know of the program and encourage their participation – a task made even more difficult by the complexity of the program.

Also, there were challenges associated with changing agency roles and identities. In particular, NRCS became the lead agency usurping the role previously held by FSA. The change of roles lead to some frictions that were confounded by the requirement that FSA was responsible for disbursing the funds. The need for concurrence of FSA to spend money, in many cases, slowed the process and increased tensions. In addition, new agency roles and identities led to some confusion for the farm community as to which agency was truly in charge.

*Pressure to Spend Funds.* There was significant pressure to be certain that the EQIP funds were spent, since EQIP is a multi-year program and failure to spend funds can be interpreted as reason to reduce future years' funding. Also, any EQIP funds in any year not allocated by September 30th are no longer available.

This pressure to allocate all the funds available is typical of all agencies with grant-giving responsibilities. As Pressman and Wildavsky (1973) note in general:

> Whether it has a lot to give or just a little, the granting organization must get rid of what it has. It is a mover of money. Its task is to remove a certain amount of money from its coffers in the time period allotted. ... An important internal goal for any organization is the rationalization of its work schedule. It must secure for itself a stable flow of business so that it can allocate its time and resources (p. 137).

As Libby (1998) has noted, these pressures and constraints assure that the objective of obtaining the "maximum benefits per program dollar spent" will be compromised.

*Agency Inertia.* The difficulties of timing and funding constraints provided an additional motivation for states – particularly those already so inclined – to make the new EQIP look like the old ACP. Limiting change meant limiting the transaction costs as well as political fallout from non-incremental changes. Although the NRCS headquarters refused to accept state programs that were "business-as-usual," the inertia in the program implementation was none-the-less quite real. It is a yet-to-be-resolved empirical question as to whether the distribution of historical ACP payments are significantly different from the new EQIP payments, but the political and pragmatic pressures remain for broadly defining EQIP eligibility.

**Targeting – It's Not Easy to be Green**

Additional targeting difficulties stemmed from the complexity of the program design, the locally-driven process and information gaps.

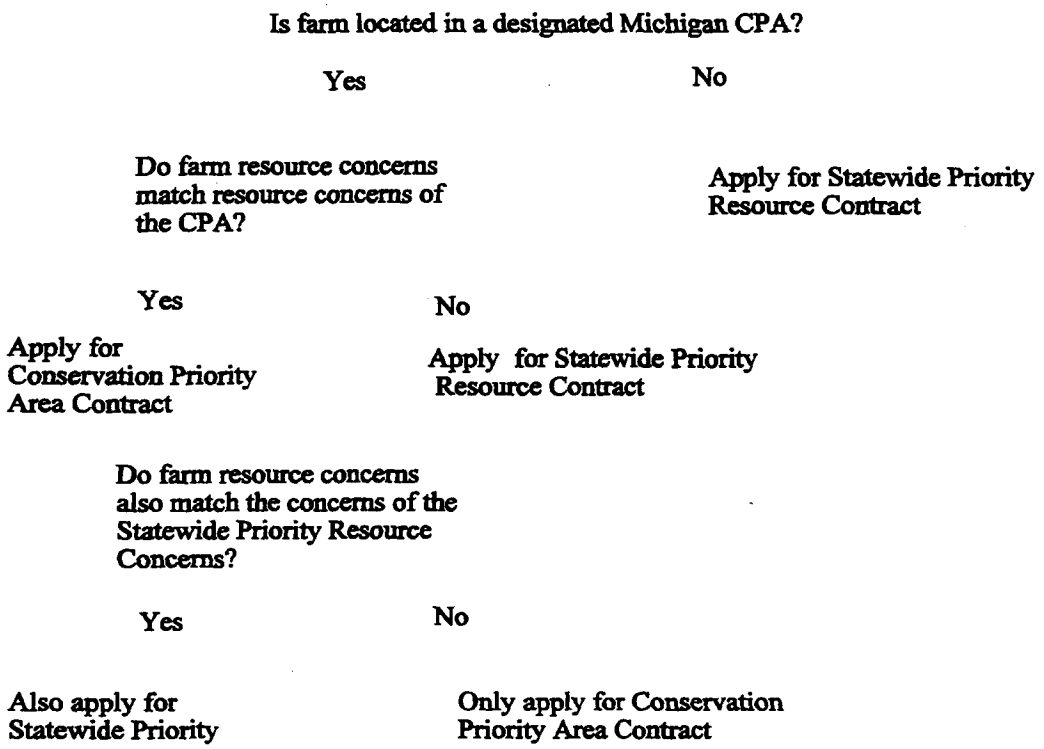
*Program Complexity.* There are also targeting difficulties posed by the complexity of the EQIP program (Batie, Schulz and Schweikhardt, 1998). In Michigan, for example, implementation of EQIP is guided, in large part, by the State Technical Committee which reviews proposals for identifying and funding

priority areas addressing environmental problems, and it makes recommendations to the NRCS State Conservationist as to which proposals should be approved. Several criteria are used to select the priority areas: the significance of the agro-environmental problems, expected producer participation, estimated program cost, and whether other financial and technical assistance is available. If a proposal is selected, a Conservation Priority Area is created. Currently, Michigan has 14 of these CPA's.

However, farmers who have significant problems, but are not in the priority areas are also eligible for funds. Funds are available for Statewide Priority Resource Concerns. Michigan currently has six priority resource concerns listed – such as riparian corridor management systems, groundwater resource protection systems or animal production management systems. In Michigan, in 1997, 25 percent of the 206 EQIP contracts and 30 percent of the EQIP funds were in SPRC (Batie, Schulz and Schweikhardt, 1998).

The complexity of determining eligibility for EQIP from a farmer viewpoint is reflected in Figure 1, where a farmer must determine whether he or she is in a CPA or eligible for SPRC funds, or ineligible. In a water abundant state like Michigan, EQIP contracts in CPAs and in SPRCs are probably assisting farmers to pursue worthwhile environmental goals. However, the dual targeting of both regions and problems, underlain with imperfect local data on environmental problems, would appear to leave few Michigan farmers ineligible for EQIP funds.

**Figure 1**



The program's complexity also posed hurdles for state program design. For example, in Michigan, the required offer index (bidding competition) was omitted. The State Technical Committee and NRCS in Michigan were concerned that the proposed competitive bidding by farmers – essentially indicating what the farmer would pay above the minimum required to protect the environment – would lead to bidding competition with contracts being awarded to more wealthy farmers at the expense of poorer ones. The Michigan State Technical Committee and NRCS saw no obvious way of addressing these issues, and ultimately omitted the offer index from the Michigan program. The Michigan program was approved by NRCS headquarters without the offer index.

*Locally-driven Process.* In Michigan, as with many states, the local conservation districts play a crucial role in the successful functioning of EQIP, because EQIP is based on locally determined conservation needs. Local conservation districts have the responsibility to establish local work groups to determine the most significant natural resource needs of the community. The local work group then quantifies the natural resource needs and obtains funding to resolve the environmental problems. One source of funding is the identification of a Conservation Priority Area eligible for EQIP funds.

There are targeting difficulties built-in to this locally-driven process where local work groups convened by local conservation districts[10] determine top priority environmental needs (generally county-based). While the State Technical Committee is a filter to assure a state-level priority perspective is adhered to, they still must respond to the proposals of local work groups. There is little guarantee that responding to local priorities will translate into the targets that would have been identified by a broader state-level or regional-level identification process.

Too often local conservation districts lack the institutional capacity and resources to get the job done. Indeed, in many situations, they may not even "buy into" the vision of EQIP as a green payment program. In Michigan, the local districts are directed by an unpaid elected board who can easily view EQIP as an "unfunded mandate," rather than an opportunity to achieve local conservation and environmental goals.

Also, in Michigan, the CPA's are re-examined yearly. In Michigan in 1997 and 1998, the same CPAs were selected but three new ones were added in 1998. While the transaction costs of yearly adjustments may be high, yearly adjustments can allow for fine-tuning the program to achieve more environmental improvement. However, adding CPAs or changing boundaries also translates into more farmers having access to EQIP funds and multi-year contracts, and brings into question whether the EQIP program is adequately targeted to true priority agro-environmental problems.

*Information Gaps.* Because the science that links farming practices with environmental outcomes is fragmentary and incomplete, targeting is not based on actual environmental monitoring and improvements. Rather, farmers are paid for certain management and conservation practices such as vegetative barriers, grade stabilization structures, conservation cropping rotations, pest management and the like that are designed to minimize delivery of identified pollutants and that are assumed therefore to

---

[10]Conservation districts are the most obvious way from the standpoint of "capacity" to get a "locally-led" process (it was also the method intended by the legislation.) Michigan, unlike states such as Maryland or Virginia, has only farmers on its boards. These farmer-comprised boards will most likely reflect a prioritization of problems based on producer perceptions more than, say, those of recreationalists or other water users. But right now conservation districts appear to be the only existing locally-driven institutions for program implementation.

relate to environmental outcomes. It will take much more research to determine if this type of targeting is effective at maximizing the economic returns to pollution reduction.

Also, because of information gaps, it is difficult to assure that the funds only go to practices that "would not otherwise be initiated without government assistance as required by GATT." Still, many would argue that EQIP is "greener" than a program based on the bushels produced of an agricultural commodity or the previous ACP program. Whether one thinks EQIP is a targeted green payment program may depend on what alternative program is used for comparison.

**Tailoring – Pushing on a Kite**

The second criterion of interest in a green payment program is "tailoring." Here the issue is whether the technical assistance advice and choice of practices funded by EQIP is tailored to the farmers' needs to assure the desired environmental outcome. The Farm Service Agency determines which farmers are eligible to apply for EQIP funds, but the NRCS is responsible for approval of all conservation plans, including those prepared by non-NRCS conservation consultants. In Michigan, applications are ranked according to ranking criteria specific to environmental problems relative to other applications. Applications are reviewed, with the highest ranking selected and recommended for approval for an EQIP contract. The Farm Service Agency County Committee has the authority to give final approval for an EQIP contract. Unsuccessful applications are deferred and remain on the ranking register until they are approved, until their application is withdrawn, or until the available funds are depleted at the end of the fiscal year (Batie, Schulz and Schweikhardt, 1998).

One difference between EQIP's and ACP's application process is the new role of NRCS in ranking applications relative to their potential impact on environmental problems. However, like ACP, EQIP has few mechanisms and minimal budget to reach those farmers who should be adopting environmentally protecting practices if environmental goals are to be achieved. Rather, the NRCS and FSA primarily react to the farmers who identify themselves and apply for funds.

There is definitive research to suggest that the approach of taking applications from whoever walks in the agency door will miss many farmers whose farms are important contributors to local agro-environmental problems (Batie, 1994). Farmers may not know that EQIP exists, they may believe themselves ineligible, they may believe they do not have an agro-environmental problem associated with their farm, they may wish to avoid the costs of meeting the eligibility criteria, they may not want to be judged by the local FSA County Committee, they may not believe the preventive actions embedded in EQIP are worth the funds, or they may not participate for many other reasons (OTA, 1990).

While EQIP education assistance funds were used to inform a broad range of farmers about the program, EQIP is not well-designed nor funded to adequately address the need for active outreach to priority farmers. EQIP did not fully fund overhead for technical assistance, forcing the NRCS to do "more with less." Some states' NRCS may be able to steal from other budgets and adequately handle the applications that are approved, or get more assistance from the extension service, but a more proactive stance is probably asking more than most NRCS offices can deliver by themselves.

Even the existing procedure does not suggest much selectivity. Monthly selections of the top of the ranking register of applications raises the possibility that if an applicant waits long enough, his or her application will be selected. From an agency point of view, however, it makes sense to keep selecting applicants on the basis of the best first until all the money is allocated.

**Tailoring – Whose Job is This Anyway?**
EQIP has the potential to meet new environmental objectives, in part because it encouraged new roles and new partners. But change can be met with inertia and dissipate energies. FSA administered ACP, but now the administration of EQIP is headquartered with the NRCS - a reallocation of responsibilities that was quite contentious. And, for some, the new roles are difficult. One NRCS official, for example, referred with discomfort to the new NRCS role of administering the ranking criteria and managing land eligibility: "We are a state technical assistance agency, not a lottery."

It is also a challenge for an agency such as NRCS with its long history of conserving soil and protecting the environment throughout the nation to implement, evaluate and enforce a targeted environmental program such as EQIP. It is even more challenging to do so in a time of downsizing and limited resources. EQIP is not the only program for which NRCS and FSA are responsible. They must allocate their time and staff across many competing obligations.

There are also relatively new partnership roles with EQIP – such as the addition of environmental NGO (Non-Governmental Organization) representatives to the State Technical Committee. New roles and new partners mean higher transaction costs and more need for coordination. But telling agencies and NGO's to cooperate does not provide them a road map with how to get the job done. And many of these partners – FSA, NRCS, extension and environmental NGO's – have a long history of conflict, at least at the federal level, making coordination both difficult and problematic. It may well be that building coordination of this nature into EQIP could just as easily translate into the building of antagonistic administrative relationships. The truth of this statement will no doubt differ in different states and localities, but is a real possibility none-the-less.

While new roles and partnerships are both laudable and necessary, EQIP provides little guidance or resources to lower the transaction costs, to improve institutional capacities, or to defuse past animosities. If these constraints are large, fine-tuned tailoring is problematic at best.

**Transparency – Which Direction is Forward?**
The final of the three criterion – of targeted, tailored and transparent – for a well-designed green program payment is most difficult. How does one evaluate and hold accountable a program such as EQIP? Ideally, the measure should be improved environmental outcomes, but, with rare exception, there is little or no baseline data nor monitoring from which to begin an evaluation. The science that links farming practices to water and air quality outcomes is fragmentary. Often long time lags occur between the changes on the farm and environmental improvements. Or environmental improvements are swamped by increased pollution from non-farm sources. In most states, there are no performance standards to act as quantified environmental quality objectives.

So, given the above, should EQIP's success be measured by the numbers of farmers who have successful applications, the smooth functioning of the EQIP process, the number and types of practices applied, the number of Conservation Priority Areas, the number of acres receiving EQIP funds, the number of dollars allocated, the number of farmers who are aware of the program, state EQIP budget growth overtime, or some other criteria? Perhaps the measure of success should be based on correlations of the distribution of EQIP funds with the traditional distribution of ACP funds or with known environmental problems?

Until such time that performance standards and monitoring become more commonplace, true accountability of the program in the broadest sense will be elusive.

**Actual vs. Ideal – An Unfair Comparison**

EQIP is far short of perfect marks on the green program criteria of targeting, tailoring and transparency. This statement is true even in a state such as Michigan where considerable effort has been put forth in good faith by agency personnel to get the program "on the ground" and to make a difference. But as I warn my classes, it is unfair to compare actual programs with ideal criteria. In a fair comparison, an analyst should only compare actual (ideal) program functioning with other actual (ideal) alternatives. We should not be surprised, given what we know about political economy and the history of agricultural, conservation and environmental programs that a new concept program such as EQIP has some flaws. Nor should we be surprised that EQIP implementation is somewhat divorced from policy intentions. Indeed, as Pressman and Wildavsky conclude:

> Our normal expectation should be that new programs will fail to get off the ground and that, at best, they will take considerable time to get started. The cards in this world are stacked against things happening as so much effort is required to make them move. The remarkable thing is that new programs work at all (p. 109).

EQIP has "good intentions" to be a green payment program embedded in policy, but, to-date, the implementation process appears to have left a gap between promise and program performance. The reasons are, however, predictable and understandable. And, the program is still very young and evolving. Many participants are just beginning to understand EQIP's intent as part of a larger context. It may be way to early to judge its success. To quote Pressman and Wildavsky again:

> If we thought from the beginning that they [the programs] were unlikely to be successful, their failure to achieve state goals or to work at all would not cry out for any special explanation. If we believed that intense conflicts of interests were involved, if people who had to cooperate were expected to be at loggerheads, if necessary resources were far beyond those available, we might wonder rather more why the programs were attempted instead of expressing amazement at their shortcomings (p. 87).

**The Future of Green Program Payments**

Still, the future of green program payments appears to be quite important. If nations continue toward more trade liberalization, green program payments may be one of only a few politically acceptable, politically stable, "GATT-legal" forms of government support for agriculture (Potter, p. 162). When this farm bill ends in 2002, there will be considerable debate on the next steps. Environmentalists and conservationists should be prepared with good arguments to obtain a share of those funds "to reconcile farming profitability with enhancement of the environment."

Furthermore, and significantly, the demand for improved agro-environmental performance appears to be accelerating. It may well be that unless such improvement is forthcoming, regulations will be imposed on agriculture to meet new environmental standards. Green payments could be used to mute those demands by achieving improvements voluntarily, or to offset the costs of meeting new regulations.

However, the gap between the promise of a green payment program such as EQIP and the performance of the program will need to close for these events to occur. If EQIP, despite good intentions, fails to improve environmental outcomes, then it can neither mute demands for regulation nor offset regulatory costs. EQIP needs to be further refined to be better targeted, tailored and transparent if it is to meet its potential as a green payment program.

Furthermore, the program is presently quite modestly funded at $200 million per year as compared to historic income support payments of $7 billion to $12 billion per year. If it is truly to make an impact on either farm income or environmental goals, EQIP must also be better funded. Until such time that better funding and improved implementation is a reality EQIP can, in reality, be considered only a fledgling "pilot program" of a possible new generation of environmental programs.

## References


Batie, Sandra S. 1985 (April). "Soil Conservation in the 1980s: A Historical Perspective." *Agricultural History* 59(2): 107-123.

Batie, Sandra S. 1994 (December). "Designing a Successful Voluntary Green Support Program: What Do We Know?" pp. 74-94. In Sarah Lynch (ed.). *Designing Green Support Programs*, Policy Studies Program Report #4. Greenbelt, MD: Henry A. Wallace Institute.

Batie, Sandra S. 1997. "Environmental Benefits of Agriculture: Non-European OECD Countries," pp. 81-102. In *Environmental Benefits from Agriculture: Issues and Policies*. The Helsinki Seminar. Paris, France: OECD.

Batie, Sandra S., Leonard A. Shabman, and Randall A. Kramer. 1986. "U.S. Agricultural and Natural Resource Policy," pp. 132-138. In C. Ford Runge, ed., *The Future of the North American Granary: Politics, Economics and Resource Constraints in American Agriculture*. Ames, IA: Iowa State University Press.

Batie, Sandra S., Mary A. Schulz, and David B. Schweikhardt. 1997 (March). "A Continuation of Environmental Conservation Policy: The Conservation Reserve Program." Staff Paper 97-16. East Lansing, Michigan: Department of Agricultural Economics, Michigan State University.

Batie, Sandra S., Mary A. Schulz, and David B. Schweikhardt. 1998. "The Environmental Quality Incentives Program: Locally Managing Resources." Staff Paper 98-03. East Lansing, Michigan: Department of Agricultural Economics, Michigan State University.

Doering, Otto C. 1998. "Balancing Productivity and Environmental Benefits in the Environment Quality Incentive Program (EQIP)." Organized Symposium Presentation at the American Agricultural Economics Association Meeting, Salt Lake City, Utah.

Ervin, David E. 1997. *Agriculture, Trade, and the Environment*. OCDE/GD(97). Paris: Organization for Economic Cooperation and Development.

Food Security Act of 1985. 16 USCA 3830(2)(B)(ii)(West Supp. 1998).

Food Security Act of 1985. 16 USCA 3830(c)(3)(B)(West Supp. 1998).

Heimlich, Ralph. 1994 (December). "Targeting Green Support Payments: The Geographic Interface Between Agriculture and the Environment," pp. 11-54. In Sarah Lynch (ed.). *Designing Green Support Programs*, Policy Studies Program Report #4. Greenbelt, MD: Henry A. Wallace Institute.

Kramer, Randall A. and Sandra S. Batie. 1985 (April). "Cross-compliance Concepts in Agricultural Programs: The New Deal to the Present." *Agricultural History* 59(2): 307-319.

Libby, Lawrence W. 1998 (December). "Implementing Good Intentions: How Rules and Procedures May Alter Resource Policy Outcomes" pp. 136-149. In *Increasing Understanding of Public Problems and Policies, 1997.* Oak Brook: Illinois: Farm Foundation.

Lynch, Sarah and Katherine R. Smith. 1994. "Lean-Mean and Green...Designing Farm Support Programs in a New Era." Policy Studies Report #3. Greenbelt, MD: Henry A. Wallace Institute.

National Audubon Society. (Feb.) 1995. "Investing in Wildlife: Multiple Benefits for Agriculture and the American People." Washington, D.C.: National Audubon Society.

Organization for Economic Cooperation and Development (OECD). 1997. *Environmental Benefits from Agriculture: Issues and Policies.* The Helsinki Seminar. Paris, France, OECD.

Potter, Clive. 1998. *Against the Grain: Agri-environmental Reform in the United States and the European Union.* New York: CAB International.

Pressman, Jeffrey L. and Aaron B. Wildavsky. 1973. *Implementation.* Berkeley, CA: University of California Press.

Skees, Jerry. 1994 (December). "Implementation Issues for Alternative Green Support Programs" pp. 95-109. In Sarah Lynch (ed.). *Designing Green Support Programs,* Policy Studies Program Report #4. Greenbelt, MD: Henry A. Wallace Institute.

U.S. Congress. Office of Technology Assessment. 1990 (November). *Beneath the Bottom Line: Agricultural Approaches to Reduce Agrichemical Contamination of Groundwater.* OTA-F-418. Washington, D.C.: U.S. Government Printing Office.

Wu, June Jie and William Boggess. 1998. "The Optimal Allocation of Conservation Funds." Corvallis, Oregon: Department of Agricultural and Resource Economics, Oregon State University. (Draft).

*Dr. A. Ann Sorensen*
Thank you Sandra. We have two more speakers who are going to talk about public-private partnerships and we will start off with Dr. Dave Ervin from the Wallace Institute.

# Visions of Agricultural Conservation Policy Beyond 2002: Implications for Partnerships[1]

*Dr. David E. Ervin, Henry A. Wallace Institute for Alternative Agriculture*

***Abstract***

This paper identifies the requirements for "smart" conservation partnerships – alliances that are necessary and foster cost-effective, durable solutions to key problems. The basic structure and operation of partnerships are discussed, with special attention to the central role of transaction costs in forming and maintaining such alliances. The second section reviews the agricultural conservation policy setting and constructs a concept of policy beyond 2002 based on emerging trends and necessary actions to fill policy gaps. In the third section, the policy implications for building effective public-private conservation partnerships to realize that vision are drawn. A checklist of attributes for "smart" partnerships is offered as a conclusion.

---

[1]Paper prepared for a workshop "Agricultural and Conservation Policies: 2002 and Beyond" in honor of Norman A. Berg, sponsored by American Farmland Trust, Center for Agriculture in the Environment, July 24, 1998, Sycamore, Illinois. I am grateful for helpful review comments and suggestions about conservation partnerships from Sandra Batie, Max Schnepf and Jeff Zinn.

## Visions of Agricultural Conservation Policy Beyond 2002: Implications for Partnerships

The recent agricultural appropriations decision by Congress to keep conservation funding essentially level and zero out some potentially innovative programs sent a powerful message. Despite credible science documenting many serious problems, and despite forceful attempts by advocates and agencies to boost funding, other political and budget priorities prevailed. The dominant role of the federal government in agricultural conservation appears to be waning. This turn of events could reverse by 2002, but the trend easily could deepen when our buoyant economy finally subsides, and budget expenses for health care and social security rise.

What will agricultural conservation initiatives look like if federal support is diminished? It does not take rocket science to predict larger roles for state and local government and for the private sector. However, education, crime control and a host of other issues likely will keep non-federal governments from simply replacing the federal funding. And, the bold shift toward markets in agriculture places intense scrutiny on private funding for conservation. In such a conservative fiscal climate, there will be a premium on doing conservation "smarter," rather than throwing more money at it. Partnerships increasingly are touted as one of those smarter ways.

It is most fitting to discuss conservation partnerships at a session honoring Norm Berg. He has nurtured many during his distinguished career while leading the Soil Conservation Service, representing the Soil and Water Conservation Society and in his local Maryland conservation roles. Of course, the partnerships between government agencies and the conservation districts begun in the 1930s have been the backbone of agricultural conservation during this century. I expect Norm will agree that next century's conservation partnerships will be quite different from those in the past for the reasons outlined above.

My main task is to identify the requirements for "smart" conservation partnerships - alliances that are necessary and foster cost-effective, durable solutions to key problems. To that end, the paper first explains the basic structure and operation of partnerships, with special attention to the pivotal role of transaction costs in forming and sustaining such alliances. The second section reviews the agricultural conservation policy setting, and constructs a vision of policy beyond 2002 based on emergent trends and necessary actions to fill policy gaps. Third, the policy implications for building effective public-private conservation partnerships to realize that vision are drawn. A checklist of attributes for "smart" partnerships is offered at the close. Note that conservation and environmental protection are folded under the single label of conservation here for ease of exposition.

### Partnership Basics

Consider the dictionary definition of partnership - *a relationship of individuals or groups marked by mutual cooperation and responsibility*. Note that mutual modifies "cooperation" and "responsibility." Thus, creating a new partnership may yield net benefits, but likely will cause costs for each party as well. Part of the costs of new conservation responsibility may be compliance expenses, although the partnership may lower those costs over the long-term, for example by public-private research and development ventures. Added cooperation imposes the other expense, transaction costs.

A careful weighing of all potential benefits against the expected compliance and transaction costs will encourage socially beneficial alliances, but will not ensure them. Several real world complications stymie such outcomes. In short, the partnership concept can be misused, and even abused. This criticism applies to all sectors - government, private for profit and nonprofit. Pledges to form ill-conceived alliances may occur when groups are unsure of a way forward on tough issues, the "let's get together and talk about it" process strategy. Lots of process does not guarantee the desired outcomes. I have personal experience with this problem. For two years, I tried to make a partnership work between public agencies in President Bush's Water Quality Initiative. The cost of seemingly endless meetings to build a coordinated approach among different agency cultures proved excessive, and ultimately foiled significant progress. It's also possible that groups may propose partnerships to gain the perceived benefits of cooperation without anticipating the high transaction costs. In essence, imperfect information and uncertainty impede mutually productive alliances. Stiglitz (1998) recounts instances of this impediment from his service as chair of the President's Council of Economic Advisors. In other cases, groups pledge to partner as a way to redirect the agenda or stall action that may impose net costs on their members. Stiglitz characterizes this as a form of noncompetitive behavior, in which too few or too large players affect the terms of the partnership inappropriately. This is noncompetitive behavior.

Despite these cautions, I believe that public-private partnerships for agricultural conservation will rise in number and effect. Indeed, they must if we are to make progress on nettlesome problems that have resisted voluntary-payment efforts, and not resort to inflexible one-size-fits-all regulations. The Western Governors Association just issued an eight point program to reform environmental policy and number two is to build collaborative approaches (State Environmental Monitor). Several examples suggest that the process of building partnerships is underway, such as the National Environmental Dialogue on Pork Production comprised of officials from USDA and EPA, heads of regulatory agencies from five states, and five pork producers convened by Americas Clean Water Foundation; the alliance between the World Wildlife Fund and Wisconsin potato growers to foster integrated pest management; and a host of public-private watershed-based initiatives. Unfortunately, there has been little independent evaluation of the performance of these alliances, a topic to which I will return later. In all of these cases, it is essential to remember, conservation partnerships are merely a means to an end, not an end in themselves. They may be necessary but cannot be sufficient.

Transaction costs - the costs of information collection, negotiation, monitoring and enforcement - play a pivotal role in explaining why partnerships develop and persist, develop and fail, or do not develop at all. Some economists leave monitoring and enforcement expenses out of transaction costs. I retain them here because of their crucial role in operating partnerships. Ronald Coase made the concept of transaction costs famous in a 1960 essay. In that article, he posited that transaction costs accounted for the persistence of monopoly, public goods and externalities. State regulation may be a transaction cost minimizing solution to those problems, but not always. Coase's insights about the fundamental role that transaction costs played in everyday life and the implications for structuring institutions to ameliorate externality and public good problems central to conservation have been widely misunderstood by many economists and social commentators (Ervin and Fox, 1998).

Economic analyses have often ignored or given short shrift to transaction costs in their preoccupation with finding the optimal levels of inputs or production. Perhaps transaction costs were considered as an overhead cost of doing business. This interpretation, however, ignores that transaction costs are variable, not fixed, and can be lowered or raised depending upon management decisions. The world of business, government and private not-for-profit organizations is awash in transaction costs. They consume

resources, such as staff time that could have been devoted to other uses. They are genuine costs of doing business, running a government agency or operating a non-profit organization. And, they are critical to forming and operating a partnership. The recent realization of the key role of transaction costs in operating modern complex institutions, has led to the renaissance for the concept under the label of the "new institutional economics." Public and private groups in agriculture have held conferences on the concept of partnering that recognized the key role of information discovery for bargaining, negotiation, and monitoring and enforcement strategies (CFARE, 1998).

The rediscovery of transaction costs is timely for analyzing conservation partnerships. Just the recognition of their role permits us to draw inferences about the conditions under which partnerships may form and why they may succeed or fail. For example, we can predict that larger potential benefits must exist for individual parties in partnerships that require the participation of diverse groups as opposed to alliances of small, close-knit groups because the transaction costs rise with group diversity. We also can predict that groups may strategically plan to delay partnership negotiations if by raising the transaction costs they avoid an agreement that is not in their long-run interests. And, we can expect that more partnerships will be formed and sustained to the extent that transaction costs can be lowered. Recall that creating a partnership requires new cooperation *and* added responsibility, both of which will raise transaction costs. The counterbalance to these costs must be perceived benefits, including avoided compliance costs, as was the principal motivation for industry groups in the national environmental dialogue on pork production. Framed this way, the economic problem in forming a partnership is to attain the highest net benefits rather than minimize transaction costs as Coase envisioned.

It's possible that many potential partners focus on the benefits of cooperation more than costs of cooperation and responsibility. There may be several desirable characteristics for conservation partnerships, such as open access and potential involvement of all affected parties, and transparency of operation and performance to ensure effective monitoring when public good values are involved. But we cannot forget that each added condition could also defeat a potential partnership. Perhaps this is why some of the most effective, sustained partnerships appear to occur at the watershed level where the objectives are clear and participation is relatively less diverse than for regional or national issues.

**Agricultural Conservation Policy Setting**

Consider the major emergent forces that will shape agricultural conservation policy beyond 2002, and hence define the opportunities for partnerships. Several factors are at work to alter the dominant traditional approach of federal agencies offering farmers education, technical advice and financial assistance on a voluntary basis.

Continued pressure on government budgets tops the list. Although we currently enjoy a federal budget surplus, the pressure to control budget expense will not abate. Indeed, it will likely grow as the costs of assuring adequate health care and social security coverage come into focus after 2002. As noted at the outset, agricultural conservation has not fared well of late in competition with other budget objectives. The most recent congressional appropriations decisions to allocate new funding for disaster and insurance programs suggest that agriculture's political interests are still centered on assisting producers to cope with adverse market and climatic shocks. Moreover, if the public mood to downsize the federal government continues, the competition for remaining federal funds will intensify.

If a tighter federal fiscal picture confronts a rising public demand for conservation services from agriculture in the 21st century, something has to give. Surveys generally show that a dominant majority

of the public have robust preferences for improved conservation from agriculture (e.g., USDA NRCS, 1995). This is a natural consequence of rising incomes which boost the demand for conservation services, including countryside recreationists and non-farm residents. The rising income, recreation and rural migration trends show no signs of reversing.

An improved scientific base to understand the scope and severity of environmental effects from agriculture has likely contributed to the increased public demand for conservation. Several recent assessments of agro-environmental processes and problems have enriched our understanding of the issues - the National Research Council report *Soil and Water Quality: An Agenda for Agriculture* (NRC, 1993), the USDA's *A Geography of Hope* (USDA-NRCS, 1996) , the 1994 and 1997 Economic Research Service reports *Agricultural Resources and Environmental Indicators* (USDA-ERS, 1994 and 1997), and the Office of Technology Assessment reports *Agriculture, Trade and the Environment* and *Targeting Environmental Priorities in Agriculture* (OTA, 1995a and 1995c). These exercises have made clear that agricultural conservation problems are serious and prevalent in all regions, albeit uneven in character and severity. They tend to concentrate where production or land conversion pressure is intense and natural resources are vulnerable to damage. Water quality, wildlife and amenity uses of farmland, and biodiversity are the most important priorities at present, but carbon sequestration via land use and tillage could surpass each if progress on the Kyoto protocol accelerates (see Appendix A, page 75 ).

A diminished federal role, robust public demand for agro-environmental quality, and improved science to detect problems will encourage a shift of responsibility for conservation programs to state and local governments and the private sector. Early signs of this shift are evident. Ribaudo (1997) reports that 30 states now have some type of enforceable measure to control water pollution from agriculture, a significant jump over the last decade. Actions to regulate animal wastes are the most notable. The number of business-led initiatives to enhance agricultural conservation also appear to be rising (Batie and Ervin, 1998). Both compliance-push forces to preempt tighter controls and demand-pull incentives from green markets are coaxing more effort from many farms and agribusinesses.

If government budget pressure and public demand for conservation do indeed collide, and the trend to state/local government and private responsibility continues, a search for "smarter" approaches will accelerate (Ervin, 1998). Smarter in this context refers to initiatives that give maximum flexibility to farmers and ranchers to invent low-cost, systemic solutions which achieve more long-lasting conservation per dollar spent. Partnerships often are advanced as one of those smarter approaches.

**A Vision of Conservation Policy Beyond 2002**

The evolving policy setting suggests a series of actions to improve the efficacy and cost-effectiveness of agro-environmental policy (Ervin, 1997; Ervin, 1998; Ervin et al., 1996). Five steps drawn from that body of work can help identify needed public-private partnerships. The steps build on recent improvements in science, work with trends toward greater private sector responsibility for environmental protection, and more state and local government initiative. Following the steps not only will benefit the environment, but will ease the uncertainty and cost for the industry, and lighten the load on taxpayers. Why, you ask, would we not already be traveling such a win-win-win path? Because political and bureaucratic inertia do not yield easily to what may be in the long-term interests of the majority of constituents. Yet, there are signs around the country that we have already embarked on this journey.

*Set Clear, Measurable Conservation Objectives and Performance Standards*
The single most important step is to set objectives and performance standards. Without the guidance from clear objectives and the incentives provided by enforceable standards, conservation partnerships will be ephemeral, waxing and waning with cycles of climatic stress, prices and government budgets. Despite over 60 years of agricultural conservation programs, few objectives and performance standards apply. This inattention to specific targets stands in stark contrast to other industries. Standards for air, land and water quality have been applied to firms in non-agricultural sectors, with few exceptions. Controlling the levels of sulfur dioxide and nitrous oxide concentrations to meet human health criteria in urban air sheds are prime examples.

Conservation objectives and standards are nearly absent in agriculture. Instead, mostly voluntary programs of education, technical advice and financial assistance have been used to entice farmers to adopt technology-based practices or retire vulnerable lands. Partnerships may be used to promote such initiatives, but they will prosper mostly on ample budgets. Current examples include the enrollment of buffer strips in the Conservation Reserve Program and the implementation of the Environmental Quality Incentive Program. The objectives guiding these programs are couched largely in terms of the use of certain management technologies or in achieving a given level of land retirement, not achieving ambient environmental conditions. Some direct controls exist, such as restrictions on certain pesticide use and the drainage or filling of wetlands drainage, but they largely preclude certain practices rather than aim to achieve specific environmental objectives.

Adroit political power and weak science on source-damage relationships have sustained an "input-based" approach, despite very different environmental programs in other sectors. Both of these factors are weakening. As farms grow in size and character to resemble other industries and farm numbers tumble downward, the political will to treat agriculture differently weakens. The science and technology necessary to identify the causes and effects of water, air and land pollution from such a large number of diverse farm production systems has improved. Much progress has been made of late with the development of geographic information systems and improved source-pollution-damage linkages. Major assessments have concluded that information exists to improve the precision of problem identification and better target damage reduction or benefit enhancement as the case may be (NRC; OTA, 1995b; USDA, ERS, 1994 and 1997). We know enough to do a better job of targeting resources to important problems than we do in our current programs.

Of course, there are political impediments to setting objectives/standards and targeting which usually implies shifting program resources. Nonetheless, the trend seems clearly in that direction. Numerous states have established controls on waste management for large animal operations. Others have set ambient performance standards, such as Nebraska's groundwater nitrate criteria that trigger controls, and Oregon's total maximum daily loads of nutrients in water quality limited streams. Congress enacted legislation that required maximum environmental benefits per dollar spent, a form of targeting for CRP and EQIP resources. The political inertia appears to be shifting slowly.

*Grant Flexibility to Producers and Build Skills for Managing Integrated Systems*
Farmers and ranchers justifiably fear that setting performance standards could easily translate into high expense for their operations. However, such actions need not equate with top-down controls that dictate specific farm practices. There may be circumstances where extreme public health risks require very tight controls, but in most cases there are good technical and economic reasons to avoid "command and control" approaches. In the more usual circumstances, producers will meet the performance standards best with "flexible incentives" to design and adopt practices that meet the requirements of their

individual production systems (Batie and Ervin, 1997). Flexible incentives refer to environmental management tools that specify "what" targets are to be achieved, but allow choices as to the "how." The gains from flexible approaches include adaptation and innovation for specific farms and resources that lower long-term compliance costs. The gains, however, come at some cost - higher administration and enforcement expenses.

Without clear, measurable objectives, it becomes virtually impossible to implement a system of flexible incentives. After evaluating several major programs in the United States and Europe, Davies and Mazurek conclude that the success of voluntary (flexible), incentive-based approaches relies on just such objectives. The authors stress that there is no easy way around the need for legislation to improve environmental policy. The legislation can ensure that objectives are established through an open process that includes the views of all key stakeholders. This requirement has obvious implications for partnerships to be explored below. Hence, the virtual absence of conservation objectives and performance standards in agriculture has profound implications for the design of flexible, farmer-led environmental initiatives

If more responsibility (and discretion) for achieving conservation is shifted to farmers and ranchers, the value of management that helps meet the standards will rise. More proficient managers will find the lower cost or higher profit ways of attaining the standards. Case stories of operators who simultaneously have achieved improved environmental and economic performances for their businesses affirm the need for high management proficiency (Batie and Ervin, 1998). However, the characteristics of agricultural managers that build successful production and marketing systems have received relatively little analysis compared to other business sectors. This neglect may stem partly from government agricultural programs that have constrained market opportunities, instead encouraging producers to "farm the programs." With the scheduled phase down of those programs by the 1996 Federal Agricultural Improvement and Reform act and the rise in health, safety and environmental issues on the farm, attention to management skills should grow.

A strength of relying more on producer ingenuity to invent conservation solutions is that they can balance or tradeoff costs and benefits within their full operation. This is often referred to as managing an integrated agricultural system. No amount of detail in the Field Office Technical Guide substitutes for this inherent skill and incentive that only the operator possesses about their natural resources and the farm operation. Perhaps one reason why we have seen so little private innovation in solving persistent agro-environmental problems may be too much reliance on the FOTG. The restrictions imposed by previous commodity programs no doubt played a role as well. Early EQIP implementation discussions stressed more flexible approaches, but evidence is not at hand to assess if that promise is being fulfilled (Batie, 1998).

***Create a Balanced Portfolio of Significant Incentives***

Diversifying incentives to fit particular farm/resource conditions and guard against budget swings seems a sensible strategy for conservation programs, but has proven difficult. The vast majority of incentives for agricultural conservation programs have come from the federal government in the form of voluntary technical assistance and payment programs. Two realities could easily alter their dominance. First, the public prefers a smaller federal government. Second, pressure to cut federal and state government budgets for "discretionary" environmental programs will likely build as health care and other "entitlement" spending requirements grow.

Continued reliance on federal payments for conservation is risky for agriculture and the environment. A broader set of incentives could guard against excessive costs for agriculture and the environment. A review of flexible incentives shows a wide range of instruments, with no obvious silver bullet approach (Batie and Ervin, 1997). Some options include reduced transaction costs (e.g., one-stop permitting for all environmental requirements), regulatory penalties if minimum acceptable performance is not achieved, taxes on offending inputs or environmental pollution, rewards for trading "pollution rights" if farmers accumulate unused rights, and market returns for food and fiber products that deliver environmental benefits as well (green markets). Note that the act of defining minimum performance standards, enforced with some form of sanction, automatically expands the traditional set. Local/state tax relief schemes also qualify but will be subject to the same stresses seemingly affecting all government budgets. Any of the options can stimulate participation if the incentives are "tangible and significant."

Some state experiments are underway to reduce farmers' transaction costs in dealing with multiple, often conflicting agro-environmental programs, and thus accomplish more conservation per dollar expended (Higgins, 1998). Idaho has just begun a program to coordinate all environmental requirements for farms and ranches into "One Plan." This effort appears to qualify as a public-private partnership, as does the Oregon effort to achieve water quality TMDLs. Oregon farmers in the water quality limited areas will use comprehensive farm plans that cover all applicable environmental requirements. If successfully implemented, the plans will protect the producers from civil penalties. The threat of regulation, if water quality targets are not met within a certain period, provides an incentive that when coupled with lower transaction costs could generate sufficient participation to meet the targets. The program is too young to determine if the incentives will suffice to achieve ambient water quality objectives.

Incentives via environmental regulation of farming by state and local governments appear to be rising. For example, several states have recently adopted regulations for livestock waste problems. The movement to regulation reflects a shift in the property rights to use the environmental resources affected by farm operations. The pattern is not developed well enough to discern the ultimate strength and scope of shift. Much attention is focused on controlling the odor and water pollution discharges from large confined animal facilities. Such identifiable environmental threats may pose sufficient risk in the public's mind to warrant more direct controls than the damages from diffuse, nonpoint problems. Still, increased regulations appear to be on a slow track for agriculture and the need to consider broader market-based incentives remains.

Stimulating as much private environmental initiative as possible through market incentives appears consistent with public sentiment to shrink government. The first step in this direction was taken in 1996 by decoupling commodity programs and linking farmers' decisions to market prices, referred to as "deregulation." The deregulated market prices are still incomplete because of missing environmental costs and benefits of farming practices. Thus, reform of commodity programs is a necessary but insufficient step in harnessing the power of markets for conservation. Although FAIR continued to rely most on voluntary-payment programs, the rules for the CRP and EQIP involve quasi-market tests. Congress directed USDA to achieve the highest environmental benefits per dollar spent in both programs. EQIP is not mature enough to judge how well it will meet this test (Batie, 1998).

Can other market mechanisms improve farmer flexibility, lower cost and improve environmental performance? An approach popular in air pollution control is trading schemes for pollution rights (Sohngen, 1998). By first capping total pollution for a region, assigning "pollution rights" (levels) for each firm, and then allowing trading of those rights, the schemes obtain many benefits that markets

afford, such as decentralized information processing and internal cost-saving reallocations. In agriculture, some early efforts have been made at nutrient trading (e.g., Fox River of Wisconsin and Tar-Pamlico Sound in the mid-Atlantic region). Experience at stimulating trades has not been promising in either case, apparently due to excessive transaction costs. The potential for net gains exists if the costs can be lowered.

Economists have also been fond of proposing charges on environmentally-damaging behavior (or payments to reward positive environmental behavior) that mimic the roles of prices in decentralized markets. Runge has advanced the concept of a "negative pollution tax" for agriculture to exploit the efficiencies of market incentives but retain the agricultural tradition of rewarding socially-desirable environmental behavior. The NPT system would use a two-level threshold to define acceptable and unacceptable levels of pollution behavior. Above the minimum permissible pollution limit (T-min), farmers pay a rising per unit tax on pollution. The tax gradually increases up to the maximum permissible level (T-max). This intolerable level would define the maximum acceptable limit of, say, nutrients or pesticides, above which fines and penalties are used to choke off discharges that are considered unacceptable at the farm, county or state level. This upper limit might be the point beyond which excessive environmental or health risk occurs. The tax proceeds would be used to reward those for achieving pollution levels below the lower T-min limit. Thus the collected fees become a refunded reward for environmental "affirmative action."

A final approach is business-led initiatives that stem from firms' efforts to trim input waste that causes pollution, and to capture product markets that reward environmental performance (Batie, 1997; Batie and Ervin, 1998). Firms perceive that meeting global competition will require ever tighter cost control, and pollution reflects input waste and excess cost. The search for pollution prevention can be stimulated by government setting pollution limits, as has been done for air and water point sources. Or, it can be driven by the "green product" phenomenon, in which a growing segment of consumers wish to purchase food and fiber that meet certain environmental criteria. Firm evidence about the extent of either trend is not at hand. Some case data are impressive. Trade reports show that the natural foods market has grown at approximately 20 percent per year during this decade. This growth has spurred even conventional food retailers to enter what was once seen as a niche market. It is uncertain how far this trend will travel and to what extent it will address significant agro-environmental problems. It meets the market test and minimizes government intervention. The only requirement by the public sector is to ensure the property rights that assure the environmental performance attached to food and fiber are well-defined, secure, transferable and enforced. Thus, government may play a role in ensuring consumers have accurate information to make decisions, much as it does for food safety, medicine and other products, and in enforcing any applicable standards.

***Stimulate Research and Technology Development***

An underappreciated strategy to reach conservation objectives is R&D policy. There are sound reasons to doubt that agricultural research has been sufficiently responsive to conservation (Ervin and Schmitz, 1996). Missing or incomplete markets for many environmental services and natural resources hamper the effectiveness of price incentives to stimulate public and private R&D. Government policy failures inhibit R&D as well. For example, financial payments under voluntary programs mostly reward adoption of existing technologies, an approach that does not stimulate the search for new technology. Without such signals, R&D responses may concentrate on remediation rather than pollution prevention or avoidance of excessive resource degradation.

Available information hints that the public agricultural research system may not have been fully responsive to conservation needs. The on-farm unit costs of food have declined over the last 30 years, while the value placed on improved agro-environmental quality has risen. The differential trends suggest that environmental R&D should have increased relative to food production R&D, all other things equal. It is not clear that such a shift has occurred. The percentage of public agricultural research in the "natural resource" program area has climbed modestly from 12 percent to 15 percent, while the proportion in the "production" category has held steady at about 60 percent (Fuglie, et al.).

Despite the imperfections in the R&D process, "complementary technologies" that simultaneously enhance environmental conditions and maintain farm profit are expanding (OTA, 1995a and 1995c). A partial listing includes conservation tillage, soil nutrient testing, integrated pest management, rotational grazing and organic production systems. Others just emerging with unknown potential include "precision farming" and biotechnologies (genetic engineering).

Most of these require farm- and site-specific management of natural resources. Hence, public-private partnerships in developing and spreading such technologies may be fruitful. An example is the Sustainable Agriculture Research and Education program which has had considerable success according to independent evaluations (OTA, 1995b).

Each emerging complementary technology will likely fall far short of its potential under current R&D and agro-environmental policies. Why? Because all serious conservation effects of agriculture have not been effectively internalized into private decisions, such as downstream water pollution from nutrients, and voluntary-payment programs do not trigger well-targeted public or private R&D. These omissions ultimately trace back to the absence of clear objectives and performance standards. Moreover, conservation programs usually subsidize existing technologies developed with incomplete prices, rather than pursue joint public-private on-farm research to develop innovative solutions.

***Devolve more Responsibility to State and Local Governments***

The proper division of responsibility, authority and resources among levels of government has held political center stage in the United States for the last decade. Questions about how best we can govern ourselves are as old as our recorded history. The "devolution debate" was cast originally in issues other than environmental policy. That changed in the early 1990s. Political groups increasingly intent upon shifting the balance of power away from national government argued that the rise in centrally managed environmental programs since the 1970s was costly and inefficient. The environmental policy devolution battle has been joined.

Because of the highly variegated nature of agro-environmental impacts, it is virtually impossible to devise policies in Washington, or even in state capitals, that can effectively influence farm-level behavior. However, given the magnitude of the environmental challenge, it is equally clear that the financial resources needed must come in large part from federal sources. Moreover, the transboundary nature of many of the issues, such as the Mississippi River system links to the Gulf of Mexico, suggests that some federal role will be necessary to ensure that regional and national problems are effectively attacked. It's clear that devolution in and of itself is not a panacea.

Federal funding commitments may go primarily to support state-led initiatives, which in turn devolve financial and technical support to local and farm-level decision makers. Although it's too early to tell the outcome, this is the philosophy that USDA is following to implement the FAIR environmental

provisions. In order to devolve such responsibility, clear accountability must exist "down the line" from federal to state and local authorities, and ultimately farmers themselves. But accountability need not imply lockstep regulation, and should promote flexible responses to local problems, such as individually designed whole farm planning schemes.

Some basic questions need to be answered about devolution to explore potential partnerships. First, what are we devolving - responsibility, authority, or resources, or some combination of all three? Posing this question raises the central issue of what government body will set the environmental objectives, and which government unit will be responsible for implementation and enforcement. Second, how do we measure "success?" Devolution means different things to different people. Some frame the issues around political process while others focus on environmental performance. A final cautionary question: who will step in to fix situations if and when state and local actions fail? These costs could be large if irreversible transboundary environmental processes are involved. Such complex situations remind us that all levels of government will play roles in future agro-environmental policy, and therefore may engage in public-private conservation partnerships.

**Public Policy Implications**

Implications for public policy flow directly from combining the insights gained from the analysis of partnerships with the vision of future agricultural conservation policy. Each implication requires an active public role, but also involves joint public-private participation.

***Establish Clear Conservation Objectives and Performance Standards***

Without clear objectives and performance standards, there are no benchmarks to guide the formation, conduct and evaluation of partnerships. A movement to ambient standards is desirable whenever the science permits. Examples include minimum acceptable pollution concentrations, as in Nebraska for groundwater nitrate, in Florida for phosphorus from dairy farms surrounding Lake Okechobee, and in Oregon for nutrient TMDLs in water quality limited rivers and streams This is a huge and costly task, having been neglected for so long, and no doubt will take some time to accomplish. Davies and Mazurek stress that all key stakeholders must have a voice in the process to ensure that the objectives and standards are viable. Hence, a partnership of stakeholders is necessary to ensure that the objectives and standards reflect all legitimate interests in the agricultural landscape.

***Set Significant Positive and Negative Incentives***

There must be sufficient incentives to offset the expected costs of forming and sustaining necessary partnerships to reach the conservation objectives. The incentives are the drivers to spur alliances that can eventually lower compliance costs. Under most current programs, positive incentives are used, but budget limitations likely will hinder their reach beyond 2002. Negative incentives (disincentives) are growing to deal with perceived "bad actors," such as large industrialized animal confinement operations that pose excessive risks for environmental quality.

***Grant Broad Producer Flexibility to Build Innovative Solutions***

If we are to achieve cost-effective and durable conservation solutions, then producers must be full partners in the search for solutions. Given the heterogeneity of farms, farmers and natural resources, top-down efforts will be less effective and more costly in virtually all cases. Oregon is using such a flexible approach in water quality limited areas. Farmers in those watersheds must implement a whole farm plan that is consistent with landscape performance standards for controlling nonpoint water pollution to avoid potential penalties (Wolf, 1997). However, they can design practices that suit their particular farm and resource conditions to be approved by a local board of public and private officials.

***Provide Credible Information to Foster Mutually Productive Alliances***
The public sector plays an essential role in providing public good information to facilitate market functioning, such as price and harvest data. This same rationale applies to the provision of the best science on the nature of conservation problems, their consequences and possible solutions. A good example of this role is the natural resource and environmental indicators information that the USDA's Economic Research Service publishes (USDA-ERS, 1997). In the absence of credible information, poor (i.e., net cost) alliances are more likely to occur.

***Ensure Fair and Balanced Bargaining***
Government is the acknowledged referee in ensuring market transactions are free from excessive influence by any participant. The Federal Trade Commission can find a company in "restraint of trade" if there is evidence of excessive power or collusion. Sanctions can then be applied including the divestiture of certain operations, and other penalties. Stiglitz' arguments about the distortionary effects of too few or too large players suggests that similar principles should be applied to public-private partnerships that influence social welfare. The form and home of the institution to carry out this role is uncertain.

***Facilitate and Mediate Process to Lower Transaction Costs***
A persuasive argument can be made that government, through its manpower and responsibility to represent all parties, may be able to lower the transaction costs of forming and operating conservation partnerships. This facilitative role is already being played by many federal, state and university employees in agricultural conservation. It is not clear however that it is being conducted in the most effective manner, for example with EQIP. More investment in training for the required skills to facilitate and mediate these delicate and controversial processes may deliver large benefits.

***Build Operator Skills for Managing Integrated Systems to Achieve Economic and Conservation Objectives Simultaneously***
This seems an obvious task for a public-private partnership. The extension system has declined in manpower over the last two decades, and is perceived to be less capable of educating about conservation issues in many areas. Recognizing the limits of extension resources, what is the potential of other education and technical assistance programs for conservation and environmental management, such as the Natural Resources Conservation Service? Their strength has arguably been in conservation technology and practices, and not economics. Private advisory firms increasingly provide joint production and environmental management services that augment the operator's capacity to achieve the dual objectives. These private firms may well enjoy a comparative advantage over their public counterparts in supplying the expertise necessary to discover complementary technologies and profitable green markets for unique farm situations.

***Stimulate Research and Technology Development Partnerships***
This is the era of public-private partnerships for R&D to solve many of society's most perplexing problems. Agricultural conservation appears to be an exception to that trend. To be fair, many joint public-private efforts are underway in federal government and at state universities. But for the reasons cited above, it is very likely that these efforts fall short of what may be necessary because of missing markets for conservation services and current technical and financial assistance programs that do not reward R&D innovations. A concerted effort to boost complementary agricultural production systems seems prudent (OTA, 1995a).

*Conduct Monitoring and Evaluation to Assess Progress in Meeting Public Goals*

Almost everyone agrees in concept that monitoring and evaluation of agricultural conservation programs should be performed by the public sector. But when push comes to shove, these tasks are seldom funded adequately. Congress has allocated few resources for such activities, primarily because evaluation has no natural constituency. The agencies understandably are reluctant to divert funding from program activities that generate support for future program funding. Without sound evaluations, there is little to assure that we are making the desired progress or have found an advantageous path. These sensible principles apply to public-private partnerships to judge which are doing well and which should be ended.

**A "Smart Partnership" Checklist**

Even though this paper has covered numerous complex subjects, I do not wish to leave the impression that the path to "smart" partnerships is complicated. Some common sense questions can be used to judge if your favorite agricultural conservation partnership is a smart exercise:

1. Does the best scientific information inform the problem definition?

2. Are there clear, measurable objectives with timelines?

3. Do performance standards exist to reward exemplary behavior and penalize bad actors?

4. Is there full and balanced participation by all parties affected by the problem?

5. Are sufficient incentives available to offset the added transaction and compliance costs?

6. Does the partnership take advantage of market mechanisms to achieve cost savings and stimulate R&D?

7. Does the agreement include a monitoring and evaluation mechanism?

If you answered "no" to one or more of these questions, you likely will spend more of your time and organization's resources than necessary and still not achieve durable conservation solutions.

## References


Bate, S. "Environmental Issues, Policy and the Food Industry," pp. 235-236. In L.P. Wallace and W.R. Schroder *Perspectives on Food Industry Government Linkages*. Boston: Kluwer Academic Publishers, 1997.

Batie, S. "Green Payments: The Future as Informed by EQIP?" paper given at the workshop "Agricultural and Conservation Policies: 2002 and Beyond," American Farmland Trust, Center for Agriculture and the Environment, Sycamore, Illinois, July 24, 1998.

Batie, S. and D. Ervin, "Flexible Incentives for Environmental Management in Agriculture: A Typology," paper presented at *Flexible Incentives for the Adoption of Environmental Technologies in Agriculture* conference, University of Florida, Gainesville, June 8-9, 1997.

Batie, S. and D. Ervin, "Will Business-led Environmental Initiatives Grow in Agriculture?" in *Business-led Initiatives in Environmental Management: The Next Generation of Policy?* , S. Batie, D. Ervin, and M. Schulz, ed's, Special Report 92, Department of Agricultural Economics, Michigan State University, 1998, pp.1-16.

Coase, R. "The Problem of Social Cost." *Journal of Law and Economics*, 3(October): 1-44, 1960.

Council on Food, Agricultural, and Resource Economics, *Partnerships in Agricultural Research and Education*, conference proceedings, Washington, D.C., May, 1998 (forthcoming).

Davies, T. and J. Mazurek. *Industry Incentives for Environmental Improvement: Evaluation of U.S. Federal Initiatives*. Wash., D.C.: Global Environmental Management Initiative, Sept., 1996.

Ervin, David E. "Agriculture and the Environment: Reading the Evidence and Rethinking Policy," *Choices*, 3rd quarter, 1997, p.1.

Ervin, D. "Shaping Smarter Environmental Policy for Farming," *Issues in Science and Technology*, Summer, 1998: 73-79.

Ervin, D. and G. Fox, "Environmental Policy Considerations in the Grain-Livestock Sub-Sectors in Canada, Mexico and the United States," in the conference proceedings of *Economic Harmonization in the Canadian/U.S./Mexican Grain-Livestock Subsector*, R. Knutson, et al., editors, Lake Louise, Alberta, April 23-24, 1998.

Ervin, D., C. F. Runge, E. Graffy, W. Anthony, S. Batie, P. Faeth, T. Penny, and T. Warman, "Agriculture and the Environment: A New Strategic Vision," *Environment*, July/August, 1998.

Ervin, D. and A. Schmitz. "A New Era of Environmental Management in Agriculture," *American Journal of Agricultural Economics* 78 (December): 198-207, 1996.

Fuglie, K., N. Ballenger, K. Day, C. Klotz, M. Ollinger, J. Reilly, U. Vasavada, and J. Yee. *Agricultural Research and Development: Public and Private Investments under Alternative Markets and Institutions*. Agricultural Economic Report No. 735, Economic Research Service, USDA, Washington, DC, May 1996.

Gilliom, R. *Pesticides in the Nation's Water Resources: Initial NAWQA Results*. Reston, VA: U.S. Geological Survey, 1997.

Higgins, E., *Whole Farm Planning: A Survey of North American Experiments*, Policy Studies Report No. 9, Greenbelt, Maryland: Henry A. Wallace Institute, 1998.

Mueller, D. and D. Helsel. *Nutrients in the Nation's Water: Too Much of a Good Thing?* Reston, VA: U.S. Geological Survey, Circular 1136, 1996.

National Research Council (NARC), Board on Agriculture. *Soil and Water Quality: An Agenda for Agriculture*. Washington, DC: National Academy Press (1993).

Office of Technology Assessment (OTA). *Agriculture, Trade, and Environment: Achieving Complementary Policies*. Congress of the United States. OTA-ENV-617,Washington, DC: U.S. Government Printing Office, May, 1995a.

Office of Technology Assessment (OTA), *Challenges for U.S. Agricultural Research Policy*, Congress of the United States. OTA-ENV-639, Washington, DC: U.S. Government Printing Office. September, 1995b.

Office of Technology Assessment (OTA). *Targeting Environmental Priorities in Agriculture: Reforming Program Strategies*. Congress of the United States. OTA-ENV-640 Washington, DC: U.S. Government Printing Office. September 1995c.

Ribaudo, M. "Managing Agricultural Non-Point Source Pollution: Are States Doing the Job?" in *Devolution of Environmental Policy*, Resource Policy Consortium proceedings, D. Southgate, J. Hammonds, and M. Livingston, editors, June, 1997.

Ribaudo, M. *Water Quality Benefits from the Conservation Reserve Program* ER-606. U.S. Dept. Agr. Econ. Res. Serv., Feb. 1997.

Runge, F. "Environmental Protection from Farm to Market," in M. Card and D. Espy, ed's. Thinking Ecologically: The Next Generation of Environmental Policy, New Haven: Yale University Press, 1997.

Sohngen, B. "Incentive Based Conservation Policy and the Changing Role of Government," paper given at the workshop "Agricultural and Conservation Policies: 2002 and Beyond," American Farmland Trust, Center for Agriculture and the Environment, Sycamore, Illinois, July 24, 1998.

Sorensen, A. and R. Greene and K. Russ, 1997. "Farming on the Edge," American Farmland Trust, Washington D.C. 75 pp.

State Environmental Monitor, "Principles for Environmental Management in the West," July 6, 1998: 3-5.

Stiglitz, Joseph. "The Private Use of Public Interests: Incentives and Institutions," *Journal of Economic Perspectives*, vol.12 (2), Spring, 1998: 3-22.

U.S. Department of Agriculture, Economic Research Service, *Agricultural Resources and Environmental Indicators. Agricultural Handbook 705*, (Washington, DC: U.S. Government Printing Office, December, 1994).

U.S. Department of Agriculture, Economic Research Service, *Agricultural Resources and Environmental Indicators. Agricultural Handbook 712*, (Washington, DC: U.S. Government Printing Office, July, 1997).

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS), "National Survey of Attitudes Toward Agricultural Resource Conservation." Unpublished report of public survey conducted by The Gallup Organization, February, 1995.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS), *America's Private Land: A Geography of Hope*, 1996.

Wolf, M., Oregon Department of Agriculture, Water Quality Division, Salem, Oregon, personal communication, May, 1997.

## Appendix A

## Priority Agricultural Conservation Issues after 2002

Several caveats apply to the following conservation issue discussions. This brief space cannot do justice to the complexity of each topic. Discussing general issue areas runs the risk of being inaccurate for any particular location due to the site-specific nature of agro-environmental problems. Each issue is described as if it stands separately, yet we know that they are linked ecologically and in the public's view of the total landscape. The enormous growth of the watershed concept is testament to the growing realization of interconnected ecosystems.

**Water Quality**

Water quality promises to be the signature agro-environmental issue for the first decade of the new millennium. There has been a gradual but unmistakable shift in agricultural conservation policy over the last two decades as water quality problems have overtaken concerns about conserving land productivity. The reduction of on-farm erosion is no longer *the* driving rationale. The shift may have been predictable as gross erosion has fallen by about a third since 1980 and scientific analyses have not revealed large productivity losses from erosion. The two issues are of course related but often treated separately in the policy process.

Highly visible water pollution episodes linked to farm practices, such as hypoxia in the Gulf of Mexico, have raised their profile among the general public. Visions of *Pfiesteria piscicida*, a toxic microbe, "killing estuarine fish populations and sickening swimmers and fishermen have put an ugly face on nutrient pollution that has stuck for the first time." No doubt, some advocacy groups have exaggerated public and environmental health concerns. And, potential polluters have been quick to shield themselves by pointing out the lack of firm evidence that links farm practices with degraded water quality. But the issues have a growing basis in science and resonate soundly with a citizenry who increasingly support aggressive action, especially when they perceive their or their children's health is threatened.

Water pollution from agriculture has numerous sources: water and wind-borne sediment; runoff, leaching or atmospheric deposition of synthetic and animal fertilizers, mostly nitrogen and phosphorus; pesticide runoff, leaching or drift; elevated temperatures from irrigation withdrawals or removal of streamside vegetation; leaching or runoff of irrigation salts, and; pathogens (e.g., fecal coliform) from animal manure. The importance of each source of pollution varies across the countryside, affected by natural resource conditions (e.g., slope, soil texture, rainfall and by farm and ranch practices).

Available monitoring data, albeit imperfect, suggest that agriculture holds the dubious distinction of being the largest source of remaining water quality impairments in the nation. Because of its expansive, diffuse and uncertain nature, reducing nonpoint source pollution from farms and ranches poses one of the major challenges in all of environmental policy. Despite numerous initiatives, we have made slow progress in resolving the problems. New efforts, such as the Environmental Quality Incentives Program are immature and not off to an impressive start (Batie, 1998). The policy trend is toward devolution and more direct controls, as a majority of states now have some enforceable measures to reduce water pollution from farming (Ribaudo, 1997). If agriculture is to avoid more stringent measures, partnerships between public and private groups may be key.

Assuming no dramatic changes occur, we can use the present conditions and trends as guides to identify critical agriculture water quality problems beyond 2002. The lack of science hurts here, in particular the few evaluations of economic and social impacts of different types of pollutants. Based on dated and skimpy science, the estimated annual damages from sediment of between $2 billion and $8 billion claim the most economic weight (Ribaudo,1989). The effects from sediment, however, are not perceived to carry human health implications, and have not been a driving influence in policy. Pollution from nutrients delivered by fertilizer and animal manure runoff and leaching has been documented in many areas by USGS (Mueller and Helsel, 1996), and commands most policy attention because of perceived health effects (e.g., *Pfiesteria* outbreaks). Potential pathogens may also be carried by animal wastes. Pesticide residues in surface and ground waters are equally widespread, but the concentrations are almost always well below EPA standards, when standards exist (Gilliom, 1997). Nonetheless, the public has shown a willingness to endorse precautionary approaches to reduce these residues, even though the human and ecological health benefits are uncertain. Irrigation salts also cause important environmental problems in specific regions, particularly the west, but do not command national policy attention.

**Wildlife and Agricultural Landscapes**

The fastest growing agricultural conservation value may be the provision of positive environmental services from farming and ranching systems. This of course was a central theme in *A Geography of Hope* (USDA-NRCS, 1996). Wildlife recreation is an example. As one indication, the Conservation Reserve Program has been estimated to deliver over its life approximately $9 billion of small game hunting, waterfowl hunting, nonconsumptive wildlife uses (e.g., birdwatching) and freshwater fishing benefits (USDA-ERS, 1997). This is the largest single benefit category for the CRP. The spread of population into the rural countryside in many areas and rising incomes mean that those values will continue to rise.

During my Office of Technology Assessment assignment from 1994-1995, the wildlife benefits of the CRP were uppermost in the minds of Congressional staff and representatives as the CRP faced expiration. My judgment is that the breadth of those perceived benefits to farm and non-farm groups played a key role in its renewal. Policy officials also relate that farmland protection enjoys surprisingly broad and strong support. Local and state governments, often in alliance with private agriculture and environmental organizations, are taking the lead in this area, following the devolution mold described above. Despite the apparently rising values of wildlife and farmland amenity in many areas, there is relatively little systematic evidence to document the size, spatial patterns of demand and dynamics of growth. For example, the ERS environmental indicators volumes gives relatively little depth to these topics, except as they relate to the CRP. The American Farmland Trust has identified 10 priority areas that pose the greatest potential social losses from farmland conversion based on economic and environmental criteria (American Farmland Trust, 1997).

**Biodiversity**

Biodiversity is treated separately from the previous recreation-based category to focus specific attention on the conservation of plant, animal and insect species for broad production-related purposes. Production in this sense covers more than food and fiber, including medicinal products and other general ecosystem support services. My perception is that the protection of endangered species, wetlands and plant germplasm will rise in importance during the next decade as will conflicts about how to pursue such conservation. This issue is intertwined with the introduction of genetically engineered plant and animal species.

For most of this century, we have taken for granted that agriculture depends on and contributes to biodiversity. The sheer size of agricultural lands dictates that farm and ranch practices will have significant effects on species diversity. Conflicts have already surfaced in the west on grazing lands and riparian areas that affect habitat for endangered fish species. The rising pressure of migration into the countryside for housing and recreation will exacerbate the conflicts as non-farm groups often value extensive land use and other practices that protect the diversity, but constrain production. I feel that one of the most demanding challenges facing agriculture in the 21st century will be the conservation of biodiversity while maintaining agricultural productivity growth. The contentious struggle for controlling the property rights on private agricultural lands makes this a key opportunity for public-private partnerships. For example, the Nature Conservancy has shifted its strategy for fostering biodiversity conservation from purchasing and idling critical farmlands to securing cooperative agreements that achieve biodiversity objectives but retain land in private ownership and production.

**Greenhouse Gas Control**

Slowly, as the post-Kyoto negotiations unfold, environmental, industry and government participants are appreciating the huge role that agriculture plays in the global carbon equation. Some estimates place the role as larger than all forms of energy production. Land use and tillage practices determine the amount of carbon stored in the soil or released to form carbon dioxide. Generally, reductions in tillage and extensive land use patterns sequester more carbon than intensive crop production with deep tillage, such as conventional or chisel plowing. More importantly, non-farm industries are recognizing that the costs of sequestering carbon in the soil by altering tillage or land use patterns are usually much smaller than altering their production or distribution processes. Hence, these non-farm firms can be expected to seek agreements (trades) with farmers to meet greenhouse gas reduction targets. A Canadian utility has already structured such an agreement, in effect purchasing tillage rights to the prairie farmlands. If the controls on greenhouse gases negotiated in the Kyoto treaty are ratified by signatory nations, this will spur more such agreements. The importance of this issue is that it holds the potential to bring revenue into agriculture for conservation, but not from the public treasury. In that respect, it works with rather than against the shift in responsibility for agricultural conservation toward the private sector.

*Dr. A. Ann Sorensen*

Thank you Dave. Our final speaker this morning is Tom Hoogheem and Tom will respond to Dave's comments regarding public private partnerships.

## Response

*Mr. Thomas Hoogheem, Monsanto Industries*

My name is Thomas Hoogheem and I am with Monsanto Industries. I'm the Environmental Operations Director for Monsanto, the ag sector. I've been with Monsanto for 22 years. I've been in the environmental area for almost 30 years now. I started at the first earth day. I helped organize the first earth day at the University of Illinois in 1970. I've done everything you can possibly do, I think, environmentally for a chemical company, although we're now known as a life sciences company. Some of you may remember Priority Pollutants. I wrote the protocol for Priority Pollutants in 1977, did most of the sampling, at least for Monsanto, covering our discharge pipes at manufacturing plants and a lot of river sampling. I think I was the first industry guy to have access to store-it data. Boy, we know the limitations of that data. Anyway, that goes back many, many, many years.

My company is no different than other companies. We've made some products over the years that I think, based on what we know now, we probably shouldn't have made. Before you pass judgment, I say just don't base past actions on present knowledge. There's not a person here who hasn't done something over their life, that they think back now, and say, "That was pretty stupid." Companies are no different. Let's just get that out. Two products that fit that criteria from my company are PCBs and dioxin from Agent Orange. I did all that sampling for Monsanto.

About 15 years ago I was asked to come over to the ag company and essentially get involved from a stewardship standpoint. My job, put very simply, has been for the last 15 years to do everything I possibly can to make sure my chemicals don't get where they're not supposed to in the environment; when they do, figure out why, and do everything I possibly can to make sure they don't get there – again. Sounds pretty simple. It's actually quite complicated. So in my job, I've done most of the monitoring for Monsanto, primarily from a ground water and surface water standpoint.

Many of you may know that we are now currently monitoring for a number of pre-emergent corn herbicides. I have 175 monitoring wells sitting in seven states in the Midwest that we're monitoring on a monthly basis. I have 175 watersheds, public surface water supplies, spread out over 12 states that we're monitoring on a regular basis. We're just now past the fourth spray season. We have one more year to go under our agreement with EPA. The knowledge we're learning is incredible.

I wish I could talk to some EQIP people. For instance, here in Illinois it is very clear to us that the most vulnerable watersheds are very, very small reservoirs. These are little rivers that have been dammed up, made into a reservoir, and used as a public water supply. We've got a number of them here in Central Illinois. They have the highest concentrations of herbicides we see, because this is a very huge agricultural area. You can just kind of envision this reservoir being taken down in the spring to collect the water because it doesn't rain in the summer, and it's just about the same time that we try to plant a regular corn crop in this particular watershed, and it rains three days later. You see why we have a problem. Not one of those water supplies is on the EQIP list in the State of Illinois. That is not right, and we need to fix that. But that's just a sideline.

Our industry is primarily regulated by FIFRA. What EPA has done is try to regulate pesticides from a product basis. In all the monitoring that I've done and in all the work I've done, it's very clear that the reason we have these problems is not the product, it's the practice. And yet we try to regulate on product.

I'll give you an example. I've got people in this country trying to take away some of the products I sell. They say, "Every time we go out and sample a river or stream, we find the same five herbicides." So we've got to get rid of those five herbicides. Now, if it's a practice issue, ladies and gentlemen, not a product issue, do you solve the problem by getting rid of those products? No. You move these five

away, move the next five up. You have to address the practice. So we've tried to regulate product, where the real issue is practice. I've been monitoring groundwater for over 20 years, and believe it or not, 95 percent of the wells I sample are not contaminated with pesticides. With the ones that are, it's very clear what it is, and it's not mysteriously leaching through the soil out of the farm field, contaminating somebody's well supply. In many cases it's the well supply of the same farmer that's using my products. There are simply a lot of poorly constructed wells in the rural environment.

The state of Iowa prides itself on having some of the best ground water regulations in the country. Do you know it is legal in Iowa to take a two-inch pipe, pound it into the ground eight feet and drink the water? It's called a sand-point well. That is ridiculous. Yet I don't see anybody willing to partner with anybody to go out and try to get a bunch of poorly constructed wells that we've got in the rural community corrected.

When you put a hole in the ground and take water out of the ground, unless you've properly sealed that hole at the surface, you've also created a hole in the ground for anything you spill on the surface to go down the hole. That's where a majority of the contamination occurs. Pesticides are the least of the problem. Animal waste, human waste, I don't care if you spill Pepsi Cola next to a well, it will run down the side of the casing. There's not some environmental property that says Pepsi Cola will, Coca-Cola won't. Change the practice. Get away from the well. If you're mixing a load next to the well, make sure it's properly constructed; you've got an impervious surface, make sure you haven't got a back-siphoning device. People in this state know there are several counties where we've had farmers that have filled up their spray tank, and as they're filling up this spray tank next to the well, that electricity goes off. They don't use the back siphoning device, and everything back-siphons down the well. I even stopped talking about this to farmers because I thought it was common knowledge, and I had two of them do it last year in Nebraska. So change the practice.

Now, what does this have to do with partnership? Well, surface water is my other issue, and that's runoff. It's also due to a practice. I don't care if you spray Pepsi Cola right next to a ditch. Is it going in the ditch? Absolutely. There's not some environmental property that says Pepsi Cola will, Coca-Cola won't. You've got to get away from the ditch.

Now, how do you regulate a practice? Good luck! You aren't going to be able to do it. There's not enough of you out there to watch every time a farmer does something, and they know it, and they're willing to take the chance. Now does that make them bad? Absolutely not. The solution, ladies and gentlemen, is incentive. It's not a mandate, it's an incentive. I'm a firm believer in incentives. Now how did I get here? How did I get to talk about partnerships? Well, if it's a practice, I've got to find ways that I can "incentivize" my customers to change their practice so my chemical doesn't get where it's not supposed to. That sounds straightforward enough.

So believe it or not, here's how little things that people do led me to this workshop. In 1989 one of the people who works for me came up with a program, a very simple program. You see, we're under terrific pressure internally, saying, "We've got all these people thinking we're doing all these horrible things out there, and they think negatively about us," so on and so forth. You can't believe what kids learn in school today about companies like mine.

So we came up with a program, and some of you may have heard of it. It's a little program called Operation Green Stripe. What we did is we went to FFA kids, and we said we'll give you $100 a farmer, up to five farmers if you find five farmers that agree to plant a grass filter strip and maintain it for three years. So now they've got a great program, they can learn a better environmental practice and they can make a little money for their senior project or for their senior trip. What we do is cooperate with our local retailers and they provide the seed. The response was just phenomenal. Nature Conservancy found about it

and said, "How can we help?" Pheasants Unlimited said, "How can we help?" Habitat people say, "How can we help," because science is very clear on buffers. Basically the same amount of water runs off, but it runs off at a slower velocity. You know what happens as soon as I slow the velocity down; less of what I don't want to have run off, runs off.

You'll find very little disagreement. We can talk about slope and how wide it's got to be, and we have habitat people saying, "Well, don't plant fescue, plant a brome." Now we've got people saying, "We can use that buffer for a habitat." In my biotech business, we sell BT corn and BT cotton. Part of our management is we have to have an area that we don't treat to make sure that we don't get resistance. Why not use that buffer for that? Now I'm finding all these other uses for buffers.

Why do I tell you all that? Well, we were lucky enough several years ago that this little Operation Green Stripe Program won one of the national watershed awards, given out by CF Industry's Conservation Fund and the United States Department of Agriculture. We got to go to Washington, no disrespect, but I avoid Washington like the plague, and we got the award and we felt really good about that. All of a sudden the government affairs guy that was with me says, "There are two people who want to talk to you." So I get hauled down the halls of the United States Department of Agriculture. I was lost. In fact, I didn't think I was ever going to get out. They brought me into this room, and there were several people there, two of whom are in this audience today. The first one is Jim Cubie. The second one is Max Schnepf. They said, "We like what you guys are doing. Let's see if we can come up with some sort of partnership and see how many miles of filter strips we can plant. Let's come up with a partnership that hits a lot of those objectives that you were just saying. It's a shared responsibility, meaning we don't sign up a million people, and they just say, 'I'm a partner.' But we say, 'You're not a partner unless you agree to do something.'" Surprise, surprise. So we did it.

What we ended up with is called the National Conservation Buffer Initiative. We have a very clear objective. We want to plant 2 million more miles of filter strips in this country by the year 2002. The way we did it was that from the industry side, we said, "We will agree to do as follows: We will put together what we call the National Conservation Buffer Council." It is funded strictly by private donations, and seven companies are members: Monsanto, Novartis, Pioneer, Cargill, Farmland, Terra and ConAgra. We've committed to this over the five years of the program. Our president and sole employee is a gentleman by the name of Dave Stawick. He worked for Senator Lugar and he helped with the farm bill. He is now president of the council. He works full time trying to get these 2 million miles planted.

Now what did we agree to do? We need to stop some of the reasons farmers are not planting buffer strips. This includes a lot of things I've heard this morning. I've never met a farmer that says he's got an environmental problem. It's his next-door neighbor. You've got to get past that first. And you have to address economic concerns. We've still got a ways to go.

The second thing is the need for flexibility, both on what the payment is and what they have to do. This program will not succeed unless the people in Washington D.C. give the NRCS people out here in the field the flexibility to make the right decision and the right payment or it's going to fail. We had a kickoff meeting in San Antonio in January and somebody from the state of Michigan, NRCS, stood up and said, "I need flexibility to make a judgment call in the state of Michigan on what the payment should be, and the person from the FSA said, "tough."

And what about from a farmer's standpoint? Here's what the farmers tell me. "It's not just the payment, it's what you're going to let me do with that land. What can I do with it? They won't let me mow it. How come we can't mow it?" "Well, you know, there's habitat out there." "When is the habitat out there?" "It's in the spring." "Well, I don't want to mow it in the spring. I want to mow it in the fall." Well, they ought to be able to mow it in the fall. That's what I mean by flexibility. Let's understand why

we have these requirements, but let's be flexible. All farmers have to do is hear "no" to one of those requests, and that's why they won't do it.

What are we going to do? If I go to most farmers that I talk to in this country today, do you know where they get their advice? They go to the ag chemical dealer. It's a crop specialist. They go in there asking, "What's the wheat pressure in my county? Where was it last year? What kind of weed have I got out there? What do you recommend on treatment this year?" You ask a farmer, "You ever hear that crop consultant, the ag chem dealer ever talk about a conservation program?" No. That's my commitment. They're going to hear it from ag chem dealers, they're going to hear it from crop specialists. That's a commitment that my company and the six companies that are in the council have agreed to make happen.

We will be speaking at the Ag Retailers Association annual meeting this year, specifically on the buffer initiative and what we want crop specialists to do and how to help us. My critical problem is that they don't talk about conservation products because they don't make any money. One of my concepts is let's find a way. I know some environmental entrepreneurs that are calling on farmers saying, "Hey. You don't have to worry about dealing with the government. I know all the programs. I'll get you signed up. I'll tell you how to lay it out," and the farmer pays them for it. It works. That's incentive.

*Dr. A. Ann Sorensen*
If we could have all of our speakers come up and take a seat. I talked Otto into moderating the question and answer session. I thought it would be a good way to sort of muzzle Otto, but he caught on to that. So he'll repeat the question from the audience so everybody can hear it. He's also probably going to sneak in some of his own answers.

## Question and Answer Session for Speakers

**Question:** Is it really a given that there will be no large scale payments to farmers after the end of the Production Flexibility Contracts? If it's not a given, and there are going to be payments, should there be any quid pro quo as the American public would expect? If there is a quid pro quo, how will this be implemented?

**Tom**: Do you want me to start? Yes.

**Sandra**: I think the main movers of the farm bill made it very clear that they didn't expect 2002 to be the end of farm programs. A colleague of mine at Michigan State, David Schweikhardt, and a political scientist, Bill Brown, wrote an article for the *Choices* magazine which comes out from the American Agricultural Economics Association called, "Never say never," which talks about this is not the end of the farm program. I think the principle of some sort of good stewardship for farm program payments has been well received. My personal bias is yes as well, there should be good stewardship for receipt of the flexibility in contract payments, if that's the way we continue. Shoot, we're buying grain again. It's hard for those of us who study this to know what's going to happen next with farm prices dropping.

**Neil**: I think the consensus is, from a political standpoint, the answer to your first question is yes. The next question is probably yes, too. But the question under that may be the one Brent raised, "How are we going to set up institutions to make that happen?" We've been talking a lot about those kind of things recently, and there's a theorem that you can apply to this. By the time a problem has been accurately identified in Washington, the solution is in place somewhere out on the land. And I believe that's happening here. I believe the emissions trading thing, and the carbon credits trading scheme, starting in forestry, are applicable to some parts of agriculture. I think what we've got to do is find the kind of social benefits that people are willing to pay for and then stack them and not replace them. You don't lose water quality benefit to gain pollution reduction benefit for air or to gain some kind of carbon. We've got to stack those and see if we can overcome some of the disjoint.

**David**: Well, I concur. Yes and yes. But let me add a proviso. Again, this is falling into green payments, stewardship payments, the "old think," if you will, that the federal government is going to fix this or at least going to play the major role, the leading role. I guess I've come to believe after 25 years of studying these problems, that that's probably not the case. They can play a critical role, but perhaps not the central role. So any green payments program, as good as it can be, is not sufficient to solve these problems. There's going to have to be a larger role in the private sector and a larger role at the state and local levels. That's the proviso.

**Brent**: I guess my take on it would be I did a little bit of research in trying to say, "When did green payments start?" In 1948, the federal government started to make green payments to local municipalities for their POTWs. Basically this was their way of going about it at first. Rather than bringing the hammer in, they started with incentive. So it's been around for a long time, and I don't see why it wouldn't continue beyond 2002. I'm very hopeful that we'll be able to come up with the research to identify ways of dealing with these uncertainties and monitoring problems that Dave was talking about. Hopefully, if we can

do that, then we can find new institutions that may help us address some of the issues we may see in the next five or six years.

**Otto**: Yes, payments will continue. I would say "no" there will still be income transfer payments that will not be linked to green payments. There may be green payments in addition. That's the way I'll answer that.

**Question**: Green payments are being talked about as a way to supplement farm income. Yet most of the schemes involve what amounts to a cost-share. If you look at CRP as a prototype of green payments, we're paying them a rent which is equivalent to the rent they could earn if they farm that land. If you look at EQIP, we're paying maybe 100 percent cost-share, but a cost-share of the cost of putting practices in place. The net effect on income is zero. How can we fashion a green payments program that acts as a supplement as far as income instead of simply reducing the costs of putting conservation in place?

**Otto**: That's one reason I say that I don't think you're going to see major income transfers linked only to green payments. I think you're going to see separate income transfers. Green payments will in essence remain a characteristic of the ones we already have. But we need to ask how to do it? Just write a bigger check.

**Comment**: We have to have a better basis. The traditional farm programs, if you think about that, didn't have much of a real basis either.

**Otto**: In the current farm program, in essence, we sent farmers a check because they were in farm programs for three out of the last five years. There are very few other entitlement programs where you do that.

**Sandra**: One of the reasons that it's hard for me to respond to that is that so many things are happening at the state level that feed into your maxim about what happens, there's always somebody doing it on the ground first.

In Michigan I think we're seeing a lot of truism that your visions of the future can determine the choices you make today. What we see is a lot of the producers believing that they're going to have to do something to make sure the environmental quality in Michigan gets better or they're simply going to be zoned out at the township level where there's a lot of political power in Michigan. We're having very serious partnership discussions about assurance programs. The trick is to figure out a way to embed it in institutions that raise the incentives to be in assurance programs that are well designed to achieve environmental outcomes. People are talking about everything from giving breaks on insurance, and Farm Bureau is having serious conversations about lowering their insurance premiums for farmers who opt into the yet-to-be-designed insurance programs, to embedding it in state policy, stating that if you're in an insurance program that's designed thus and so, you'll be exempt or be viewed in compliance with a whole set of legislation and maybe get some property tax benefits as well. So a lot of what's happening in this area isn't being driven per say by the federal programs, whether they be farm income support programs in people's vision or green support programs. They're being driven from the EPA side of the ledger that says, "Are we going to have to meet total national daily loads in our streams and rivers, either from the EPA at the federal level or the DEQ at the state level?"

**Brent**: To follow-up, I hope they get decoupled entirely. There's no way you could do a performance standard if you were still worried about income enhancement. You really have to decouple the two in order to do that. I think that the EPA's example of Section 319 dollars, which are similar to EQIP dollars, does that decoupling, and the USDA really ought to be focusing on that. If they want to do income

enhancement, do income enhancement. Have a performance standard for that. If you want to do environmental improvement, do that. But focus on one or the other. Maybe have separate programs for them.

**Sandra**: That is, of course, what's in the GATT agreement.

**David:** That's what I was just going to say, Ralph. Strictly speaking, that's GATT illegal. What he's proposing will just throw up flags in the WTO like crazy. They'll go nuts over there because you're not supposed to pay any more than the cost of the practice or the loss in income. The program is supposed to be directly linked to an environmental objective. There's another clause there that's often forgotten. So it's going to be a tough one, since we're such a big champion of that agreement, in trying to hold Europe – nobody's mentioned Europe here – hold Europe in line from doing just what you're proposing. Europe proposes to do this right now, using payments to keep farmers in business because they like rural landscapes with lots of small farms. They call that environmental purpose. We're setting up for the next big confrontation in the GATT as to whether those programs will indeed be GATT legal.

**Neil**: I'll pass on this question.

**Question:** I heard this morning words like devolution, flexibility, partnerships and so forth. The system that's now in place, is it capable of delivering programs that we envision in the 21st century? For example, should we be talking about block grants to the states to let them decide how to spend funds on their farms?

**Neil**: Well, since I backed out of the last one, I'll plug away at this one. That all sounds very good until you begin to build competitive differences between how states do things. If we take ourselves back to the '70s, the early point source thing, you have the industry in Washington screaming their heads off about federal regulation and behind the doors insisting on it because they recognize that they didn't want to do pollution competition between Georgia and Oregon. So the only way they could deal with it was a level playing field. So they were saying one thing in public and another in private. I think you'll find that same thing here. There comes a time when you have to have some kind of a backstop to that or you get into this whole competitive situation. You begin to change the competitive nature of the industry.

That has a little to do with the question that Ralph asked, too. If you look right now at one of the latest other national negotiations, the Kyoto negotiations, one of the real problems that they grappled with and still don't know how to figure out is whether they want to reward people on the basis of performance and not circumstance. That comes into this argument as well. How do we tie to people actually doing things as opposed to being lucky and being in the right place for that particular program's implementation. We don't want to get back to the point where the guy that gets the biggest reward is the one that plowed the worst land and ran it off in the worst way for 10 years and then qualified for the highest cost-share payments to get out of doing that some more. So those are some real difficult issues to grapple with on this one.

**David**: I'll chime in here. I think that it's a very good question. The short answer is no, the institutions are not currently there. I think that's what Brent said, and he can elaborate on that with respect to trading and many other things.

In the comments I made, I see, for example, a large deficiency in the capacity to help operators build management skills for integrated systems and to become proficient in, managing some of the trading schemes or whatever they're going to do in terms of controls. I think more emphasis needs to be placed on that. This is just a no-brainer for extension to do this stuff, but I don't perceive that they get it. I'm sorry. I was in extension and I administered extension. I know out in the countryside there are good extension people working on these questions, but as a whole, especially at the federal level, they just don't

get it. I think maybe NRCS could do more in the area of management as well, because I think it's been practice oriented.

Maybe this is an unfair criticism, but I think you need to start thinking about the people as the solutions, not the practices. That's what will sustain this. We have to put institutions in place to build human capital. We have to do it in such a way that we combine conservation and economics. There may be tension, but they both have to be there. I'm a firm believer that we're just incredibly ingenious in developing these new institutions. If we put some incentives in place to meet performance standards, institutions will arise that will surprise us.

**Sandra**: I'd like to reemphasize the point I was trying to make before, too, about the state rules. The day when the federal government's programs sort of set the pace in environmental activity is over. The governors have stopped the implementation of the Coastal Zone Management Act by saying, "This is too inflexible for us. We've already got our own programs going."

If you've studied the history of environmental policy, the cutting back on environmental programs by the Reagan administration was the period of the biggest capacity building at the state level. The public demands for improving environmental quality has to be met. If the federal institutions aren't answering those demands, they get answered at the state level. If the state level isn't doing it, and this is what we're seeing in Michigan right now, the local communities come forward and say, "We're going to use whatever powers we have to do it." I think when you look at the future of this, you need to step back and look at all those players and say, "Where's the best point to come in and try to design these institutions to be the most effective, the least costly, get the incentives in the right direction and still provide as much flexibility and freedom for individual producers and citizens as you possibly can?" So one should not put all their attention asking about the federal programs, you should put attention on the state and local as well, because a lot of the action is happening at the watershed level, the local level and the state level.

**Brent**: I think devolution is a big part of the answer, because when you look at the EPA and the way they're handling watershed trading, it's a response. It's a response to things that came from the bottom up, things that were happening out there. Their state agencies were doing them, local organizations were involved with them. They had to have a response to it. So the institutions aren't there, but I think if we keep pushing out to the state level or even lower than that, we might actually see these institutions start to develop.

**Tom**: I can't let this one go. I've got to put my two cents in. Ralph, in answering your question, if I remember the question, the fact of the matter is I think we'd all agree there's a lot of duplicate efforts. There are a lot of turf battles now between federal, regional and state offices. I think most of the people I talk to in agriculture say that that looks to be fairly inefficient and inconsistent. The reason we were saying two things 10 years ago, as was mentioned a while ago, is we wanted federal regulations because we wanted consistency, and we didn't want to have to deal with 50 sets of regulations on a state level. There's a lot more to the answer to your question than just that.

The fact of the matter is that the more money we can get down at the local level, the better – until somebody can convince me that local experts know less about their particular area than somebody in Washington D.C. I haven't seen it. But there is definitely a federal role providing policy, consistency, guidance and expertise. It doesn't have to be turf.

**Question**: At the local level, frequently, the problems we're concerned with don't appear locally. If you look at a problem like Gulf Hypoxia, it's being influenced by things coming up out of the upper Midwest. I look at the farmers in my watershed, and they say, "It's not my problem. It's not impacting me." So I guess I'm not quite the believer in local and state level that many of you are, having dealt with local gov-

ernment. At the very local level, I've seen the nasty, dirty politics that take place and its just as crass and corrupt as that at the upper level. However, if we're talking about performance standards, I'd like somebody to address how we set up the monitoring framework to see that performance standards are being met with whatever range of practices that gives a toolkit that the practitioners can use. How do we set those performance standards for local levels when we're dealing with national and sometimes international problems?

**Tom**: Let me start on that. I totally agree with you that the problem may be up in a watershed or the solution is up there, and that's where I focus. You're right. The Gulf Hypoxia involves some huge areas of this country. But I would come back to you and say the solution is going to have to happen on a local basis. Otherwise, it's not going to be done.

Now this may be controversial, and I didn't address it, but I did indirectly. I said, "How are you going to regulate performance, how are you going to regulate practices?" Listen, most of what we talked about is water quality. Right? Most of what we talk about, water quality and conservation, has to do with agricultural runoff. We can talk about all the practices we want. I have yet to see anybody that can come up with some number or some sort of standard that can be enforced. It can't, even with the monitoring I've done. Do you know what the single key-defining factor is on how bad water quality is going to be? Rainfall, and you can't control it. I could put all the practices that we talk about in place. You get a gully washer for three days, does that mean the guy is out of performance? So I'll say again, "How are you going to regulate performance from an agricultural standpoint?" It's not a numerical number. We can talk about total maximum daily loads and all that. What happens from a runoff standpoint is almost entirely determined by rainfall, and I don't know how you're going to regulate a rainfall.

**Sandra**: You can, however, take the concept, the total maximum daily load, and take it back to the farm in terms of saturation of phosphorus, for example, in the soils. That's something the producers can monitor themselves and stay within some sort of band of not too little and not too much. You can say, "If you're doing this and you're keeping records and if we find this river is out of compliance, we are going to ask to see your records that you're monitoring that." You started building in a system where the producer is in control, monitoring their own system, staying within some sort of bands of too much or too little phosphorus, and if you're within those bands, you're in compliance. You can do that sort of thing.

**Tom:** What do you do to the guy who is out of compliance?

**Sandra**: Peter Nowak is back there and he's been very silent. But I remember him saying that "We don't know if voluntary programs work or not because we've never tried them." What he means by that is we've never gone out and targeted the producers with polluting operations, maybe because they are on too steep of land, maybe because they've let their animals get too close to the stream, maybe because they're bad managers. We've never gone out and targeted those individuals with tailored assistance to their kind of problems, and that's the promise that EQIP hasn't fulfilled. The mechanism structure has not yet been developed so that tailored outreach to the person out of compliance is there. You start at that end of the continuum, and you end with, "If you won't come into compliance with targeted and tailored assistance, then you're in violation of the law, and there are civil and criminal penalties, depending upon the outcome."

**Neil:** The other thing is that that the rainfall situation is as easy to measure as anything else you're talking about monitoring. You can hook your expectation of what you're going to catch in the stream to the weather records as well. You can deal with unusual events. That's not an impossible thing to do, I don't think.

**Brent**: I guess I take a little different track. I think it's almost an ironic question, to some extent, because it has a supposition in it that we're actually out there monitoring the BMPs that we install now. We don't actually do that. We're installing a lot of practices now and saying, "Oh, these are the best available technologies for this." But we're not actually testing if they're doing a better job. Why I say it's ironic is because a lot of times when you talk about trading systems, people say, "We don't have the monitoring ability to do that. We can't do performance standards." It's almost as if we are doing a good job of that monitoring in the first place. I think there's a lot of work that needs to be done on that, and I would hate to see that be sort of something that we always stand behind and say, "We can't go forward with performance standards because we don't have monitoring." The simple fact of the matter is we just don't have it for anything that we do out there right now. That is something that I think we have to correct.

**David**: Steve, I think I've forgotten your question, but I'll try and respond, because there is a point about regulation here. The ideal solution, in my mind, is that you never have to regulate. But you've got such a big stick behind you that the people voluntarily and flexibly achieve the performance standards that have been set. I think that combination of incentives is what you want. I agree with Tom. There's a lot of transaction costs in regulation, but a lot of states are doing it whether we like it or not. Oregon is doing TM deals in the Towalozin basin. I studied there for two years. They don't know what they're going to do if they're out of compliance, but they're going to find somebody. The threat has caused more action in that watershed than they saw in a decade to say, "How can we avoid that kind of falling off the cliff," if you will. This is going to require some really intelligent structuring of the program so you don't have to go out there with a glove and visit people's farms.

**Tom**: Again, the issue is not monitoring. You can go out and monitor runoff. That's not the issue. How are you going to regulate it? I'll say it again: Regulation means a standard, and I don't know how you put a standard on there. I'd rather go find those people. Here's another thing that comes to mind: What I've heard farmers tell me, "If you ever get a chance to talk to the government, tell them to quit telling me how to farm and teach me how to farm better." You can't believe how much difference that one little word makes. The other thing is, "Quit forcing me how to farm and help me farm better." If you keep those two little things in mind, I think we can go a long way towards solving a lot of problems from an agricultural standpoint.

**Jim Cubie:** Dave made the point this morning that we have to get our conservation and economic objectives and policies working together. In '85 we made a major change. We linked farm payments to conservation objectives like the Swampbuster. In '96, we made a major change. We decoupled our programs so that there is no incentive to put in another acre of wheat to get another dollar. In fact, if you don't want to put the wheat acre in and run cows, you can. My basic concern is that in 2002 – John Schnittker, and forgive me if I misquoted him, has made the comment that we actually have a green program today because in return for $4 billion or $5 billion, the farm sector is asked not to do two things: Screw up wetlands, and manage in a conservation or soil retention way. The danger that we face, I believe, is insurance options. When we were writing the 1996 Farm Bill, you may have noticed there was one program that was delinked and that was profit sharing. That wasn't a mistake. That was done on purpose, because a large sector of the community has decided that in 2002, we're basically going to take the existing farm base line crop insurance program, jam it together, call it all insurance, and we'll have two bad outcomes: All the linkages in terms of wetlands and compliance will be gone, and we will have a recoupled farm program, because the crop insurance program is a totally coupled program. You get a 40 percent subsidy, and you band the two together and get a 60 percent subsidy on every acre and on every bushel. Maybe someone in the intellectual conservation community is figuring out how to create a revenue insurance option which is not coupled that will not have those effects. I would just alert people – and this is more by way of comment than question – if somebody is doing this, I hope they start to get the word out about it. I see this as, in fact, the agenda that's coming in 2002 that we're not ready for.

**David**: I've heard fears that all these efforts trying to ensure against the variability with farmers is actually going to cause some severe environmental problems again, because you're just taking that risk out. I don't know if that's true, but it's a good point, Jim. I know Jerry Skees is thinking about these things.

**Jim Cubie**: He makes the same point. If you want to get to an anti-environmental program, create a revenue insurance program.

**David**: Somehow it doesn't get on the radarscope.

**Norm:** Maybe this is a sign of frustration. But we look at 2002 agriculture policies coupled with resource conservation and so forth, it's a political process and 2002 to the people in Texas is light years away. Yesterday I heard that disaster relief for Texas will be the equivalent cost of what the conservation funds are for this year, 700 million, that's what they are guessing. How do we as resource conservationists deal with long-term problems and possible solutions, work the process so that we have some contingencies worked in? Let's say there is going to continue to be natural disasters. This map that National Geographic put out points out where we have conditions that can be related to droughts, floods, hurricanes, etc. What is it in the conservation of natural resource areas that we can contribute to better understanding of where we live, where we produce, where we have quality of life issues and build in some flexibility in what is allowed in terms of political process that has to react to this on an almost overnight basis?

**Otto:** One of the questions that Paul posed to us last year is related to the business of how you treat conservation as an investment – a long-term financial thing, versus annual expenditures or short-term emergencies or disasters? The Hubert Humphrey's sponsored disaster payments program of the '70s is a prime example.

**Brent**: I'll take a shot. I'm going to go back to the old trading systems. I think that if we were to maybe think of devolving some of this further than even just government payments to farmers. Let's get the institutions right so a lot of this is happening privately anyhow. Economic systems are, despite what most of us think, incredibly forward looking, and they're a lot more forward looking at least than the political process. That I can guarantee. I think that any way we can we get help into the hands of farmers and devolve the process so that you have the sticks, the type that Dave was talking about, so that people always know those are always going to be there. People can respond appropriately over time, and they'll respond with a long-term attitude. I guess that's my opinion.

**Neil**: I think Jim Cubie had a pretty wise insight when he took a look at the fact that a lot of what we're talking about is almost a form of risk insurance. When we're looking at this business of episodic shocks, if you want to stay comfortable on that one, don't get into the climate change science. Everybody was hoo-hooing about the climate change science and this half a degree, was the average going up a half a degree or was it going down a half a degree on average, global average. There was a bunch of us sitting there saying, "It doesn't matter." If what we've done to the system is trap more heat inside it, and heat is energy, then you've got more energy moving around in this system. What that does to you, it's widely agreed, is you build larger episodes. You build farther swings in the highs and the lows.

If you want to find an industry today who's really worried about the climate change issue, go to insurance, worldwide insurance and go to banking. You'll find people really concerned about the fact that their money is riding on a bet that the future is going to be just like the past, and they're not so sure that's a good bet anymore. I really think, if we're going to look at income, we've got to look a lot at risk insurance, some kind of an ability to produce an insurance payment when things go below a certain level or above a certain level, however we decide to measure it. Because with anything else, we're going to find

ourselves swept away in these short-term episodes, if you will. The long term doesn't matter much if you're going to die next week.

**Otto**: Neil, do you feel you have answered Norm's question?

**Neil**: No.

**Question**: I have a question specifically for Mr. Hoogheem. You said it's practices not products. Is there not a lot of room for better products? Less toxic products?

**Tom**: No question. Most of the products we use today, at least in the highest volumes, have been around for 25 years. I think most of us in the business will be the first one to tell you that if we had other products, if we had newer products, we probably wouldn't have some of the problems we've got.

**Question**: Where are they? Why don't we have them?

**Tom**: Well, I think in many cases you do. I'm not here to sell you any product, but I've got a few if you're interested. I'll give you an example why it hasn't gone faster than maybe you'd prefer. The most widely used pre-emergent is a little chemical called atrazine. The economics of that product are such that many farmers will tell you even if you reduce the rate that I can use where I only get 10 percent control, I'll still use it because it's the best 10 percent control I can get for the money. When you go out and try to replace products, obviously the economics is what drives you. We'll try to come up with better products environmentally but trying to replace some of the products that we've got on the market today is extremely difficult because the cost benefit that is there with the products we currently have is so favorable.

**Jim Cubie**: Could I comment on what Norm said? This issue of disasters and how they screw up the conservation programs is precisely addressed in the 1996 Farm Bill. That is why EQIP was easy to fund. If the secretary wants, when a disaster hits California like it did a few years ago and wipes out a generation of conservation investments, we can raise EQIP. The statutory numbers are not limits. They are just fundamentally a budget baseline. After the Appropriations Committee is active, you've got to do it differently, but you can still go above those limits of proper notices. It simply takes a major decision by the administration to do it. Second, I think every one of these disasters is an opportunity, as we saw in the '93 floods. That's where the Emergency Wetland Reserve Program came from. It took $150 million of new money to buy out a lot of land. So one, the authority is there; and second, we have models where instead of going into Texas now and simply buying a lot of the grazing land, handing out a lot of money to cattle producers, you use the flexible authority to say, "All right. You'll get the money if you'll change the grazing practices so you don't overgraze again in the future." These disasters are opportunity for new money to make changes.

**David**: Could I add to that too, because it's a good point, Jim. One of the things I had written down and didn't have time to say is, I think Arthur Schlesinger made the point that almost all of the big policy changes are driven by disasters and crisis. That doesn't bode well if you're trying to build this long-term conservation program. Whenever there is one of these crises that we can piggyback on, maybe that's the time. If there's another farm crisis coming, then we've got to be prepared to offer some institutional changes that will indeed be appealing. That's what happened in '85. That whole set of programs came out of a crisis. It wouldn't have happened without it. Right now I don't perceive that we've coalesced to the point where we have a set of ideas that we can just say, "Here's the way to go forward that will not only improve the environment but keep the economic situation healthy as well."

**Question**: We talked a lot this morning about introducing economics into regulatory schemes for incentives. There wasn't a lot of talk about what I would call purely market-driven solutions. For example, in

the food business today, many companies are demanding that their suppliers engage in best management practices and conservation practices all the way down to the farm level to assure safe food supplies so they don't get consumer reaction to bad products. Is there something along that line that's possible in the water quality area?

**Sandra**: Dave Ervin and I have so much to say about that. We have a full proceedings that we would be happy to send any of you who just leave me your card.

Basically pollution prevention type of programs that are driven through the market, be it by consumers' demands reflecting through the retail sector – we put on a conference a year ago in Toronto and have a collection of 15 papers or so on the topic, including comments from chemical companies as well as consultants. As a matter of fact, it's mostly folks doing this that have written the papers.

**Neil**: Dealing with the forest side of things, you run into this with the certification efforts being made in Europe and other places, including the United States. This is one of those where you can again start to talk about transaction costs, however. Market-based mechanisms are not free of transaction costs. So just the costs of monitoring and verification and planning has so far sort of made the whole idea of forest certification a struggle for U.S. producers, especially small landowners.

The other thing that's made it a real struggle for us is that idea of the chain of custody, the idea that the product was grown in a way on the land that was responsible and then stayed with responsible companies and practitioners throughout its chain of custody. In forestry, if you're Seven Islands Land Company, and you're sitting up in Maine, and you're sawing down logs and putting them on a boat and sending them to Europe with the paint still fresh on the stamp, the chain of custody is nothing. But if you're sitting out here and you're another company that's buying chips from 50 different suppliers and putting the product through 50 different product lines and trying to keep track of where everyone of them is at, just your monitoring and bookkeeping costs drive the situation out of control.

One of the problems we've had with that whole idea is that a market mechanism is not free from the intercompetitive problems that just happen because firms are in very different circumstances and some can do it easily and others can't.

I guess the only last comment would be: We've talked this morning about public function. If you get into market mechanisms, you need some kind of baseline to work from, you need some monitoring, and you need some verification. There may well be a role for government, in fact, in providing that sort of third party independent oversight that lets market functions operate well and freely.

**Sandra**: As well as certification of consultants in the private sector. I think the robustness on the demand side really matters here, Steve. A company like Gerber, that's going to have zero detection of pesticides in baby food, knows that their market is going to be reflecting those demands, that mothers are going to purchase baby food that has zero detection of pesticides. It's a lot easier for companies like that to do the monitoring, to handle the transaction costs, than something like forestry where it's not clear that there are going to be consumers at the end of the line that are going to buy the higher priced product that's certified as coming from a sustainable wood lot. So the demand side on this becomes a very important attribute. In some cultures like Germany, for example, with their blue angel program and their labeling program do a lot more to encourage that demand than other countries, such as the United States, where green product labeling got off to a very poor start and in many consumers' minds is associated with inferior quality.

*Dr. A. Ann Sorensen*
I'd like to thank all the speakers this morning. They did a tremendous job.

## Farmer Discussion Panel

What should innovative cost-sharing look like in the next farm bill?
What are the problems?
What is the appropriate role of government?
*Moderator - Mr. Tim Warman, American Farmland Trust*

*Dr. A. Ann Sorensen*
I would like to introduce the panel of farmers and practitioners who are going to address what they heard this morning and give us their perspectives on how programs work, and maybe what kinds of programs we might want to consider in the future. After the discussion panel, which will be moderated by Tim Warman from American Farmland Trust, we'll have a question and answer session, a short break and then we'll have a panel of former NRCS chiefs, moderated by our present NRCS chief, responding to what they've heard today and also their own thoughts based on their own experiences.

So with that, I'd like to introduce Tim Warman, who is my boss. Tim is based in our Washington D.C. office and head of our policy programs and he will moderate the farmer panel.

*Mr. Tim Warman*
The joy of working with Ann Sorensen is you don't have to be her boss, you just have to stand back and watch her do amazing things.

The purpose of this panel is to get a reaction from the practitioners, from the people that are out working the land who actually have the most at stake in the various different programs. These are policies that we, as a nation, put into place to affect agriculture one way or the other, whether or not our policies are there to try to preserve a particular pattern on the landscape or to make sure we can feed and clothe our population and a significant portion of the population of the planet. These policies also determine whether or not we have a food system that is the most efficient and cost effective and leaves the environment in a condition which we all want to see it left in.

So, I think the comments we're about to hear are going to be critical to all of us. We asked our panelists to think about a couple of questions and as I sat in the audience I came up with several others which I think are somewhat provocative. I hope as a panel you'll take a crack at commenting on these.

The questions we asked you to think about were things like: What should innovative cost sharing look like in the future? What are the problems? I see that "what are the problems" statement really as being that we don't yet have programs and policies in place to address, and "What are the programs and policies that we have in place now but are not as an effective part of the solution as they could be?" We ask the question, "What is the appropriate role of the government?" But as I listen to the comments that we heard, I heard it said another way, which is, "What are you, as farmers and managers of the land, going to ask Congress to do for you in the next round of farm policy?"

Another question that came to my mind evolved around the concepts of pollution trading and going beyond the individual farm to either a community or a watershed or some political jurisdiction in which we attempt to manage what goes on on the land. I have real questions that you may be able to answer as to whether or not this will work. What is required to make it work to encourage you to participate on a voluntary basis? What conditions have to be in place to make these kinds of new concepts work?

I had a real question that came to mind, one that I think is probably somewhat challenging, in responding to public demand. We heard the story that loggers out there harvesting trees are forced to respond to fairly rigorous public interference or interaction on the way they harvest trees. Last time I checked, we

didn't hear very much on how you harvest corn or soybeans. I think that that's a challenge, to look at the implications of that for the future as producers, particularly as we move as a nation towards one with a sector with large commercial farms and a sector of smaller nonprofitable, noncommercial farms.

We heard the question or the statement that farmers were the first environmentalists, that they're conservationists at heart. I assume you'll confirm that. It's something that we might want to hear.

We heard a discussion about performance objectives versus best management practices. I'll give you my own bias. I think 15 or 20 years ago when, as public policy, we as a nation decided to go towards best management practices, that that was a mistake. We should have figured out the problem and let you find your own way to solve the problem and do the work necessary to define it. That's what I think performance objectives really are, defining the problem and then saying, "Yeah, we're going to find a way to solve this." We didn't make that choice 15 or 20 years ago.

We heard about user fees, that, in fact a lot of the services that government agencies provide (extension, NRCS) are valuable. I think some reaction as to whether or not they are in fact valuable enough to pay for would be interesting information to get from you all today.

The one from the perspective of American Farmland Trust that is perhaps most important is your understanding, perception, or reaction to the concept that you have an environmental product and environmental goods which you currently provide to the public at no cost but which might be goods that the public could legitimately purchase from you. That may be an alternative to making payments strictly on the basis of income transfer. From the farmers I've talked to, very few are big supporters of flat out straight income transfer payments. At American Farmland Trust, we're convinced you have a bushel basketful of environmental products or goods and we just need to find a mechanism that allows you to sell those to the public. We believe, from everything that we've seen, from public surveys and from our own interactions with the general public, that is not only do they have a desire, but they've got a true economic demand for these kinds of goods.

So with that round of additional questions, what I would like to do is just start at this end of the panel, let each of you introduce yourself, say a little bit about your enterprise operation, tell us who you are. Everybody's got about 10 or 12 minutes, then we'll have 30 minutes of question and answers at the end.

*Mr. Steve Wentworth*
Thank you, Tim. I thought I was going to be farther down the list, and I was going to have more time to put my thoughts together.

I'm Steve Wentworth. I farm with my brother in Central Illinois, just about 170 miles south of here between the Springfield/Decatur/Champaign area. I farm 2,700 acres. We raise corn and soybeans. As a side note, I'm an officer in the organization, called Foundation E.A.R.T.H. E.A.R.T.H. is an acronym for Environment, Agriculture, Research, Technology and Harmony. We're agriculturists that feel that farmers have done a good job in the past environmentally, but we can and need to be doing a better job in the future.

This is a point that I wanted to make that I'm not sure that a lot of people outside this room fully understand. A big part of the nation's farms are farmed by people that don't actually own that particular piece of land. Many of our conservation programs, especially cost-share, have been directed at the landowner and not the actual person that's doing the farming. There's somewhat of a disconnect. At our own farm, actually it's a combination of farms, of the 2,700 acres we farm, my family owns 785 acres. The rest,

almost 2,000 acres, are owned by other people that own that land for a variety of reasons, and they have different values and ideas about what they want done with that farmland.

For instance, on our own farm, we no-till our crops. We have discovered that no-till farming makes a great deal of sense in terms of soil conservation, runoff, net dollars per acre, our machinery costs and our labor costs. We have three farms that we farm where the particular landowner flat out tells us that we'll not farm no-till, that they don't believe in it, they think that they can make more money by farming it the conventional way. Well, I guess we could be self-righteous and say, "We're not going to farm that ground and let somebody else farm it that manner. We don't believe in some of the old conventional practices." But we go along with those landowners to maximize the income for our families. We try to incorporate the best conservation practices that are possible given the criteria. Some of these landowners feel there's added chemical costs. Some feel that there's added seed cost. Some think there's reduced yield prospects because of the more conventional tillage practices. But we have to go along if we want to farm that land.

So much of what I heard discussed this morning was talking about payments that accrue directly to that piece of land and the landowner. Somehow practices and conservation programs need to be structured in such a manner that both parties, the landowner and the farmer who is working it, get value or incentive to make whatever changes need to be made.

Tom talked a little bit this morning about the buffer strip council and some of the buffer programs they're putting together. One of those watersheds that he was talking about was one of the large watersheds in Central Illinois which has a very large problem with nitrate runoff. Buffers would be a big help in that. The question is: How do you get some of those buffers established? Some of the landowners look at the situation, "Well, I'm paying $25 an acre for taxes. Do I really want to take that land out of production and still pay the taxes?" They're looking at reduced production. Somehow we've got to move to the point where we're looking for a longer-term solution to some of our problems.

Dr. Doering this morning talked about his high school principal and some of the values he established at a young age. Some of the people who now have investments in farmland, look at farmland the same way possibly that they'd look at their Microsoft stocks. They want an immediate return. As everybody in this room knows, conservation practices don't always give you that immediate return. There needs to be a longer-term perspective.

Also, some of the people of my generation who are starting to own the farmland now are used to throwing their computer away after two years. Maybe it's a difficult concept to comprehend that we only have one chance with this planet and this land. They might call themselves environmentalists, but there's somewhat of a disconnect between actual owning the land and the practices that need to be put in place to keep it in top production.

With that I'll move on to George.

*Mr. George Allen*
Thank you. My name is George Allen. I'm from Schaghticoke, New York, which most people can't pronounce. It means still water. It's an Indian name. I guess the Indians came west after we moved there, and, after looking at corn land, I wish I'd moved west and left them there.

I'm far enough away that it cost quite a few AFT memberships to get me out here, and we're a six-generation farm. I'm the sixth, and I've got three teenage boys with my wife. Hopefully at least one of them will be seventh generation. As I was leaving, the 14-year old piped up and said, "Why are you going out there," like I don't know anything. So I definitely have a good perspective of being humble, and

this morning was confirmation of that. In other words, I look like Calvin, not Hobbs. Then when Tim got up and mentioned five more questions in addition to the two that he asked us to prepare ourselves for, it reminded me of Congress, changing the rules on us all the time.

There are a couple things I want to talk about. I just want to put things in perspective. We're kind of a Dr. Jekyll/Mr. Hyde industry with a schizophrenic farm policy relative to whether we're an income-securing operation or a conservation ethic type of business. I kind of think we ought to look at the perspective of that, at least in dairy. We're getting about the same price we did in the 1970s. I think the same thing is pretty much true for corn and most of the commodities. I'm not saying that for any sympathy, because I know you folks know some computer manufacturers that have suffered the same sort of thing with semiconductors. The fact of it is we ought to call it what it is and just decide what we really want to do with it. It seems to me that if we're really conservation-based, we should forget the income side of it. Particularly now that GATT has changed some rules, we ought to just get out of the rut, which is really just a coffin with both ends kicked out of it, and decide that this is the time to make some substantial watershed, no pun intended, changes in how we approach things.

We dabbled about conservation in 1985. In 1996, we were really kind of building up the courage to do something about it, knowing that something definitely needed to be done. The fact of it is 2002 is coming, and it appears that there's at least as much pressure to move back toward where we were coming from as to where I think we need to be in terms of resource conservation.

I might mention to you with regard to the late'70s and maybe even earlier than that, if you put it on a dollar-for-dollar basis in some ways I'm amazed that things aren't in worse shape than they are. You think about the number of industries where families have had to live on basically static or less than static income and found ways to do it. I go to Congressional hearings where people are telling us how inoperable farm families are and how much difficulty they have working with difficult subjects like this. I'm thinking, "Wait a minute. We're still here." That counts for something. If you can push policy implementation down as close as you can to the farm level, there is plenty of expertise out there to figure out how to do things right. But you've got to tell us what you want.

I'll give you a couple of examples: We have 800 dairy cows and about 2,000 acres, and we are in a rotational-type system. Out here in DeKalb, I realize that HEL (highly erodible land) probably means just a wrong way to spell "Hell." But back there we really know. We farm both sides of the mountains most the time so we have to be careful about how we do it.

When we started dabbling with nutrient action plans in the mid '80s, we were doing quite a bit of minimum tillage and even some no till on some of our outlying farms, mainly because we didn't have ways to get manure out to those fields. Now we're heroes because we used conventional fertilizers and all that stuff and would use no-till. When we decided, looking at our soil fertility results, that the farm close to the home base was getting too high in nutrients and we had to move these nutrients out further, we realized that we had a whole new set of challenges and neighbors who had not experienced that difference in their environment. Therefore, we had to change some things. We had to switch to injection of manure under the soil which automatically takes you away from no-till. As a six-generation farm, we have a fairly strong ethic of deciding that whatever we're doing this generation definitely won't preclude the next generation's ability to function as a farm. Now whether they want to function as farmers, that's for them to decide, but certainly it's not because of something that the previous generation did.

We use a whole array of practices that have reasons but are hard to legislate. I'm not sure how you can do that on a national level. You have to have something closer to home to do that. I would vote for incentive-based policies coupled to performance objectives, hopefully measurable, so that you can see where you're coming from and hopefully where you're going. I would have some punitive measures in

there for the folks who aren't able to, for whatever reason, come up to standard. Hopefully, there would be some technical assistance so that it can be provided if they want to change. But there are some folks out there that don't have the attitude to handle that. I guess they need to feel the stick.

I want to mention two other things. One is resources also mean research, in my estimation. I'm not plugging for the land grant colleges or anything like that, but one of the quiet revolutions that has taken place in the dairy industry in the last 10 years is our ability to feed cows less protein because of the research that has taken place over the last 20 years on protein fractions. That immediately brings down the nitrogen affluent from the farm because you're doing a better job with the cows. It also happens to be more profitable. Hey, you can't beat that with a stick. Right? Those kind of things are results of research that people tell me actually took place 20 years ago. I am concerned that we aren't replenishing that seed stock of research, and I think that has to be part of the program.

The other thing is that we have quite a few folks who are getting up there in years. Any legislation that has to do with conservation resources has to be a long-term investment, and there's going to be a huge generational turnabout here. Believe me, somehow there's got to be a way to have that happen so that any investment that we do make as a public policy isn't just washed away because the next generation just doesn't have a clue as to what we were trying to accomplish. Thank you.

*Ms. Sally Puttmann*
My name is Sally Puttmann, and I get asked many times, "Do you farm?" Yes, I am a real farmer. I live near Sioux City, Iowa. We raise corn and soybeans and hogs. If I had not been in Sycamore this morning at 6:00 a.m., I would have been in the hog pen helping sort hogs, because we sell hogs cooperatively every Thursday morning. I help sort them. That's when I and my business partner make our decisions for maybe the following week, maybe the following month and maybe the following year, and sometimes the five-year plan gets talked over.

I have a brother-in-law who has always been in academia. He was complaining to me one time about the price of food and what he was paying at the grocery store. I asked him, "Well, how would you rather pay for it? Would you rather pay for it at the grocery store or would you rather pay for it in taxes, because I cannot produce it for you for what it would cost you if you paid the full price at the grocery store." He said, "Well, I'd rather pay it in taxes." So that tells me that if the general public thinks that they're getting their bang for the buck by putting practices in place on land that produces the food, that they'll be willing to pay for it in taxes.

I've heard many times here today that the funds are being stretched, and there's not enough money. In the EQIP program in Iowa, the educational funds in that program have not been utilized to the fullest extent. I have a couple of suggestions about what and where we might use them. I think there's a new role for extension in this. I think the land grant colleges need to use extension to train the crop specialists and crop scouts that will be working in private industry. I think educational dollars can go there. I think educational dollars need to go into FFA programs to teach conservation ethics so they know what's good for the soil. I don't think that's being done on a large scale. I think educational dollars need to go to our lobbyists to bring the legislators and their aides out to the country to let them know what the needs are because they don't know. It will take some creative thinking to do it. I know they've been invited many, many times, probably by all of you, and you've not been able to get them there. But I think if you follow the paper trail, you can get them there. If they think they can get some dollars for some pet projects in their districts, they'll come.

I bring this need clear down to the county. In Iowa we have county supervisors. I know some states call them county commissioners. I live in a county that has a city of 80,000 people and all the county supervisors live in Sioux City. They don't know the problems. I think those educational dollars under the EQIP

program could be used to educate those people, get them out on the land. Maybe they'll be able to see the benefits that could contribute to their county budgets if we could get some projects going.

Another thing that I think needs to be done; is for us to look at our conservation compliance plans as a menu. I can remember when ours were set up. We had a menu of things we could do. We never questioned whether we had any flexibility under them. The land that we farm has every kind of conservation system on it that you can imagine. We have terraces, contours, grass waterways, ponds and field borders. The only thing that we don't have are buffer strips, and I know why. I think we're driving the cattle industry out of business when we insist that they have buffer strips along streams because a lot of cattle producers count on those streams, particularly the cow/calf people, for their water supply. There isn't any cow/calf producer that I've encountered that's willing to put in miles and miles of fence to fence off a buffer strip that's in permanent CRP. So they stay out of the program for that reason. I think we need some flexibility to make it possible for those people to utilize those buffer strips in the fall after the growing season when the crops are off, and to get those cattle to water if they need some water. There are ways to prevent cows from standing in the water.

I think it's fine that people are interested in buffer strips and I'm glad they're interested in them, but I think they need to minimize erosion on their fields first before they get paid to put in buffer strips. I've seen examples where that hasn't happened. In some instances, we're putting the cart before the horse.

The last thing is that farming has to be profitable. A farmer buys extra nitrogen for the land as insurance to get a good crop. Why not make an insurance product that costs less money than the extra nitrogen that they put on? Now, I know that I heard one speaker up here complain this morning because the appropriations committee shifted some money to an insurance program. But I think that's what has to happen. I've carried crop insurance every year since I've farmed in one form or another. I think every producer has to realize that's their responsibility. When the program was decoupled, it became their responsibility to carry some sort of risk insurance product. We need to make the dollars possible so that they can have a good product to buy, and they won't put it in extra nitrogen. Thank you.

*Dr. Cliff Ohmart*
I'd like to thank American Farmland Trust for allowing me to be here today. It's a real honor. I want to start my segment with a whole bunch of qualifiers. For one thing, I'm not a farmer; and therefore, I'm not responsible for anything I say. I've had a pretty schizophrenic background. In all seriousness, I want to briefly go through that, because I do not represent all of California, and I am a little concerned that people will go away saying, "Did you hear what that guy from California said?"

To start out with, I have a bachelor's degree in forestry from the College of Forestry in Syracuse, and then I went on to Berkeley and got a Ph.D. in entomology, where I met Ann Sorensen. I specialized in pest management in forestry and went on to Australia and worked for CISRO for 13 years in forest pest management. Coming here I heard about the Asian longhorn beetle outbreak in Chicago, and I had to chuckle about the good old days of worrying about things like that. But then in 1989, I moved back to California and became a pest control adviser and worked with some friends of mine from Berkeley who started an IPM company. I know it was mentioned this morning that you can't regulate practices, but if one state has tried, it's California. To give any advice, if you write any recommendation to use a chemical on a farm, you have to be a licensed pest control adviser, and that's what I was for seven years. It really opened my eyes to what the whole pest management game is all about. I say "game" because it is a game in a lot of cases.

While I was at Berkeley, I had the honor, even though I wasn't in agriculture, to mix with some of the early IPM people, like Robert van der Bosch and Bud Messenger, and sort of combine that with the schizophrenic background, and working with growers for seven years. My head is still spinning. Over

the last three years I've worked with a group in Lodi, California, called the Lodi Woodbridge Winegrape Commission. My official title is research IPM director.

The reason I was invited here today is not necessarily for my knowledge about the farm bill, because I don't know much about it, but the idea of how growers can become proactive in doing what they can do to move forward. I've never met a group like the Lodi Woodbridge Winegrape Commission. It's really an amazing group of growers. Very quickly, California is, of course, divided up into crush districts, based on wine grape growing, and the growers in crush District No. 11 in 1991 voted to form a local marketing order which became know as the Lodi Woodbridge Wine Grape Commission. Once that happened every wine grape grower in the crush district has to be a member and they tax themselves, and the money goes into a pot. Some of the things that were talked about this morning is why the commission was formed. The really progressive growers realized that things aren't happening the way we wanted, and we needed to take the reins ourselves. So they did that.

Lodi is now the leading wine grape producer in North America. Most people don't know that because you don't get that many Lodi Appalachian wines, but it's about 65,000-plus acres of wine grapes, and they produce most of the five premium wine grape varieties. They out-produce Napa and Sonoma by double in terms of Zinfandel and things like that. So it's not just some growers who started doing their own thing. They also have a big impact on the wine world.

One of the things that they were interested in was, of course, marketing Lodi. Everybody knows the Credence Clearwater song, "Oh, God. Stuck in Lodi again." They didn't want people to think of that when they're buying wines. What's really interesting is marketing, of course, is a big deal to them, marketing to wine grape buyers, and they've been wildly successful just by the fact that they're now the leading producer. Another thing is they thought, "Well, integrated pest management is what we want to do." So they formed this program in 1992 and hired a consultant, and then about three years later, I came on board. They got an EPA grant, which is one thing we might want to get into later when we talk about how we provide incentives. My comment would be provide more opportunities for things like that, because the EPA grant allowed them to really move forward.

They have a very comprehensive grower outreach program. It's a real true farmer-to-farmer education group. They felt that both the university and extension were valuable, but with the cut-backs they decided, "We're going to teach ourselves some things as well," and do a lot of on-farm research. I can elaborate more during the Question and Answer session.

Before I address the questions I need to point out that I'm working with a very high value crop. Things like production, non-production don't even enter into the equation. My reaction to some of the questions are going to be very different than that of people who grow corn and soybeans. I've worked with almonds, walnuts, apples and wine grapes, and all of those take lots of money to get established. We're talking about with a vineyard that requires maybe $10,000 an acre to get going. The whole ballgame is very different.

What's my reaction to what cost-sharing should look like in the next farm bill? Well, my experience with permanent crops in California is the money is just not enough. The average grower is not interested in the EQIP program. They like the program. They think it's very valuable. But to give them $30 an acre or to cost-share up to $10,000 really doesn't help them that much. The ones that participate feel like, "We should participate in EQIP because it's a good thing to do," rather than, "It's going to make me do something different." So my answer to that question is the system has to be changed for those kinds of crops.

Then the next thing: What are the problems? I won't really go into that as much. I know I always view things first from a pest management perspective. I know Tom this morning mentioned this whole problem of who advises the growers on what to do. It's agrochemical people, and that is a major problem. In California it's very clear cut because you have to be a pest control adviser to advise growers. Who are most of the pest control advisers? They work for retail chemical companies. If you're trying to do conservation efforts, despite all the good intentions, that's a major problem. We've got to do something with that. This has nothing to do with cost sharing or anything else. I personally don't know what we can do about it, but it is a major problem, and I think it happens elsewhere in the United States as well.

What role can the government play? My answer to that is that in California and other parts of the country, there are some community-based agriculture programs under way. Pew Charitable Trust is involved. American Farmland Trust is involved. We need to come up with a system to encourage these grower-to-grower education programs to get going and encourage local groups to take the reins.

This morning, because I have an academic background, I find the discussion absolutely fascinating, but it also gave me a headache at the same time. If I were a grower, this morning I would have walked out at lunch and never come back. Because on a day-to-day operation for the farmer, I really don't see the relevance to most of what was said this morning. There are little bits and pieces. Again, with my academic background, there were real problems, but there's still such a huge gap between the big picture and the day-to-day operation of the farmers I work with. We've got to close it somehow. I think these programs are really helping out. I think I'll leave it at that.

*Mr. Karl Czymmek*
Good afternoon. I want to reiterate what many folks have said earlier. I'm also deeply honored to be here in a program celebrating all the great work that Norm Berg has provided U.S. agriculture over the years.

My name is Karl Czymmek, and I'm working in the New York City watershed agricultural program. A little bit of background: I have a degree in agronomy from Cornell University, and I worked as a crop consultant and vegetable pest management specialist in Western New York for five years full time. I took what you'll agree would be the next logical step. I enrolled in law school. So I'm not a farmer. I'm only a part-time farmer, but I am a member of the esteemed group called the New York attorneys.

We heard a little bit about Aesop earlier, and I'm going to refer to Homer here. My discussion this afternoon is titled, "Nutrient Management Odyssey." To paraphrase Webster's, an odyssey is defined as "a long series of wonderings filled with notable experiences and hardships." U.S. agriculture, I'm sure most of us will agree, is in the midst of an Odyssean journey. Like Odysseus we have to use our wits to extricate ourselves from the problems that we're facing. We need to compensate for the limited resources that we have before us.

With respect to nutrient management, I believe that this is one of the biggest conservation issues facing agriculture since the dust bowl. Innovative cost sharing can indeed play an important role in addressing these issues. Clearly public staff and resources cannot meet all of the potential needs relating to this issue, but we need to wake up to ag's contribution and non-point source pollution, nevertheless. How do we start? I think we start by focusing on our cost-sharing resources, on nutrient management planning and by emphasizing practices which foster behavioral change.

I'm fascinated by the similarities in so many of the different discussions this morning and this afternoon. There's some recurring themes here, and I hope people take note of that. Also, it's good to remind people that they were mostly developed independently, which again is very fascinating.

Why should we focus on behavioral change? Because it's cheaper and will also assure higher long-term adoption rates. What are some of the challenges? It's difficult to count behavioral change. You can't see a behavioral change, unlike strip cropping or shelterbelts, which leave a distinct fingerprint on the land. Improved distribution of manure, for example, is not something that's readily observable.

I'm going to focus on, once again, two similar themes that we've heard in talk after talk: education and research. Why education? In order to achieve behavioral change, we need to inform people of why they need to change. With education we can achieve buy-in, and buy-in will provide the long-term behavioral change that we need to address some of these issues. Farmers need to understand the issues before them. Why is phosphorus a problem in surface waters? Why is nitrogen a problem? How do farms in general contribute and how might their own operation contribute to the problem?

I believe we need to cost-share nutrient management planning, particularly for livestock farms. A nutrient management plan is one of the single most important and I believe cost effective measures to deal with nutrient management and excesses that might be associated with farming operations. We need to look at nutrient management at the crop and the livestock level. Soil fertility: We need to do nutrient inventories on these farms to show people where the nutrients have accumulated and where there are fields that could benefit from additional nutrients applied via manure or otherwise. We need to look at feeding and forage programs and point out the fact that good homegrown forage is reducing the need for importing feeds, which exacerbates nutrient management problems on farms.

I've worked with a lot of dairy farms over the years. I'm not going to pick on them. But it's starting to become apparent when you perform what's called a mass nutrient balance, there are a lot of dairy farms that are grossly out of line. I think that also goes for hog farms and poultry farms. The typical dairy farm that I've seen has an annual accumulation of phosphorus between 70 percent and 90 percent in excess of crop needs on an annual basis.

Now, earlier Tom Hoogheem said, "That doesn't make them bad people," and I profoundly agree with that. That's an issue that we need to walk up to. Some of that phosphorus has a potential to leak out of the system. We need to understand these issues, and we need to start addressing some of the simpler things on the farm.

Mr. Allen mentioned earlier some of the feeding programs relative to reducing nitrogen use. I think we need to do some of the same things with phosphorus. In fact, there are some things we can do there. Using Cornell's net carbohydrate model, for example, will help farmers reduce the need for imported nutrients; and, therefore, the challenge faced with, "What do we do with them once we've got them on the farm?"

We need to cost-share private sector nutrient management consulting fees. A comment to one of Sally's points earlier: In some ways I think crop consultants should be training extension and USDA staff on how to get some of these things on the ground. A bold statement there.

Again, I think nutrient management planning is relatively inexpensive as compared to structural or engineering practices. Cost sharing can be phased out fairly quickly, which is something that in these days, in spite of budget surpluses, that will ring nicely, I think, with OMB's mandates.

What else can we do? There are a couple of other things we could look at. We could educate crop farmers as to the value of manure. Perhaps we can persuade some of our cropping neighbors near some concentrated livestock operations to accept manure. One of the main objections I see in the field is, "Why do I want that stinky stuff? My neighbors are happy." So the crop farmers are a little bit reluctant of getting into the business of taking nutrients from dairies or livestock farms because of the odor issues and the

neighbor problems that they cause. I'd like to see us look at ways to foster nutrient banks, where brokers move nutrients from areas of excess to areas of need. We're a long way from that, and there's a lot of complicated issues associated with it, but I think it's a neat concept.

Let me talk real quickly about research. Enhanced distribution of nutrients on a farm through a nutrient management plan is great, but we need to do more research. Manure is bulky and therefore expensive to move, and we need to find ways to reduce the volume. Composting doesn't reduce that volume far enough. We need to find ways to do that further. This will enhance exporting opportunities, not exporting to other countries, of course, but exporting to neighboring farms or other lands that can use the nutrients. We need to find low-tech ways to facilitate this transport.

We can cost-share on farm research with early adapters, both large and small, to try to find appropriate technologies to share information with, not necessarily cost-share on all farms, but merely to share that information with other operations. We need to partner – there's that word we've heard a lot – with industry, university and farms on cutting-edge projects. Learn some new technology and make a few mistakes.

Regarding EQIP, when I first started looking at this topic, it seemed to me like a real answer was, "Well, we'll just expand EQIP all across the country and take care of everybody's nutrient management problem." I don't think we'll ever get that past OMB. We really need to focus on where we can get our best bang for our buck here. Perhaps EQIP is the appropriate place with some of the smaller operations in our income-transfer issues.

One quick thing here: How do I leverage agency resources to accomplish this? We need to do this fast. We need a lot of people. As I said earlier, we need to tap into the private sector. I know the agency is looking at third-party vendor certification. It's an outstanding concept. I know we're doing some partnering with the Certified Crop Adviser program. That's a great idea, too. I will also say as a CCA myself that I think we need to watch the standards there and continue increasing those standards with respect to CCAs.

In conclusion, it's plain that agriculture cannot continue to externalize the environmental costs of waste distribution. It's also clear that financial pressures, lack of information and lack of options have substantially contributed to the situation as it exists on farms. Farmers are indeed great caretakers of the land. If we provide them with tools, they can be even better. I believe farmers will rise to the non-point source pollution challenge in the same way that they have to the soil erosion challenge.

Effective non-point source pollution reduction can be obtained relatively inexpensively by changing behavioral patterns. Once again, knowledge is the key. Let's get proactive about nutrient management. We need to police ourselves or someone else is going to do it for us. Cost-sharing nutrient management plans will help. It's up to us, farmers and those who serve them, to see that America's agriculture nutrient management odyssey can be looked back on as the notable experience rather than a hardship. Thanks.

*Mr. Tim Warman*
Well, Steve, George, Sally, Cliff and Karl, I think your comments have been extremely helpful and stimulated three more pages of note taking on my part. Now what we would like to do is spend the next half an hour with the dialogue between you and us up here, and I'm going to play sort of the same role that Otto played a few minutes ago. I'm going to try to repeat the question. So fire away.

## Question and Answer Session for Farmer Discussion Panel

**Question**: I'd like to ask the gentleman from California. You said that almost all of what discussed this morning was not relevant to your clientele. Would you like to elaborate on that?

**Cliff**: Yes. I knew this was going to come up, and I was trying to think why it is. I do think it is related to the high crop value that I deal with. All the crops I work with go through these boom and bust cycles, in terms of planting. It's related to market and price, and there are no subsidies of any kind. There's no organizations saying, "Don't plant this." It's all what they want to do. A lot of what was talked about this morning revolved around "What do we do about the cost-sharing and keeping things out of production or in production." So that's why those things weren't relevant. But there were lots of bits and pieces, for example the idea of chemical salespeople talking to growers, and the partnership thing that are very important. I see that as the future.

**Question**: Along the nutrient management line and the private and public partnership, one of the things I've heard regarding some of the evaluations that were done on nutrient management plans in Maryland is that those individuals who had recommendations coming from industry seemed to be applying much more chemicals than those that were coming from the cooperative extension. I'm wondering, from a farmer's standpoint, how you view chemical salespeople who have incentive to peddle chemicals, since that's what their income is based on, in terms of getting realistic recommendations to you on how much chemicals to use?

**Steve**: I get the information for chemical applications from a lot of different sources. I have a great deal of confidence in my representatives. I listen to what they say. I go to field days where different rates are demonstrated. I play around, if you will, with different rates on my own farm. I have a lot of confidence in my local supplier who has the whole spectrum of chemicals available and what he sees working. I've got a special relationship with him. He's less concerned with moving volume than he is with seeing me succeed. Then I also work with farm managers and university extension and go to seminars in the winter and read a lot of articles and try to come up with ideas.

As many chemicals and programs as there are out there, and with the relatively new phenomenon of rebates from the companies and the mergers that are rapidly going on in the industry and the different interrelationships between design crops and chemicals, it's getting more and more difficult every year. When we just had one or two chemicals to work with, and we used the same ones every year, it was pretty easy. I don't even try to remember what I've used in the past. I try to go through a research phase every year to establish what I'm going to apply. Every year is different. What will work one year, in terms of rate, may or may not work the next year.

**Sally**: We keep extensive records about our chemical use every year and did long before that idea was promoted. Our agronomist is also our neighbor who farms part-time. He is not shy about telling us what didn't work and what does work. You finally use your own judgment about, "How much more of this can I afford," and that type of thing. So it's a combination of people and systems and information that we use to judge what we're going to use on what and where.

**Cliff**: I have very strong feelings about this topic for many reasons, and temper what I say based on it. For one thing, as a pest control adviser, an independent one in California, the chemical people are my competition. So I have to separate all that. Also, it's a little harder with nutrients than it is with pesticides. I think it's easy with pesticides. It's more a black and white issue. What I continually saw – wherever I went I saw it – was the chemical pest control adviser from the chemical company. Their primary job was to sell product. Of course, they throw in the "free field service." I know lots of very good chemical pest control advisers, but the bottom line always seems to come down to this: Since their pri-

mary function is to sell material, what suffers is the monitoring. From a pest management perspective, this is where I see the problem. It's the monitoring that helps you judiciously use the pesticide.

What they did in California about 10 years ago was try to pass legislation to make it illegal to be a chemical retail person and a pest control adviser, but that was shot down very quickly. So I think we're never going to change that. What I'd love to see is companies start separating product sales from service. That's how I see the thing going. But it's a very difficult issue, and I think it's very important.

**George:** I've had a little experience with that also, particularly with regard to that natural fertilizer we have to use. We have a fairly close relationship with Cornell. Eventually their professors retire, and we just get to retrain the new guys.

With regard to nutrient management and something as natural and biological and as difficult to manage as manure is, every year is a learning experience. That's a little bit of what I worry about with regard to a very tight set of regulatory aspects to any kind of legislation. We've had some very challenging years, for example, 1996 was the wettest on record. Of course, you don't know that going into the spring. We leave our lagoons more than half full. There goes our nutrient action plan out the window. We put commercial fertilizer on so we can get the corn into the ground. Anybody looking on the nutrient action plan in December that year would say, "These guys are just total outrageous nuts." But you got to do what you got to do to get the crop in.

I think relative to the second part of the question, the recommendations can be different, as you pointed out. I think you can look at the models and figure out what's happening. Land grant universities have other constituencies besides farmers. I think maybe that, as shown in the model, you have what might be called optimum yield, perhaps, versus maximum yield. Farmers, particularly livestock farmers, have a set amount of acreage. They know approximately what kind of yields they can expect off those acreages. They know how many mouths they've got to feed. They'll do what they have to do to do the right things to get that kind of production off their land. There is that tension there.

My personal experience with regard to crop advisers is that I've never found commercial product salesmen to give me a bad lead. I think possibly that's because there's enough competition out there so that if they do, they won't get in the front door again. Now that there's more mergers, I'm not sure how that will affect things, but as long as I see faces, I don't think I'll have a problem with that. I have noticed of late, though, that I'm starting to suffer the same thing that my dad suffered when I first came home, that the younger the faces are getting to be, the more difficult time I have taking what they're saying at face value. I guess that virus has come across to me.

**Karl**: There's another nutrient management issue there. If I could just have a couple comments on that one as well, Tim.

As a former independent crop consultant, I have a bias towards thinking farmers ought to have their own source of unbiased information. In terms of Maryland and nutrient management plans, I'm not familiar with the situation there, but if someone from the private sector, whether an independent crop consultant or a product sales representative, couldn't produce a reasonable nutrient management plan a few times over, then they shouldn't be allowed to do it. They shouldn't be in the business.

I didn't mention earlier in my discussion that nutrient management planning needs to be resource based, that is, it needs to take into account the financial, human and physical resources of the individual farm. That's one of the critical components of it. We can't do cookie-cutter nutrient management plans here. If a farmer is going to retire in four years, there's no point in having him build a manure storage structure. It has to be based on the goals of the farm.

**Tim**: Paul, you had a question.

**Question:** For the past 25 years in this country, we've tried to define basic responsibilities, things like the Clean Water Act, Clean Air Act, Endangered Species Act, even adding cultural resources components. Where we set some standards and we say that if you break those standards, then you are subject to law, we call that regulation. To protect our most basic resource – soil – we still do not have such an act. Unless we harm our neighbor directly, we can do pretty much what we want with the soil. We can destroy it, from the standpoint of raising crops on it, feeding the world, or whatever in the future. How do we deal with a bad actor when it comes to soil? We have conservation compliance, but it only applies to the worst of land, not to the best and there is a question about how long we'll have it. Should we have a National Soil Quality Act? Should there be some standards like there are for water and air and so forth? I'd like to get your opinion on that.

**Tim**: I think Paul's question was twofold: One, should we have some national legislation that deals with soil quality; and second, if we have such a law, what do we do with the people who don't follow it?

**Cliff:** I'll be quick since no one else wants to go. I guess I'd throw the question back to the audience: Is the science there? When I'm looking for ways, for growers to cut down on pre-emergent herbicide use under their vines, and I talk to soil scientists and say, "Give me evidence of why they should be cutting back," I'm really not hearing too much. So I would say if you were to try to do an act, is the science there to be able to do the act?

**Sally**: I think the best thing you can do for soil quality in this country is to keep the cattle industry healthy. Some of our water quality policies do not allow a cow/calf producer the ability to access water like they need to do. I honestly think the best way to keep the soil quality high is to keep the cattle industry healthy.

The best rotation plan is to put some grass in that rotation. That's the best way to build soil quality there is. I can say this because I don't think there's anybody here from Southern Iowa, but Southern Iowa is ideal for cow/calf operations. But what did we do? We put it in the CRP, sucked all the young people out of Southern Iowa, and they're gone, folks. They're gone. So now we have to rely on some courageous old farmers and some courageous young people to take another shot at it.

**George**: I was hoping I would be able to say that about New York, too, but we have a panel member from New York. I probably shouldn't wade into this but I talked to all our FSA people relative to where they thought things were from their perspective. Frankly, in our county, we haven't seen any EQIP because our states allocate it differently, as they tell me. Apparently we aren't bad enough actors to get some of the higher priority funding. I thought there would be a question on that, but we'll work on that later.

They talk about going out and finding professional grant writers and things like that. To answer the question directly, though, they did say the 1985 Farm Bill, where there was some sort of a stick by having the linkage between Sodbuster and wetlands and conservation plan, was very effective in our county. As I mentioned, it's an HEL-type county. They didn't like being the administrators of it, but they felt that it did save soil, was effective and had more compliance. Even though there is a lot of grumbling from farms, the fact that there was some incentive by linking the payments to conservation compliance did do the program well.

I think incentives might work where it's decoupled totally. As I mentioned earlier, this cross purposes thing of trying to link conservation to production-type aspects and commodities just gets us too confused,

and it really is counterproductive. If you consider long term conservation as a legislative goal, a national clean soil act, I guess a couple of things come immediately to mind. First of all, I'd ask, "What about the shopping centers and all that going on some of the nicest soil around?" We're totally converting it forever to nonagricultural uses, some of the best resources in the world for growing food. But also, if we were indeed to take on that kind of challenge, I think there would be some farmers in this room who would say, "I bet we could live up to standards of science." Would the country be willing to set the same standards for our GATT partners, where that cheap food would suddenly start to be awful enticing? I'd like to throw that question back out to the policymakers.

**Steve**: Also in regards to that, a couple years ago we were down to the last farmer in our area that still moldboard plowed. What got him to change to a minimum tillage operation was out-and-out peer pressure. He caught crap every morning at the coffee shop, and his wife caught crap from the other wives because of the dirt blowing into the other women's homes. Some of that works.

Also, I mentioned briefly in my opening comments about this large segment of the population that actually makes some of the decisions about farming practices, the landowners. They don't have much background on soil qualities and very little understanding about soils. They might say, "Well, my husband moldboard plowed, and he was a good farmer." Hence, moldboard plowing is a good way to go. As more and more people get removed from the farm, the amount of basic understanding about soils and soil quality and the need for soil retention structures drops and that kind of thing is apparent. Some of the education somehow needs to be directed and received by those landowners.

**Karl**: Once again, I'll chime in. I think the answer to your question, Chief Johnson, is no, I don't think we need a soil quality act. I think farmers and those who work with farmers, have a moral obligation to protect the land, but we shouldn't complicate that with a legal obligation. I think, as Steve mentioned, that peer pressure is a great way to get some of those so-called "bad actors" to change. If we can't push them to change their practices, we can maybe push them out of business. That's just the way it's going to have to be, I think.

I think voluntary programs will yield better results. We'll get better buy-in from the person who's implementing it on a day-to-day basis. I'm involved in the New York City Watershed Program, and we've got a 90 percent signup in that watershed for farmers to participate in a whole-farm plan program. Yes, there's some juicy things we offer there to do that, but there's some lessons to be learned here. I know that as a whole farm planner that when I went out onto a farm and informed that farmer that everything they do will be voluntary, they gave a big sigh of relief. These are people who have never had any agency folks on their farm previous to this, and there are lots of them, believe it or not. Frankly, I was able to get them to do a lot more in terms of water quality and conservation precisely because they didn't have to do it. I didn't have to have that stick behind my back. It's a great thing to think about.

**Tim**: Other questions?

**Question**: I'd like to go back to that idea of cost-sharing with professional advisers. There's a lot of precedence of that for forestry programs now. It seems to me that moving some public programs, for instance the nutrient management planning and some of the whole farm plans, and putting a cost-share or an adviser in there could go a long ways towards the transitions that I was trying to talk about this morning. It's a little different. I was wondering how the panel would react.

**Cliff**: I don't know how the EQIP program was advertised, but in our area it was basically funds to cover the costs of an independent pest control adviser to come in and write up the plan for you. The problem with it is there was enough paperwork that a lot of people got turned off, so my impression was they didn't leap at it. I looked at the amount offered, and I said, "Well, that's too little," but then when I real-

ized what they were pushing for, I actually thought that was quite a good way to go. So I don't quite know. The paperwork part of it really did turn off quite a few growers, but the idea is, I think, an interesting one.

**Sally**: I think that the reason a lot of producers are not interested in working with a governmental agency, frankly, is the paperwork. Also, sometimes they'll get an answer from one agency that's different than another one. Finally, they just throw up their hands and forget it and do what they think they can do on their own. And I'm speaking from experience, because my husband did that. We got cost-share for terraces, but everything else we did, we just did on our own because we didn't want to deal with the paperwork and the hassle.

**Question**: If I could follow that, though. The interesting thing about a lot of the professional advisers is they do the paperwork for you.

**Sally**: Right. If you can simplify the paperwork, I'll think they'll be interested, particularly the people who are really reluctant to use any part of any system. If they think the whole process could be streamlined and simplified, they'd be more receptive to it.

**Cliff**: Just a quick addition to that. This morning somebody mentioned how important people are. Well, in our area one of the other problems was the person from the FSA who handled all this turned everybody off. Literally the person got replaced about a year ago, and they said, "We can now do more with the programs, because we've got a different person in there."

**Question**: There was some discussion this morning about monitoring or performance goals, and I'm wondering how you would feel about data being collected on your property and how that data might be used by federal agencies.

**Steve**: Well, a concern that I would have would be like that that was mentioned this morning; how that data was taken, how often it was collected, were there circumstances that made it unique or unusual. For instance, if there was a large rain event and then they took the data or vice versa. How that was taken and how many samples? Were they going to take one sample from one farm in one county or were they going to look at all the soil types? Were they going to take it over a number of years and try to build some information? That would predicate a lot of my response in how I would feel about it. But if it was just an isolated test once in a while, I guess I would have some reservations.

**George**: I knew that was going to come up. Unfortunately, I have an answer for it. I liked what Brent had to say this morning because I think that's sort of a boxed-up way of thinking that we need to spend more time. Neil mentioned cost-sharing advisers. We all have lawyers, and all of us in production agriculture are always looking over our shoulder to see who is watching us anyway. Why not have those same crop advisers have an agreement with whoever the controlling agency is as to what the monitoring tests are to be. He or she administers the tests and compile the records, they are confidential records, unless there turns out to be a problem in the watershed or whatever the resource that's being protected is at issue. At the time that there is a problem, then the legal code of confidentiality is upheld to the extent that it can be, but for the sake of the watershed enough is opened up to find out if the client farm is the culprit. That's how I'd do it.

**Cliff**: I think a partial answer to your question has to do with comfort level. I don't know how many people are familiar with in California. There's a full pesticide use reporting system that requires all growers to report all the chemicals they use on their properties. Because of that they've gotten used to people collecting performance information, if you want to call it that. For example, in the program we have going now, there are 40 growers. They manage about half the acreage, about 25,000 acres. I collect

all the things that they do on their property. They seem amazingly comfortable with that, and I think it's partly because, over time, they've gotten used to having to report these kinds of things. If you talk to a grower who's never had to do this before, he'd probably pass out. So it's an evolutionary process, which is a partial answer. I think it's possible, depending.

**Karl**: We're just going through some of that in the New York City watershed. There was some monitoring conducted by the New York City staff. It was used in a report that was not particularly favorable to farms, and the farming community in the watershed was understandably very upset. That's an issue that we really need to be careful of.

I don't think we know enough about monitoring as it pertains to water quality to really be out doing a hell of a lot of it just yet. I'm reminded of an example where a technician was sampling a stream below a farm that discharges milkhouse waste directly into the stream. We had before and after samples. We installed a lime flocculator, which treats the milkhouse waste after it has gone through the system and before it's discharged into the stream. We had before samples and after samples, and the conclusion was there was no change. Well, come to find out, silly lawyer that I am, what do I know about this stuff so I started asking questions. It turned out the technician was getting there about noon everyday. Everybody knows that milkhouse waste systems are discharged right after milking. What time is that? 7:00, 8:00 in the morning. That water was long gone. We don't know what that phosphorus was doing, what that lime flocculator really did, and that study was being kicked around. So we've got a long way to go on the monitoring issue.

*Mr. Tim Warman*
I believe we're just about out of time. We're going to have a break after this. So if you've got questions, I'm sure they'll be glad to talk to you during the break. What I'd like to do is run through what I heard as the themes or at least the bits of wisdom I picked up as part of this exercise.

First of all, I think we forget when we work inside the Washington, D.C. beltway, personal relationships out there in rural communities are absolutely critical. The conventional wisdom inside the beltway is that pesticide dealers giving advice give crappy advice. But what we just heard, several times, is, "I've got a good relationship with my dealer, and we've developed a trust, and I think I get good information." I think that's important for us to remember. I think it's also important for us to remember when we think about how we put personnel, NRCS, FSA and extension service, out into the field.

Secondly, there are still a number of issues that require technical problem solving. I also think you said that good farm managers will solve the problems once they understand what the problems are, which leads to the other theme that education is vital for you, for the people providing information for high school kids, all across the spectrum of the community.

There was a very clear emphasis, and perhaps it was the makeup of the panel, on nutrient management. I think there's also a clear emphasis within the levels of concern about the environment, that nutrients are a key component of solving that. Your reactions to some of the questions were very enterprise dependent. I think we have to keep in mind that agriculture is not one big homogenous thing out there but some very diverse enterprises, and we have to understand that as we craft policies and solutions.

There was a very good comment right at the beginning about the need to target land managers, farmers, not just landowners, another thing that I think occasionally gets lost in the shuffle. We need to take a long-term view. That's been said several times, and we've heard a lot today about the challenges of taking a long-term view and trying to show results in a hurry. The perception that I came in here with, that the public would pay, was echoed by Sally and her experience with her brother-in-law as long as the pub-

lic perceives that they're going to get good value for their dollar. I think part of what the discussion so far today has been about is how we ensure that, in fact, the public is getting good value for their dollar.

Finally, which I found very heartening, the theme that science base performance standards can be acceptable. So I would like to applaud you. Thank you for your participation.

## Panel of Former NRCS (SCS) Chiefs

What Opportunities do you see to address unmet conservation needs on private land?
What must happen to take advantage of the opportunities you see?
*Moderator - Mr. Pearlie Reed, NRCS*

*Chief Reed*
Good afternoon. First, let me say that it is, indeed, an honor and a privilege to be here today. Today I'm going to have an opportunity as moderator to do something that I've always wanted to do. I've had an opportunity to work with the four chiefs that you see sitting here. This morning I was trying to think about something ugly to say about each and every one of them, but I couldn't do it.

Norm Berg, of course, was the chief who, back in the late '70s, ensured that I got into the mainstream of the Soil Conservation Service. Chief Peter Meyers' last state conservationist appointment was me before he moved on to be assistant secretary. I should say to you, Pete, that that was the last great decision that you made in SCS. When Bill Richards came along, I was state conservationist in California. Of course, he allowed me to keep that job; came out and spent about 10 days with me once, and that was extremely helpful. Of course, I probably spent more time with Paul Johnson working for him as his associate for approximately three years.

So, indeed, it is an honor and a privilege for me to be here today to moderate this session and to tell them that I am going to limit their time to approximately 15 minutes each. When we get done, we'll take questions. The four chiefs were asked to talk about the following two questions: 1) the unmet conservation needs; and 2) the opportunities that they see in the future. So with that I think we'll start with Chief Berg and proceed in that order.

*Chief Berg*
Thank you, Pearlie. I've enjoyed the session through the morning and through the afternoon. Chief Johnson invited the people we have sitting here at this table to two of the past NRCS conferences in the fall, and we were given the opportunity to give the younger generation that are now in control of that agency the benefit of our collective wisdom based on our experience. They were very cordial. They made us feel very welcome, but I'm quite certain they returned to their respective duties with mixed reactions to our particular view of the past and the present and the future of the agency. We had fun doing those panels.

I think we'll approach this activity in the same spirit. I had the good fortune of being able to still be here, to have worked for Chief Bennett and Chief Soulder and on through the group that we've had since then. Back in that day the movement was quite simple. First of all, I saw Bennett just before I returned to duty after being in the Marines, and he said, "Young man, your job is to go back to Idaho and help those local people learn the value of soil conservation districts," because they were still forming conservation districts. But even with the districts formed, our primary mission was on a voluntary basis for those people who were ready, willing and able to do something to go out and help them do a plan and then eventually help on the installation of the plan. It was only later that we assumed the responsibility, at least for the permanent practices cost-share through ACP, to determine whether it was needed; and if it was needed , to go ahead and set the standards that had to be met and help on the practice installation and then certify that it was ready for payment.

But look what's happened since then. Anybody coming into the agency today is faced with a myriad of activities and the complexities of the issues that we've heard this morning. What might develop in the

future in the way of policy and so forth just adds to the challenge. I've already been privileged to participate in two major conferences this month. The first was in San Diego, early July, the annual meeting of the International Soil and Water Conservation Society. There were many topics on the agenda, but the first primary speaker, Dr. Ratan Li of Ohio State University, made an excellent presentation on soil conservation and mitigation of the greenhouse effect through $CO_2$ enrichment, global in terms of the cropland aspects of that. The second was a summer meeting of our Maryland Soil Conservation District Association. I'm a member of my local board, and our 24 districts meet twice a year. The primary concern of that group dealt with the new Maryland Water Quality Act that has been referenced here a few times. That act, after quite a bit of work through the legislature, is now a law, and it is setting a new way of doing business with the people that have animal waste and are applying fertilizer. It came about because of a concern about health and safety of the water in terms of the aquatic life. It was almost a hysteria in terms of the *Pfisteria* activity. Yet, with a lot of people working together, they were finally able to compromise and meet the requirements of what the governor had in mind. They set in motion the new set of rules in terms of how nutrients are managed and especially how fertilizers are going to be applied. It's the mix of incentives for research, for cost-sharing, technical assistance and the potential for regulations. That's put off into sometime in the future but based on a planning process and so forth. But the value of that activity has already begun to show up, because the conservation districts will require additional technical assistance, the extension people will get additional people to deal with nutrient management, and there will be additional funding from the state for research and for additional information in educational work.

In between those two activities, I monitored the Senate's debate on the fiscal '99 USDA Appropriation. Their concern was for the future of the farmers in some regions that were plagued by low prices and other crop-related problems. The word used in the debate included "crisis" in some areas. That suggests when we talk about the issues dealing with soil and water conservation, it represents, as I mentioned, a very complex and wide spread of issues. I think we know a great deal about the soil, water and resource-related conservation problems on the nation's private crop, grazing and forested lands. We need to know more. We need to be able to specifically tie that back to a site when we're dealing with the problem. We need to accept the fact that many of the answers to the problems are in place, at least to reduce soil loss and in many cases to deal with the other problems, including some of the more pressing water quality problems, wildlife habitat and issues like that. In some cases it may eliminate the problem short term. Why then unmet needs? What are they? Well, there are some out here that deal with the fact that the problem may be there but it hasn't been accepted as a problem. We've heard that many, many times. It may be the next land over from that neighbor. It may be downstream someplace, and so forth.

There's the whole role of economics in terms of the costs and the benefits of practicing stewardship. It was mentioned briefly today, but the tenure problem obviously is one that is very perplexing; the complexity of having these things come together in a way that makes sense to the landowners, the land operator. There are other priorities that have to be addressed in terms of what should be done with the income that a land manager has and what they need to do today, tomorrow and next year.

However, in my mind the most pressing, unmet need is people. We need skilled, experienced conservationists who recognize the importance of interdisciplinary work, and we need them in adequate numbers to implement the conservation programs that are in place. I'm not speaking for a particular agency. I think people are needed with the right disciplines in all levels of government (federal, state and local) and the private sector. From act to action requires people. We have good laws that are just waiting to be implemented in an adequate way. We need not only people but we need the adequate financing for the cost-sharing, the rentals, the easements, the other things that the law gives us the authority to do.

Federal and non-federal programs have, on paper, provided a very substantial kit of tools for land and water managers. We need the people who are trained to assist those owners and operators on the imple-

mentation of the planned practices, and the field delivery capability that the law had in mind and, I would say, should demand. The present force of people in research and education and technical assistance tends to be heading the wrong way. We've had downsizing. We've had the demand for more efficient deliveries systems in terms of the number of field offices. All these things have impacted on the morale of the people that are in place. They've been asked to meet tight deadlines under very stressful conditions.

What should happen to correct this situation? I don't think we have a good answer. I think we're going to have to accept the fact that the budgets are going to be limiting, especially at the federal level. I think we're going to have to accept the fact that it is the landowner and the land manager who have to be responsible for what happens. It's in the *Geography of Hope*. I brought along a copy, Paul, just in case we need to be reminded. The vision is in there that farmers, ranchers and all other private landowners understand that they have the care of the lands in their hands; the vision that local action neighbors working together, is the most promising foundation for effective land stewardship; the vision that early in the next millenium our nation will achieve an added measure of that state of harmony between people and land called conservation. Now that puts the burden back, as I said earlier this morning, on the decision that this country made early on that the local land manager/owner was the person to make the decision and do what needed to be done for that particular piece of property. The reason that we don't have that totally worked out in terms of the role of government, I think, is one of our weaknesses. There were several things that were mentioned this morning that I think could begin to suggest ways in which this could be turned around. The fact that we've done things for 60-plus years in a certain way doesn't mean it's the answer as we move into the next century.

*Chief Meyers*
First, let me say that it's an honor to be here honoring my friend Norm Berg, and I think it's very appropriate that we do that. Norm, I hope we can impart some words of wisdom to go along with what you all heard today, and I'm sorry to say I didn't hear it all. I want to give you a little background as to where I've been the last six or seven years since I left Washington, Thomas Jefferson said we should all go serve our country or our state and then go back to the real world. The reason I want to share this with you is because I feel like I'm in the real world.

I run a farm management business which has me dealing with farmers everyday and the landowners. My wife and I are also involved in a Christian outreach to farm families all over the country, some of which have real serious problems. We see some of the downside to all this. I keep my hand in on the research with advisory work at the University of Missouri and the School of Natural Resources at the university. I'm trying to stay close to the academic side, but I'm really back to working with production agriculture. That's really where I want to come from today.

I know you've just heard a very good panel, but I want to share some things. We're supposed to address unmet conservation needs. As Norm says, there's plenty out there. There's no doubt about that. I'm going to focus on private lands. We're always going to have soil erosion. We're always going to have water quality degradation. We're always going to have urbanization of farmland. It's just an ongoing process. There's always going to be those unmet needs on private lands.

I will say that I see a much better conservation ethic with 95 percent of the farmers. I used to say 90 percent, Bill. Now I see it with 95 percent. I'd love to pat the 1985 Farm Bill on the back. What I really want to do is say "cost-sharing economics," but I'm not going to do that. I want to challenge you on people relationships so that we can all work together. Whether we're farmers, whether we're folks in Washington, whether we're working in conservation groups or environmental groups, it makes no difference. Some of you won't like to hear me say this, but I want to lay this out there pretty plain, and I hope the farmers in the audience will also listen to one point I want to make. First, I want to say that the environmental and the farmer/ranch groups must find middle ground for solutions. They have to be economically

viable for production in agriculture. This year is a classic example of an era of lower prices. We've got to keep these farmers and ranchers on the land, and we've got to keep them producing. The good managers can do that. Then we have to look for environmentally sound practices that are based on scientific evidence, not just some media hype or things like that.

The second point is that conservation and environmental groups and government agencies must maintain working relationships with the farmers and ranchers and those who represent them in Washington; in other words, the Farm Bureau, the grange, the commodity groups, you name it. I say "must." I think this just has to happen. But you have to maintain your relationships with the people who are working the land, not just the Washington reps. Taking nothing away from those of you that represent groups in Washington, they get a little defensive about things, and they want to just have their own side of the story. You need to keep those relationships with the farmers and ranchers.

The conservation groups should be sensitive as to what ideas and groups they identify with. You have to do this in order to maintain credibility with the farmers and ranchers, who read a lot, and know what's going on. They know when somebody's way-out ideas are coming from some groups. If you identify with some of these groups, you're going to have a hard time maintaining your credibility when you want to go out and work with these farm groups. They will let their Washington people know, "This group is off base, that group is off base," and then it gets to be very difficult if you're associated with that particular group. I'm not naming any names. I think you can put all these pictures together. Then we have to maintain working relationships – and when I say "we," I mean all of us, the farmers, the ranchers, the Washington agencies, the Washington groups. You have to maintain a working relationship with your conservation districts and those who advise them, which is mainly NRCS or state agencies.

Conservation district boards are some of the real conservation keys to farmers and ranchers. Those are the folks that are doing it out there. They're the leaders in your community on conservation. Too often we tend to neglect those folks. Specifically, conservation and environmental groups should support private property rights instead of trying to reduce them by supporting adverse government legislation. We can sit in Washington, I've done it myself, and we think, "We'll pass this law, we'll enforce this, we'll enforce this," and we don't care about private property rights, which is part of what this country was founded on. It's very easy to get into that mentality.

My daughter brought me back to reality one time. I came home from being deputy secretary and still had a year or two to go. I was expounding on what we were going to do for the farmers. She was sitting at the kitchen sink, and I was at the table at Christmastime, and she looked me right in the eye and she said, "Daddy, you've been in Washington too long." So I want to warn you about getting caught up in that mentality.

Private property rights are very important for the folks in the country. We must support conservation tillage, no-till and the necessary herbicides that make them work. Too often we say, "We can't have any herbicides." Well, I've got a friend at home that's beginning to show me that by using some common sense, the right kind of lime, reducing some certain types of potash, and using sugars, he's eliminating herbicides and doing it on a commercial basis. So there's a lot of avenues there.

But we can't tell these folks to go out and do no-till, do conservation tillage and take the tools away from them, unless there is scientific evidence to prove otherwise. We have to support the EPA issuance of the necessary clearances for currently approved agricultural pesticides, unless there is genuine scientific research to the contrary. Whether you know it or not, the EPA is at the point of pulling most of the clearances until they can re-clear all the herbicides. They feel like this is their mandate. Well, this could dramatically reduce the effectiveness of a lot of farmers and a lot of different types of agriculture. So I know it's going to be hard for some of you to do that. I'm just telling you what I see from the country.

All conservation, environmental and farm groups should support sustainable agriculture and encourage the niche markets that result from true sustainable and organic agriculture. Now you wouldn't think that would come from me, would you, Bill? But we've got folks that we're working with in our ministry that are making a good living in these niche markets. Some of those are provided by organic farming. There's a place for it. I would like to think that all farming is sustainable. I don't like to just set it aside and put it in one place. It is on our farm, and it is on the farms that I manage. So I'm comfortable in saying that.

Another one a little more controversial: Conservation and environmental groups should support genetic engineering in plants. I know that's a big no-no with some of you. These specifically altered plants can give us great reduction in the use of pesticides in agriculture. They're doing it already. I think we need to recognize that. It's also going to help keep agriculture producers economically viable. Of course, that' what's in my heart. That's what's in Mary's heart. We want to keep those farmers and ranchers on the land. We've got great opportunities for disease and insect-resistant crops through genetic engineering. We have opportunities to use fewer, if any, herbicides and insecticides if we don't have public policy or public hysteria about these GMOs or genetically modified organisms. Now I'm not ready to tinker with the human race. Don't get me wrong. But I am talking about plant genetics here. GMOs offer solutions for an improved environment as well as great economic opportunities for farmers and ranchers who don't need federal price support programs as much as they need increased prices through specialty crops provided by genetic engineering.

I want to conclude and leave you with several phrases and words that you've heard me often use, and then I'll be quiet. One word is "balance." The second is "common sense." The third is "scientifically proven."

*Chief Richards*
Pearlie, I'm going to take this opportunity as the first time I can publicly congratulate you on being elevated to the best job in Washington. I think Pearlie knew that before we did. I also thank AFT for this opportunity to visit with many friends in the room and to work alongside the old chiefs, I guess I'm allowed to call you "old," and also to honor Norm. He never ceases to be the great teacher. He was the first person that I saw the first morning I went to work. Here was Norm with an assignment of a whole bunch of stuff to read, and all this advice from this guy that I've never seen before, but that's Norm. I also thank the farmer panel, I was terribly proud of them. I wanted to stand up and applaud on several occasions.

Today I'm going to be very informal. I want to react to many of the things that we've done. I will get around to the assignment, as Peter carried out so well. But I arrived here with two things uppermost in my mind. The first is the direction that conservation tillage is going in. The second is to challenge you to come forth with a conservation farm bill of the magnitude of the '85 effort. The time is coming fast. Maybe it's already here. The pending prices and farm prices have farmers worried, and there's already pressures to rework the Freedom to Farm bill. This Monday, Senator Dewine was in our office. I put this to him, "Do we have a problem with the farm bill?" He assured me that he doesn't think there's any danger at all that they'll open the farm bill, but there is going to be some money thrown at agriculture, and he really doesn't think that he can do anything about it.

So, Jim, I'm going to come back to something you said earlier that I agree that disaster should be an opportunity. I challenge you all to really find a way to utilize those funds in farm planning. I liked the phrase that came out here earlier today, "Get a behavioral change for the money that we're going to spend."

Conservation tillage. I travel by car whenever possible. My kids laugh at me that somebody will send me free tickets on an airline, and I'll still drive. The staff used to laugh at me for trying to go from one state office to another. So I've crossed Illinois and Iowa and Indiana. I've been to Mackinaw, Upper Peninsula Michigan, down through to Omaha. I've been in Kentucky, Tennessee, Arkansas all this spring. I've also been working up in the northeastern part of Ohio, what I would call the cradle of no-till. What I see is sickening. That's about the nicest thing I can say. I'm really concerned. I'm worried. I would say that in some areas that you could get out and whether it was no-till, minimum till, or conventional till, you could take a simple ruler and measure the depth of the gullies. I mean we've got a problem in the West, out around Omaha, even where the no-till seems to be working well, we've lost so many of our waterways. Peter, I sure agree with you that conservation ethic is much, much better, but we still have some problems.

The Conservation Tillage Information Center figures I have through '97 with some others for '98 shows that we're sort of holding our own, but you have to look deeper. We're gaining in soybeans. We're gaining in cotton, but we're losing or staying awfully even in corn. Iowa, for instance, this year is going to show a 22 percent decline in conservation tillage. Norm, I even looked up Maryland, and it's going to be down 4 percent. Folks, compliance is still in effect. It's still in the Freedom to Farm bill. We farmers are getting paid quite well. We're getting paid awfully well. To quote an old friend, he used to liken me to a traffic cop. I'd have to say that while I never did agree with that, I'd have to say the speed limit signs have been taken down so far as farmers are concerned.

Now I sound like I'm being critical. I've got Paul and Pearlie here. I have never, since I've been out of there, second-guessed you. I hope you take this constructively. It's sure not all your fault. You just happen to be the ones who are sitting here at the table. We have supervisors in every county who ought to be out there taking people to task when they see those problems. Peer pressure was mentioned earlier. Peer pressure is probably the best tool that they have. The extension service is not helping us in the field. Our land grant system in Columbus is trying, but so much more research is needed to really work the problems out that we have in no-till. There are some problems, short-run problems, not long run. I would suspect that FSA is not helping you. We've talked a lot this morning about the turf battles. I've been saying lately that if those turf battles are not stopped, we farmers are going to lose all three agencies.

Most of you know that I came in really at the crucial time, at the 1985 Farm Bill. Farmers were really up in arms at the time, and probably that's why they appointed a farmer who really didn't know what the problem was. I'll never forget that soon after I got there, Jim Cubie called me up and warned me pretty sternly that, "If you guys don't get compliance, the agency is in trouble." I quickly figured out that someone had sort of bet the agency with the 1985 Farm Bill. So with all of your help and by reaching out to industry and the press and forming all kinds of partnerships, we got the job done. We sold compliance without really forcing compliance, at least to a successful enough degree that the public was happy.

I felt so good when the Monsanto fellow this morning said, "Teach us, not tell us." Well, that's what worked. I think we need to do that again. Of course, some farmers are happy that the problem has gone away. Responsible farmers want stewardship, and they're losing faith in the system. We're not helping them get that or really carrying out compliance. I like to think the 1985 Farm Bill was a masterful stroke. It wasn't regulation, but it carried requirements. Yes, it carried a stick, but it didn't have to be used very much, as also was pointed out this morning. So I encourage you to go back to that model for a comprehensive soil quality and carbon sequestration program.

The time is coming because global warming is being marketed in this country and around the world. I had the opportunity to be in Costa Rica this spring. I met landowners and farmers down there who were buying land in anticipation of some kind of a program that the U.S. and Europe were going to pay for. Otto had me at a global warming or climate change workshop this year, about a month ago. Thank you

for that. It was a great conference, but it really didn't convince me that we know enough to be making policy and budget decisions based on the information. We sure know enough to need a whole lot more research. But the thing that really got to me is the concern that it's not global warming over time that we in agriculture will adopt to, it's variability. I come away convinced that greenhouse gases and $CO_2$ are really increasing. We don't know what it's doing, but the very thought that it could be causing more variability is frightening, especially to me as a Republican, Peter, because it's become a political issue. Never in our history have we had one party blaming the other for bad weather, and it's going to work because television tells us every night the weather is bad.

Otto, you said earlier that every era has its tone. Well, the tone of this era may well be a public perception of this whole global warming issue. I think that the U.S. and the rest of the world is going to throw money at climate change. So our challenge is to offer up a program that will put that money to good use, put it to long-run productivity increases to sequester carbon. We really have some answers that we need to put on the table. I think it's going to be easier to sell than green payments. Weather is there every night. I think that that's an opportunity that I would really like to see us promote. This was mentioned earlier, Norm. Get this book as soon as you can get your hands on it. It's come out of Ohio State, so I got one of the master copies. It's really good. I suspect, Pearlie, you paid for part of that. Thank you.

In conclusion, our assignment was unmet needs. I'm saying "back to basics." Get back to erosion. That's our business. Erosion short term, soil quality long term addresses most of the other issues. What changes need to occur? My top two were your top two: to get the farm groups and the conservation groups together. But I'm going to go one better. These turf battles between the institutions, especially the three or four agencies in Washington – we've got to get over that if we're really going to get on with our mission and really serve the public. I don't know what to do about this. We're almost to the point where we've got to put them all together and start over. I sure wouldn't have said that as chief, you know that. But as a customer out there looking in, we're frustrated, and somebody has to make some big decisions.

Precision farming, and the whole biotech revolution will change the way we produce food. It will change the way crops are marketed. I was in a conference here about a month ago. The economists are already beginning to worry that so much of crop production is going to go contract to specialty crops that the Board of Trade, long term, is in danger. That's a real thought. The way land is managed, everything is really going to change. The possibility of the new technology really moving towards prescription crops, crops that are really produced under the control of the contractor, be it multinational, whatever that company is, really leads to someday when it may be the multinational food company that will set the erosion and environmental standards at the farm level. As a farmer, that frightens me. I'm asking you, "Help. Let's be ready for that before that comes." With that, thank you for your time.

*Chief Johnson*
It's good to be here today. Thank you, AFT, for convening this. It's going to be one of many that I think we're going to be part of over the next few years. Norm mentioned that we brought the chiefs together the last couple years that I was part of the agency. I'll never forget the one meeting we had when the state conservationists and our leadership all come together once a year. We brought the chiefs together, and they reflected on past experiences. I remember one of the former chiefs talking about some of the drainage work that we had done in the past and experiences of dynamite and mistakes that they made. But I couldn't help reflect as I was listening to him speak at how our people were laughing and how it sort of released them. For a number of years now we've been tightening up, and we've been thinking about the past as the sins that we had or the things that we did wrong and so on. This was just a time to make us realize that that was the past and we did good things then. We thought we did better than we think today, even on some issues. But it gave us kind of a chance for some freedom, because we're constantly being criticized as public agencies.

Drive across this country or fly across this country and look and I think you'll realize that a lot of good work is already going on. As we talk about the future and about the needs, we often talk about the problems. We talk about the bad things. But I think that we need to recognize that there's good work going on on every farm and ranch in this country today, and you can see it. We continue to build and evolve. Each chief here is known, I think, for one or two major issues, and then we try to build on top of that. My predecessor thinks we slipped a little bit on one of them. He's right in that we need to continue to put great effort into conservation tillage. As a nation, when we look at private lands, I think we continue to evolve.

ACP was not a terrible program. There are a lot of good practices out there today because of ACP, but we've said that we could probably focus better. We heard this morning that that attempt is being made, and we're not there yet. Nonetheless, I think if you look at status and trends, we're going in the right direction, and things are getting better. PL 566 has done a lot of good things, and today is doing far better. The CRP is better today than it was 10 years ago. The Wetlands Reserve Program is getting better and better from those first experiences we had with it. Now there's the EQIP and the Wildlife Habitat Incentives Program, and so on. I think that we are making improvements. I think if we look at where we are today, we recognize, though, that the job is a lot bigger than we seem to have resources for. We keep talking about how we have fewer resources or we're going to have fewer resources.

I think it's good at this point to stop and take a look at exactly where we are in this country. Many of you have heard me say this, that I think we're two-thirds of the way there. We have a public land policy that has been somewhat successful. We have about a third of our country today in public lands, national forests, national parks and wildlife refuges. That's a major part of our environmental policy in this country. We're arguing over how it should be managed and how big it should be, whether it should be large or smaller, and so on, and I think that's as it should be. But at least that piece is there and is recognized by the public and by policymakers.

As of the '70s, we have a regulatory approach in our environmental policy in this country that sets some basic standards, the Clean Water Act, the Clean Air Act, the Endangered Species Act, dealing with hazardous wastes, all of these set some national standards and we'll continue to argue over whether or not they should be tighter or weaker, and to whom they should apply. As we look at farm policy in the future, that part of a regulatory approach is certainly going to impact us. We need to be part of that discussion outside of the farm bill entirely on clean water, for example, and clean air, endangered species and so on. But the piece is there, and we recognize it as a nation, and we continue to work on it.

I would argue that there's a third part that's not there yet. We've dealt with it today in little pieces. That is the commitment to private land and private landowners. I'm going to stretch our topic a little bit, because I think we need to go beyond just farms. We here in the Midwest are constantly talking about farms, and yet you heard today that agriculture is very different in New York, very different in California, and much of the West is not part of any farm program at all. Yet there's 600 million acres of rangeland in this country that really has very little help. I think we need to look at the third part of our environmental policy in terms of private lands and a commitment to it.

Seventy percent of our land is private. Most of it is in agriculture and private forestry. I think that as we look to environmental policy in the future and as we talk about the next farm bill, we need to look at perhaps raising that issue. As a nation are we willing to contribute resources and technical and financial assistance to private landowners to go way above and beyond the basic things that we would have in a clean water act or a clean air act? We can set some basic standards, but if 70 percent of our land is only going to be devoted to producing corn and soybeans and cattle, then there's not much land for all that biological diversity out there.

If we thought about it, most of us would say that we could produce all of these things on this land if we really put our minds to it. So I think that as a nation we've got to start talking about a major effort, the third part of our environmental program, in this country, to extend a hand to private landowners, whether they be suburban homeowners or farmers or ranchers or small woodlot owners. I would argue that over the next three or four years, as we talk about farm bill and as we talk about reauthorization of our various acts, that we add that third part to it.

I know many of you say, "We can't afford it. OMB is not going to let us do it." But what's wrong with shooting towards perhaps 1 percent of our national budget to providing incentives, a proactive voluntary approach, to getting all of these benefits on private lands? This goes way beyond what we've talked about in any farm bill, but I think it's time to start talking about it. If in the end we don't have a farm bill in terms of commodity programs, I think it's perhaps time to replace it with a commitment to private lands, the International Private Lands Stewardship act. How much? I don't think it's out of line to talk about $15 billion a year to help ranchers and farmers and suburban and urban people to care for private land. That's not very much money. It may seem like a lot, but we do have surpluses right now. When you think about what it can buy, and when you think about what it can do to work us through these problems of private property rights and things like that, I think it's a very small price.

Can we get there? Some people would shake their heads and say "no." But in 1970 we didn't think that we could ever get NEPA or we could ever get the acts that we've gotten since then that set some basic standards for us. We did it. I think that it's not too early to start talking about that opportunity here. Then farm policy will still deal with how we deal with the Clean Water Act or those regulatory things, but it will also add this new dimension that I think can really buy an awful lot of benefits. I do think it's possible to do it.

From our experience in backyard conservation, we know there's a terrific interest. All lawns don't have to be bluegrass mowed once a week. There are a lot of other things that you can do to enhance the richness of that land. Roadsides don't have to be mowed, like most seem to be in Illinois. There can be some wild land along there as well. Every farm and ranch has a place for some wildness. Even where we farm it, we can farm it in such a way that the soil functions better than what it has. Some should go to research to learn how to do better conservation tillage, it seems to me. With rangeland in the West, fantastic benefits could come off of that if we put something towards it.

I'll close with one experience to give you an example of what I'm talking about. I was asked to speak out at Buffalo Gap National Grasslands in South Dakota. This is an area that was really hurt by the dust bowl. The Soil Conservation Service was asked to bring 500,000 acres back to life, we did. In fact, we did it by planting Russian thistle because we couldn't get anything else to stop the soil from blowing. Then in the '40s that was turned over to the forest service, and they managed the national grasslands and have since then. But it's beautiful land today. It's fantastic land. It's got pronghorn antelope on it. It's got coyotes on it. It's got everything that the wildlife people can dream of on it. It's producing beef. Ranchers are grazing it. It's got all of these things. The public says, "That's what we want." That's 500,000 acres. There's another 750,000 acres all around it of private ranch land.

Because it's public land, we've got about a dozen forest service personnel there, each with a nice new green pickup truck. We have a visitor's center. We have a new office, the works. The ranchers are doing the actual management of it. But nonetheless, we've committed those resources to that land. Right next to it we have the private land, 750,000 acres, 250 ranch families. What do we have to help them? We've got one full-time young female District Conservationist, we've got two part time staff, we've got an office that I'm sure doesn't cost more than $60 a month rent. We tell them all, "Yeah, we'll help you, but it will be six months or so before we can get to you." Every one of those ranchers could produce exactly what's

being produced on that public land. As a nation we're willing to commit our resources to the public lands. Why can't we commit those same resources to the private lands? Just think of the benefits that we could have if we could do it, whether it be Bill Richards' farm or a ranch out in South Dakota or a suburban backyard. Think of the richness we could have for a very, very small investment in the grand scheme of things.

I would argue that as we look to 2002, we ought to keep that in mind. I think we ought to start talking about it nationwide. I don't accept the fact that we don't have the money. This is the richest economy the world has ever seen. We spend more on deodorant in one day probably than we do on private lands conservation in a year. We've got money. We've just got to commit ourselves to it. The public wants it. Private landowners need it. At the same time we can be as productive as we've ever been and more so when it comes to producing the traditional commodities. So I would throw that out to you. Let's not think so small as to say that the next farm bill has to tweak EQIP. These are all tools for a much larger picture that I think can really give us an exciting future and one that our children and grandchildren will be proud of us for.

*Chief Reed*
Thank you, Paul. Why don't we give them a hand before we start with questions.

## Question and Answer Session for NRCS Chiefs

**Question:** Paul, I would just like to follow up on your last statement, to throw out something. I just finished an analysis of the Class 300 budget from 1960, that's the first source of environmental budgets. One of the things you see is that we were doing an awful lot for water resources in the '60s and '70s, and that got replaced by a really large sewer and water grant program which took over and took a big piece of that. That's starting to tail off. It seems to me that there's an argument to follow one you just made that says maybe it's time that the lands of this country, which we really haven't touched with a major bit of manpower and a bit of effort since we shut the CCC's down, maybe it's time for the lands of this country to take their turn and get back to the system. Have you woven that one together in that argument at all?

**Chief Johnson:** You can tell from my comments that I'm thinking about the larger scale right now and haven't had a chance to put together the pieces on it. But we have committed, I think we saw a graph this morning, a huge amount of money to water and sewer plants and things like that, 10s of billions, hundreds of billions perhaps to clean water. We've done the same with clean air. Yet our commitment to the working lands of this country, over a billion acres, is a $200 million EQIP, just $200 million. In fact, we even put $2 billion to CRP to tell farmers that, "If you don't farm it, you're doing conservation." So we've done almost nothing on private lands beyond the technical assistance. Thank goodness we have that. So somebody should stack up what we've been willing to spend on these resources, and I think we'll find that we could make a good case for it.

I heard this morning the comment that Kika de la Garza says that, "We've bought this land already." I disagree with that a little bit because we're not buying the land. We're purchasing benefits off that land. When I lease land from a neighbor to grow corn on it, after 10 years I don't own the land, nor do I think I should. I bought some rights to use that land. I think the public can continue over the long haul to buy some rights from farmers and ranchers and private landowners. There's nothing wrong with renting partial use of a piece of land for bluebirds or lady slippers or things like that. So I think that's the other way to look at it. I don't think the answer is putting everything in the public domain, nor is the answer regulating everything. The answer is going out and accepting these conservation benefits as commodities and being willing to pay landowners to produce them.

**Question**: One of the themes that has come out today is that there is a lot of frustration between what we would like to accomplish in conservation, what we think we can, and what we seem to be able to do when it comes to the limited money available, and limited staff. A whole variety of topics are identified under that. One of the ones that Chief Meyers touched on, and I would like to hear your comments on, is the way interests are represented in Washington. In particular, it strikes me that some of the national groups that lobby on the national political scene are not necessarily in touch with what the local constituencies seem to feel about some of these issues. At least that's what I find when I talk to local people when I have those rare opportunities to do that. I was wondering if any or all of you would comment on that disconnect and how that might affect this frustration between being able to get to where we seem to want to go and everyone seems to want to go and why we can't get there?

**Chief Meyers**: Well, of course, I indicated that we need to make the connection, but I also didn't indicate to you that I did work for three years as a lobbyist. I did find out if I didn't have my people in the country behind me, I was very ineffective as a lobbyist. So the groups that are doing a good job are making the connection, and farm bureau would be one that I'd tell you about. I'm not as familiar with some of the others.

The commodity groups are getting better. I don't know how well the environmentalists connect their people in the country with their Washington people. But I do know that these Washington folks, and I've

sat in with some of them trying to resolve some issues, get awful defensive about their own turf. I don't know that their folks in the country know that they're this defensive about it. The way to make connection is have a grassroots structure, which not everybody can have. The farm bureau has it. Ralph, you're getting it. I can see it in the magazine that you're getting more grassroots in American Farmland Trust, but you don't have it yet. Bill, you have any thoughts on this?

**Chief Richards**: Well, the problem is just there all the time. I'm sitting here thinking about our state tech committee that I get to serve on. The farm representatives come instead of real farmers. They don't understand the real problems, and that goes all the way through. Part of it is the farmers' fault. We don't give enough of our time to do it ourselves, and you can't necessarily hire somebody to do it. I really echo one of the real surprises I got that if you try anything new in the way of policy in Washington, you immediately have those different representatives from those groups really dig their heels in. They resist change a lot more than their members out there do. That's a problem of our system.

**Chief Reed**: I have a question for Chief Meyers and Chief Richards. Both of you alluded to the problem of the turf situation there at USDA and how that's manifesting itself out in the countryside. If you could write a prescription to fix that, what would it be?

**Chief Johnson**: And why didn't you?

**Chief Richards**: Well, I obviously don't know. That's why I was being provocative and just for orneriness threw out "starting over." I really don't want that to happen. But the frustration shows. My sons go into the ASCS office and say, "Dad, didn't this get fixed in the farm bill? How come we're doing all this anyway?" Things just don't change. Then you go down to our office, and forgive me, Pearlie, and we're overburdened. They can't possibly get out and serve all of the requests of us farmers. And extension is pulling the other way. I don't know the answer. I thought it was interesting the way that so many of the speakers talked about it this morning.

**Chief Meyers**: Bill, you probably had as good a relationship with an administrator of ASCS as anybody I've ever seen, and you still had problems down in the ranks. Pearlie, I don't have a good answer for you, but I think it has to be solved. Paul brought it out. Bill mentioned he's worried about combinations. Yet if we're going to be effective in conservation and water quality and farmland protection in the field, we've got to have more people out there working, federal and state people and conservation district supervisors, instead of fewer people. If we roll the NRCS into a farm program group, the FSA, you're going to lose your effectiveness, and eventually the Department of Interior is going to take it over or something like that. Of course, that's the last thing that any of us want to see happen, not from pride, just from practicality. It has nothing to do with the fact that we were former chiefs. That really doesn't make a difference. It's the fact that we want to be effective out there on the ground on the private land. There's not a good answer. I come back to the farm groups, and I come back to the need to continue to educate our congressmen and women and senators as to the need of separate agencies. It's going to get tougher and tougher as there's fewer and fewer dollars and people. I like Paul Johnson's thought about investing in private lands, more dollars. It's going to be a tough one to sell, Paul. I totally agree with you, it's just going to be tough to sell it politically. Bill hit the nail on the head. The farmers are too busy farming to get up there and lobby like they should. The folks that were here today I'm sure are very effective because they take an interest in it. It's very difficult. I'm not excusing my compatriots in the farming community, but they'd rather work on the farm; and when they get a little time, they go fishing.

**Chief Reed**: Any other questions?

**Question**: If we're planning towards 2002 and we're talking about mobilizing resources, that's easiest to sell if you've got a definable mission for those resources. Bill had an easy time of it. He had this mission

dropped in his lap and had to cook with it in terms of the 1985 Farm Bill. What could we define as a mission for 2002 that would provide the kind of attention and discipline that Bill got forced on him but that also maybe can galvanize some resources and accomplish something?

**Chief Richards**: I hate to sound like a broken record, but I think heading down the road of a comprehensive soil quality improvement bill that will build productivity for future generations will really protect and improve the environment. I'm not one of those that takes the track that we just hold our own. I think we have the technology to really improve the environment while producing abundant food. The mission needs to be to serve the people of the world, to better the systems here not only for food production but really now we've got the opportunity to improve the carbon levels of the world. That's something that we didn't think about. I'm sure you all didn't in the '85 or the '95 farm bills. That's why I brought that up. I think that's a timely opportunity that we need to jump on because it's win-win for everyone concerned.

**Chief Berg**: I think a previous panel said that we didn't need the equivalent in soil that we have in air and water as a national goal, a national objective. But I think we do. I don't think we can deal with the problems we're dealing with, like this Maryland law, with nutrient management activities. But it has to be a part of what the quality of the soil is going to end up being in terms of what's needed to produce, not only the food and fiber but the other benefits. One that might be a little narrow, but I think the American Farmland Trust is concerned about moving this country towards the objective at least of no net loss of our prime and unique lands. We sit here, and just outside this building, this beautiful soybean field just to the right of us is headed for lot development. If we have no net loss in wetlands, why not no net loss for our most valuable producing areas in terms of food and fiber?

**Chief Johnson**: All of the issues dealing with the environment today impact private lands, and private lands can contribute to solving the problems. I think we figured that 88 percent of the precipitation that falls every year in this country falls on private lands, 88 percent. If that's the case and you want clean water, guess what? That land better be functioning properly. So when we talk about clean water, we're talking about assisting private landowners to use that land better than what we have. Air quality, the same way; and the global climate stuff, carbon sequestration. You talk about endangered species. Most endangered species probably inhabit private lands. The answer is not to regulate every single landowner but to provide incentives to develop better habitat. I think that, for almost every issue facing us from the environmental standpoint today, part of the solution would be a major 2002 stewardship bill of some sort. I think the American public would understand every bit of it if we couched it right. Who would be against it other than OMB? Private property rights people? It's a way to diffuse some of the anger that's out there. Clean water people, clean air people, global climate change people, wildlife, endangered species, all of these. A great part of the solution to the problem lies in better management of private lands and rewarding private landowners for doing good things. So I think there are real opportunities there if we can pull this coalition together.

**Chief Reed**: We have time for two more questions.

**Question**: I was just wondering, if we're going to spend 15 billion on this private lands program, what the public reaction will be given that in most other environmental regulations we have this theory that owners should pay. That has never really applied to agriculture. I am wondering, if you went to a program of that size, and I know it's not that big compared to some of our other programs like defense and other things, if you might have calls for that? That seemed to be what Neil Sampson was saying this morning to some extent in the connection between forestry and agriculture. I was wondering if you would comment on that?

**Chief Johnson**: I think we're going to have a push for higher standards. What I think we need to couch this in not just, "We're going to meet the minimum standards." This will bring farmers to the minimum,

but it will give us an opportunity to go way beyond that and to have a richness of an American landscape that I think all life depends on over the long haul. So it's not just an issue of, "This is going to meet the basic requirements." We're going to ask farmers and everybody else to meet basic standards, I think. This doesn't preclude things like trading of pollution permits and things like that. All of that can fit within it. But this takes that richness above and beyond that. It keeps open spaces. It deals with endangered species issues that we're never going to be able to deal with just by hitting somebody over the head. We've heard over and over again, "You can't regulate what that farmer does every day in his back 40." It just doesn't work.

**Chief Reed**: We'll take one more question.

**Question**: Related to that, Paul, it seems to me you get the boldest action when there's a crisis. Right now the only crisis that I see is hog manure and that is the crisis. I did my own informal survey on the way to the conference. I asked the limo driver, "What's the biggest problem in agricultural conservation?" He said hog _____ – and he didn't use 'manure' – he used the "s" word. He said it very, very forcefully. I know that's not a big enough issue to wrap around your concept, but I wonder what is it that we can sell the American people to convince them. For the Clean Water Act it was the Cuyahoga River and things like that. I think your concept is something the American people would probably support if you could get to them. They seem to want a fire, a crisis, and do you see anything? Maybe Bill is right, maybe it's the climate change that's really going to push it because I sense that's what's resonating with the public but not in the political arena. Any comments?

**Chief Meyers**: Well, you're right – politically. It takes a crisis to motivate things. The only real one on the horizon is global warming and carbon sequestration. Whether that's enough of an issue to sell to the public, I don't know. I was going to add just a minute ago that cost sharing does work. We do a wonderful job in Missouri on cost sharing with state funds. The EQIP program is helping on irrigation management. I think there's a lot of things we can do with education and cost sharing. Whether we can get the public cranked up enough to give $15 billion is an entirely different ballgame. I don't have a good answer. Politically it will be tough.

**Chief Richards**: While you were talking the $15 billion I kept thinking, what can we put on the table to earn that because that's the way it's going to work. It's back to the performance-targeted system. If we could really show that we were raising carbon levels in the soil, that we were raising productivity, that we were banking something for America and the world's future, I'd think we'd have a good chance of going at it. I also might throw out that I think we're going to spend the $15 billion. It might not be here.

**Chief Johnson**: I throw out that number just because that's what we're spending per acre on public lands for these benefits. I think if you look at the potential for environmental benefits, they're much greater on private lands than they are on public lands. They're richer lands. They're lands that host much more biological diversity. As I said, they're lands that filter and partition most of our water. I don't know if that's the right figure. If we could get a billion more, it would be better than where we are. But I won't settle for that yet.

**Chief Berg**: On a subject that is somewhat related, Paul and I are co-chairing a program committee to put together a conference in January that will address, we hope, the state of North America's private land in terms of an assessment, of what we know, of what we don't know, what the tools are that are available, what's working, what we need to do better, and try to identify in the soil, air, water biodiversity area, what it is that we know that the public needs to know. That may support some of the things we're talking about.

**Question**: Talking about the $15 billion and Bill's comments about using performance standards or performance targets of some type with conservation compliance, there seemed to be unwillingness, at times, to the monitoring that came along with programs based on our performance standards. I'm curious what your thoughts would be on how the agency or something that could be developed could deal with the issues inherent in any sort of performance standard monitoring. What are your thoughts on that?

**Chief Johnson**: I think the others ought to comment on that as well. There is a little difference here in that this is new money and if a landowner signs up for it, they're signing up with a very good understanding. In the past, if we could have taken away all commodity programs and said now you can have a commodity program if you do compliance, I think it would have been easy. Nobody would have been complaining. But because that was already there and we in the agriculture community thought that was already ours, and then added some restrictions on top of it, we got that reaction. We got through it, thanks to these two guys in particular. I think it would be a little different if you started with a new program on top of the other. Now you would say that you'd have to meet some basic standards in order to access this, and I think that there would be a lot more acceptance of it, because the rules would be there right from the beginning.

**Chief Richards:** I think what you're asking is a question I ask of the sciences and so forth, "Do we have the technology to do the measuring? Can we tell whether or not soil is improving?" The answer is "maybe." But I'd also say that, Peter, you all went into that other deal without the science to really make it work. It's not an exact science.

**Question**: The follow up question is: is the agency willing to have district conservationists doing the monitoring as well as provide the technical assistance vis á vis the performance standards and the practices to keep them. How do you handle that issue?

**Chief Meyers**: The agency needs more DCs, I can tell you that, a lot more. We don't have them out there anymore.

**Chief Reed**: It would be easier to answer that question from a former chief's perspective than the present. Okay. We are about out of time. I do want to give the four wisemen who are sitting here an opportunity to make a parting comment, if they would like to do so.

**Chief Berg**: Thanks again for allowing Ruth and I to be part of this workshop. We are looking forward to the next century.

**Chief Meyers**: I would just say we've got to be working together, the environmental groups, the farm groups, the conservation groups, whether they're in Washington or outside of Washington, and we can't be hammering at some of these issues and picking them apart when they're economic issues for agriculture and then expect the farmers to come to the table and cooperate on conservation issues.

**Chief Richards**: Thank you, Pearlie. I think Norm hinted that you'll invite us back, and I would second that. It was an exciting time to be a chief. It's an exciting time to be back on the farm and be in this business. I'm looking forward to the kind of a program that we had before that will really set us up for the future so far as really improving the environment and improving the productivity of our farms.

**Chief Johnson**: I think we ought to constantly thank private landowners for the good work that they are doing. We don't do that enough. I think it's very, very important that we do it. There's a lot of wonderful work going on out there, and they never get told "thank you." I would urge us all to do that. Beyond that I think we ought to think big.

**Chief Reed**: Let's give them another hand.

## Closing Remarks

*Dr. A. Ann Sorensen*

If our panel would just like to remain seated, Ralph and I are going to keep our remarks very short. We are cognizant that we are between you and rush-hour traffic in the Chicago area. We have quite a few people that have early flights out of O'Hare so we want to keep our remarks quite brief. I'm going to go first with just a few housekeeping notes, and then I'm going to let Ralph close the workshop.

One brief item: We have a few panel members I believe that have not signed the brochure that we're presenting to Norm. After the conference, if you have not signed, please come up and see me, and I'll direct you over to it, and we'll get your autographs on it. Also, you have evaluation forms in your packet. Hopefully, all of you have packets. We'd really like you to fill those out because that's what enables us to do really good conferences. We'd be particularly interested in knowing how you found out about this conference. It's always a challenge for us to make sure that we get the word out. If you have any suggestions or recommendations on how we can get the word out more efficiently, we'd also appreciate that.

I was remiss this morning in not recognizing our sponsors. It's always a challenge to put a workshop on, but we had several sponsors that I want to recognize: Of course, NRCS is one of our most important sponsors, but we also had the Economic Research Service, the Wallace Institute, the Leopold Center, the Farm Foundation and I'd like to thank the DeKalb County Farm Bureau for these wonderful facilities and everything that they have done to help us host this conference. I'd also like to particularly thank my staff. I am really just a figurehead. We couldn't do these kinds of workshops without really good cooperation and a lot of hard work from my staff. Teresa Bullock is our administrative assistant, who a lot of you dealt with over the phone. Denyse Sturges is our farmland information librarian, and this is where the proceedings will reside. Esther Day is the resource economist who is working with us. We have three graduate students, one who is just finishing up, actually delivering his Ph.D. thesis today, Patrick Stewart, and two new graduate students, Anita Zurbrugg, who is with the NIU Law School and affiliated with our Farmland Information Library and Trent Shaskan, who just joined us as a graduate student from NIU.

And our speakers stayed on time. That's a great tribute to them. I know we really loaded up this workshop. We kept you to very strict time schedules. I think each speaker could probably have spoken easily for eight hours. I know Otto could have. So I really, really appreciate the time and effort to get here. I appreciate everyone who has participated in this conference because I know that you're all very busy, but this is a really important issue. We're talking about the future of our country. Finally, just a personal note to Norm. I've organized a lot of workshops, and I usually have to call in all sorts of chips and use guilt trips on people. I have to launch into a real long spiel to try to get them to participate in the workshop. Sometimes it's really a challenge. But this time, let me tell you, I barely got the words out of my mouth, "We're having a workshop in honor of Norm Berg," and everybody said, "Where is it? When is it? I'm coming." Norm, this was a real honor for us to host this workshop, and I just want to say that it's been a real pleasure working with you. With that, I'd like to turn it over to our president, Ralph Grossi, for some concluding remarks.

*Mr. Ralph Grossi*

Thank you, Ann. Norm, I want you to know there are no subliminal messages in honoring you today. We expect that you will continue to work on these issues for a long, long time. I could talk all day, too,

actually. I could spend a lot of time, but I'm one of those who has an early flight tonight so I won't. We heard a lot of good things today, both in terms of the technical aspects of the programs and how they're implemented as well as the political ramifications. I'd like to go through and just remind you of a few of them before we wrap up.

I think it was very instructive that Otto led off this morning with a bit of history about farm policy in this country. He reminded us that conservation was the justification in 1936, or part of it, for income transfer of payments to farmers. My first major effort on a farm bill was in 1985, and conservation reserve was part of the justification. Income transfer to farmers was a part of the reason that CRP came into play at that time. My only thought about that is that I'm tired of conservation being used that way. I think it's time that conservation becomes the reason that we work with farmers not the excuse. He also reminded us of interagency tensions at USDA in the early days.

Neil pointed out, and I think a lot of farmers might be surprised by this, that we're not all that regulated in agriculture, that actually forestry is much more regulated than we are in agriculture. I think he was implying that if we don't find ways to address some of these issues, eventually we will follow down that track. We will become a more regulated industry than we have been. There are lots of policy ramifications for Neil's other point when he referred to agriculture and the forest industry becoming bipolar. There will be a lot more small producers and a few very large producers and not very many in the middle anymore. Clearly agriculture is quickly moving in that direction. The policy ramifications of that aren't clear, of course. But I think we'd agree that most of the programs we've been working with historically were designed for that middle group. So we have to think about that, and that's an important nugget that we take away from this conference today, a recognition that that is an issue.

He suggested that the trend will be to regulate the large producers and try to provide incentives for the small producers. In a number of ways that came up today, but no one ventured so far as to say where you draw the line. What is a large producer? What is a small producer? I suspect that's going to be one of those tough political issues. Being a dairy farmer from California, I think I know what a small dairy is. My friends in Vermont probably have a different opinion of what a small or large dairy is. We have some work to do on that front.

On a number of occasions, farmers and other panelists today alluded to the issue of the bad actors, the problem stewards. I was very encouraged by George Allen's comments and others that, "It's time to do something about those people because they are part of our problem." It's a difficult issue. One of the messages I got here was that it's time to think about what you do about those 2 percent or 5 percent or whatever number it is that really aren't living up to the expectations and responsibilities of private landowners and farmers.

I thought Brent's presentation on pollution trading was very intriguing, picking up on a trend in other areas, clean air, for example, and trying to apply it to agriculture. This is another interesting concept that certainly has some merit as we look ahead to the policy discussions. A very important point he made and many others made during the day, is we need to put emphasis on performance not practices, that the only way to really solve problems is to identify what the expectations are of the landowners as stewards and then give them the flexibility to solve the problems; not the prescription but the flexibility. Sandra reminded us that that we are working in a larger global environment, that we have to think about the term GATT-legal as we think about policy moving forward, and that does draw a boundary around the kinds of things we can do and the kinds of ideas that we should be developing. She talked about green payments and the EQIP program and the fact that it has potential, but changes are needed in the way it's being implemented.

Dave talked about partnerships and the actionable level of partnerships and the need, again, to have flexibility so that partnerships can develop and respond to issues at the local level. Tom reminded us that there are partners out there in the corporate world who are willing and able to not only participate but bring resources to the table to help individual landowners solve problems. Finally, one last point that I thought was very important that Steve raised near the end, and that is we often forget that many farmers are tenant farmers. Many of the people whose behavior we want to influence are not the owners of the land. Too many times that's forgotten in the policy process, and is only really responded to in the aftermath of policy development in the rule writing process. We can remember some of those fights over CRP payments and how they were going to be allocated. We need to think about that going in.

I think there are also some things we didn't hear. That's my perogative. Before the last panel, the issue of private lands and property rights and responsibilities of individual landowners was at the top of my list. Fortunately the last panel took care of that, I think, we need to recognize that there are rights and responsibilities and that there is a role for government to facilitate that whole process. The word I didn't hear all day today was the six-letter word that we deal with almost every day: "sprawl." Sprawl is a hard word to define right now, but across the country that word is catching fire. In communities everywhere people who are sitting in traffic jams breathing contaminated air, people whose kids are spending an hour and a half or two hours on school buses, are beginning to rethink the growth patterns of communities all around the country.

Today on your way back wherever you're going, home or to an airport, I want you to do one simple thing. Count the number of new subdivisions that you pass where there's a real estate sign that says "farm view development" or something like that. It's pretty important to have a farm view in your new home in the countryside, until the next home is built out your back window, of course. We think sprawl is going to be a powerful word over the next few years because there is an accumulation of a lot of frustration among an awful lot of voters who live in suburban America today. They're going to start putting demands on government (local, state and federal) to do something about it. We don't know how or what that will mean, or how it will manifest itself in terms of public policy, but know that the problem of suburban sprawl is growing rapidly, if you excuse the pun. It also means that as a consequence of that, a lot of good farmland is being lost, and you see it in some of the best farmland right around this center, as Norm pointed out earlier. This is an important issue.

We're very pleased, of course, that there was a little bit of a new program in the 1996 Farm Bill, the Farmland Protection Program. We met reality last week when there were no funds appropriated for the program for next year. That tells you something about the priorities in the traditional farm policy and appropriations committees. I'm pleased to say that NRCS has taken leadership on this issue. Training is occurring among district conservationists around the country. There is the establishment of the Farmland Information Center to get information out, funded by NRCS. We're very pleased with that and hope that will continue in the years ahead. The other concern I have about today's comments and the discussion is that we tended to be primarily thinking inside traditional programs today. Of course, that's because we're thinking about the farm bill as it currently is. We have to think about what the farm bill could be. I said this morning when we started I think we're in a period of transition, a paradigm shift, if you will. I said that in a paradigm shift you don't know you're in it until you're well into the process, and you don't know what it's going to look like at the other end. All you really know is that something is going to change. You're going to have a different circumstance five or 10 years from now than we have today in farm policy. We don't know what that is, but we have to start thinking as they say "outside the box." We have to start thinking about what it is that farm policy delivers to the American public. What do they get for their dollars? We have to ask that question because we need their votes. It's that simple. We've had the benefit of not needing to go to the public for support for a long time, but now that we've started the process with Freedom to Farm of decoupling, by 2002 we're going to have to come up with a pretty good reason to continue shuffling tax dollars into farm programs of some sort.

I think the public wants value, but I don't think the public necessarily wants to cut the funding. There's a powerful and deep reservoir of good will across America for the American farmer. The public wants to help them, wants to help farmers succeed. They want to know how the dollars are going to be used. Part of our job is to think about how those dollars are going to be applied. We had some wonderful ideas at the end of this last panel, as you would expect. The chiefs came up with some great ideas. I applaud the comments that Paul and Pete made about the need to deal with the private lands issue.

Let me make one other point, because it goes back to a speech last December by Charlie Stenholm in Washington. He talked about the loss of about $7 billion at the end of 2002 in the farm programs because of the budget agreement. Whether that's the right number or not, I don't know, but it's something around $7 billion that may disappear from farm programs. I think the best estimate is that there might still be about $4 billion left in the programs according to the budget agreement. Is that enough money to do what needs to be done? The first point is why should we have to live by that agreement? Agriculture delivers a great deal. But there is at least some money left there that we have to decide what to do. Four billion dollars are left, and if it's not going to go to additional Freedom to Farm payments, where is that money going to go? We heard some good ideas. We heard today that we need more research, better education, more assistance for landowners in the form of incentive payments. If we start thinking about that kind of a basis for the future of farm policy and begin to build the programs around those reasons, I think we can sell that to the public. Maybe we have to add food safety and a couple of other contemporary concerns. That would be fine. Then we can start talking about the kind of money Paul was talking about I think, because then we would have the constituency.

Right now the process that has been evolving since the last farm bill, and even in the previous farm bill, is that we all pat ourselves on the back after the farm bill saying, "What a wonderful job we did. We got all these new programs." Then we meet reality at the Appropriations Committee. What happens there is we all start this sort of infighting and feeding off of each other and cannibalizing each other's programs and trying to save our program at the expense of some other program. We saw it in spades last week. The only way we're going to stop that is to have a bigger pie to divide up. Because right now what we're doing as a community (agriculture, conservation, environment, research education) is we're intensifying the battle over fewer and fewer dollars. That can't last. We have to think as a group about really expanding the pie, and I like 15 billion. That's a nice number, Paul. Let's start there. Think both technically about the programs that will be justified in the public's mind and politically about how to build the constituency to do that.

Thank you all for coming. Happy birthday, Ruth. You'll be hearing more from us, of course, because I hope that the ideas that were generated here today will begin to fuel a process that will lead to more and more gatherings where we can sort these ideas out. Thank you very much.

# Appendices

# Appendix 1

## Acronym Listing

| | |
|---|---|
| AAA | Agricultural Adjustments Act |
| ACP | Agricultural Conservation Program |
| ADM | Archer Daniels Midland |
| AFT | American Farmland Trust |
| ASCS | Agricultural Stabilization and Conservation Service |
| BMP | Best Management Practice |
| BOD | Biological Oxygen Demand |
| CCA | Certified Crop Advisor |
| CCC | Civilian Conservation Corps |
| CCC | Commodity Credit Corporation |
| CPA | Conservation Priority Areas |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| CRP | Conservation Reserve Program |
| DEQ | Department of Environmental Quality (Michigan) |
| DC | District Conservationist |
| DDT | Dichloro-diphenyl-trichloroethane |
| EQIP | Environmental Quality Incentives Program |
| EPA | Environmental Protection Agency |
| ERS | Economic Research Service |
| FAIR | Federal Agricultural Improvement and Reform |
| FFA | Future Farmers of America |
| FIFRA | Federal Insecticide, Fungicide and Rodenticide Act |
| FOTG | Field Office Technical Guide |
| Foundation E.A.R.T.H. | Environment, Agriculture, Research, Technology and Harmony |
| FSA | Farm Service Agency |
| FTC | Federal Trade Commission |
| GATT | General Agreement on Tariffs and Trade |
| GIS | Geographic Information System |
| GMO | Genetically Modified Organisms |
| HEL | Highly Erodible Land |
| IPM | Integrated Pest Management |
| NEPA | National Environmental Policy Act |
| NGO | Non-Governmental Organization |
| NPDES | National Pollution Discharge Elimination System |
| NPT | Negative Pollution Tax |
| NRCS | Natural Resources Conservation Service |
| OECD | Organization for Economic Cooperation and Development |
| OMB | Office of Management and Budget |
| OTA | Office of Technology Assessment |
| PCB | Polychlorinated Biphenyls |
| PMA | Production and Marketing Administration |
| POTW | Publicly Operated Treatment Work |
| R&D | Research and Development |
| SAF | Society of American Foresters |
| SCS | Soil Conservation Service |

| | |
|---|---|
| SES | Soil Erosion Service |
| SPRC | Statewide Priority Resource Concerns |
| TMDL | Total Maximum Daily Load |
| USDA | U.S. Department of Agriculture |
| WHIP | Wildlife Habitat Incentive Program |
| WRP | Wetlands Reserve Program |
| WTO | World Trade Organization |

# Appendix 2
# Speaker/ Participant Listing

**Welcome and Introduction**
Mr. Ralph Grossi
President, American Farmland Trust
1200 18th Street, N.W., Suite 800
Washington, D.C. 20036
Ph: (202) 331-7300
Fax: (202) 659-8339
e-mail: rgrossi@farmland.org

**Opening Remarks**
Mr. Norman A. Berg
Senior Advisor, American Farmland Trust
1200 18th Street, N.W., Suite 800
Washington, D.C. 20036
Ph: (202) 331-7300
Fax: (202) 659-8339
e-mail: nberg@farmland.org

**Keynote Speakers**
Dr. Sandra S. Batie
Elton R. Smith Chair for
Food and Agricultural Policy
Department of Agricultural Economics
Michigan State University
East Lansing, Mich. 48824-1039
Ph: (517) 355-4705
Fax: (517) 432-1800
e-mail: batie@pilot.msu.edu

Dr. Otto C. Doering
Professor, Public Policy Specialist
Department of Agricultural Economics
Purdue University
1145 Krannert Bldg., Room 569
West Lafayette, Ind. 47907-1145
Ph: (765) 494-4226
Fax: (765) 496-1224
e-mail: doering@agecon.purdue.edu

Dr. David E. Ervin
Director, Policy Studies Program
Henry A. Wallace Institute
for Alternative Agriculture
9200 Edmonston Road, Suite 117
Greenbelt, Md. 20770-1551
Ph: (301) 441-8777
Fax: (301) 220-0164
e-mail: hawiaa@access.digex.net

Mr. Thomas J. Hoogheem
Environmental Operations Director
Monsanto Industries
800 N. Lindbergh Blvd.
St. Louis, Mo. 63167
Ph: (314) 694-3345

Mr. R. Neil Sampson
President, The Sampson Group Inc.
5209 York Rd.
Alexandria, Va. 22310
Ph: (703) 924-0773

Dr. Brent L. Sohngen
Assistant Professor, Department of Agricultural,
Environmental and Development Economics
The Ohio State University
322 Agricultural Administration Building
2120 Fyffe Rd.
Columbus, Ohio 43210-1067
Ph: (614) 688-4640
Fax: (614) 292-0078
e-mail: sohngen.1@osu.edu

**Farmer Discussion Panel**
*Moderator*
Mr. Timothy W. Warman
American Farmland Trust
Vice President for Programs
1200 18th Street, N.W., Suite 800
Washington, D.C. 20036
Ph: (202) 331-7300
Fax: (202) 659-8339
e-mail: twarman@farmland.org

Mr. George Allen
Allenwaite Farms, Inc.
414 Waite Road
Schaghticoke, New York 12154
Ph and Fax: (518) 692-9142

Ms. Sally Puttmann
1023 Kossuth Ave.
Kingsley, Iowa 51028
Ph and Fax: (712) 378-3569

Mr. Karl Czymmek
Watershed Agricultural Council
RR1 Box 74
NYS Route 10
Walton, N.Y. 13856
Ph: (607) 865-7790
Fax: ( 607) 865-4932
e-mail: karl_czymmek@cce.cornell.edu

Mr. Steve Wentworth
Foundation EARTH
RR#1 Box 262
Oreana, Ill. 62554
Ph: (217) 877-9691
Fax: (217) 877-9694
e-mail: pwentworth@q-com.com

Dr. Cliff Ohmart
Lodi_woodbridge Winegrape Commission
1420 South Mills Ave, Suite K
Lodi, Calif. 95616
Ph: (209) 367-4727
Fax: (209) 367-0737
e-mail: ipm@lodiwine.com

**USDA NRCS Chiefs Panel**
*Moderator*
Mr. Pearlie S. Reed
Chief, NRCS
U.S. Department of Agriculture
P.O. Box 2890
Washington, D.C. 20013
Ph: (202) 720-7246
Fax: (202) 720-7690
e-mail: pearlie.reed@usda.gov

Mr. William Richards
Former Chief
Agri-Business Consultants, Inc.
24537 Canal Road
Circleville, Ohio 43113
Ph: (740) 474-3602
Fax: (740) 474-9364

Mr. Peter Myers
Former Chief
519 Tanglewood
Sikeston, Missouri 63801
Ph: (573) 471-3700
Fax: (573) 471-7971

Mr. Paul Johnson
Former Chief
Oneota Slopes
2689 Lannon Hill Road
Decorah, Iowa 52101
Ph: (319)382-3829

Mr. Norman A. Berg
Senior Advisor, American Farmland Trust
1200 18th Street, N.W., Suite 800
Washington, D.C. 20036
Ph: (202) 331-7300
Fax: (202) 659-8339
e-mail: nberg@farmland.org

**Participant Listing**

Allan Aves
DeKalb County Farm Bureau
33556 Kirkland Road
Kirkland, Ill. 60146
Ph: (815) 522-3836

Don A. Baloun
USDA NRCS
6515 Watts Rd., Suite 200
Madison, Wis. 53719-2726
Ph: (608) 276-8732 ext 252
Fax: (608) 276-5890
e-mail: don.baloun@wi.usda.gov

Charles Barnard
Economic Research Service
1800 M St., N.W., Room 4084
washington, D.C. 20036-5831
Ph: (202) 694-5602
Fax: (202) 694-5756
e-mail: cbarnard@econ.ag.gov

Chuck Beretz
American Farmland Trust
1200 18th Street, N.W., Suite 800
Washington, D.C. 20036
Ph: (202) 331-7300
Fax: (202) 659-8339
e-mail: cberetz@farmland.org

Alexia Brunet
Purdue University
1145 Krannert Bldg
West Lafayette, Ind. 47906

Teresa Bullock
Center for Agriculture in the Environment
American Farmland Trust
P.O. Box 987
DeKalb, Ill. 60115
Ph: (815) 753-9347
Fax: (815) 753-9348
e-mail: tbullock@niu.edu

Joe Bybee
Ill. Dept of Agriculture
Bureau of Land and Water Resources
Northern Illinois University
148 N. Third street
DeKalb, Ill. 60115
Ph: (815) 753-9660
Fax: (815) 753-2305

Terri Campion
Illinois Farm Bureau
1701 N. Towanda Ave.
Bloomington, Ill. 61702
Ph: (309) 557-3343
Fax: (309) 557-3729

David Clutter
Natural Land institute
320 S. Third St.
Rockford, Ill. 61104
Ph: (815) 964-6666
Fax: (815) 964-6661
e-mail: nu@aol.com

Jim Cubie
Agricultural Conservation Innovation Center
2234 South Hobson Avenue
Charleston, S.C. 29405
Ph: (843) 740-1325
Fax: (843) 740-1331
e-mail: jim.cubie@agconserv.com

Doug Dashner
DeKalb County Farm Bureau
1350 W. Prairie Drive
Sycamore, Ill. 60178
Ph: (815) 756-6361

Esther Day
Center for Agriculture in the Environment
American Farmland Trust
P.O. Box 987
DeKalb, Ill. 60115
Ph: (815) 753-9347
Fax: (815) 753-9348
e-mail: eday@niu.edu

Robert L. Eddleman
USDA NRCS
6013 Lakeside Blvd
Indianapolis, Ind. 46234
Ph: (317) 290-3200 ext. 301
Fax: (317) 290-3399
e-mail: robert.eddleman@in.nrcs.usda.gov

Dick Esseks
Northern Illinois University
Division of Public Administration
148 N. Third Street
DeKalb, Ill. 60115
Ph: (815) 753-0945
Fax: (815) 753-2305
e-mail: jesseks@niu.edu

Vince Faivre
Illinois Farm Bureau
1701 N. Towanda Ave.
Bloomington, Ill. 61702
Ph: (309) 557-3343
Fax: (309) 557-3729

Don Fehrenbucher
USDA NRCS
1202 S. Gougar
New Lenox, Ill. 60451
Ph: (815) 462-3106
Fax: (815) 462-3176
e-mail: joliet!don@atlas.il.nrcs.usda.gov

JoJo Gehl
452 W. Saint James, Apt. 3
Chicago, Ill. 60614
Ph: (773) 832-0581
e-mail: jojogehl@ameritech.net

Joel Gerlt
DeKalb County Farm Bureau
16061 Derby Line Road
Genoa, Ill. 60135
Ph: (815) 784-5977

Ruth Goldstein
American Farmland Trust
1200 18th Street, N.W., Suite 800
Washington, D.C. 20036
Ph: (202) 331-7300
Fax: (202) 659-8339
e-mail: rgoldstein@farmland.org

William J. Gradle
USDA NRCS
1902 Fox Drive
Champaign, Ill. 61820
Ph: (217) 398-5267
Fax: (217) 373-4550
e-mail: bill.gradle@il.nrcs.usda.gov

Katherine C. Gugulas
USDA NRCS
P.O. Box 2890
Washington, D.C. 20013
Ph: (202) 720-7847
Fax: (202) 720-2588
e-mail: katherine.gugulas@usda.gov

Harold D. Guither
IL Society of Professional
Farm Managers & Rural Appraisers
305 Mumford Hall
1301 W. Gregory Dr.
Urbana, Ill. 61801
Ph: (217) 333-1807
Fax: (217) 333-5538
e-mail: hguither@uiuc.edu

Steve A. Halbrook
Farm Foundation
1211 W. 22nd St., #216
Oak Brook, Ill. 60523
Ph: (630) 571-9393
Fax: (630) 571-9580
e-mail: steve@farmfoundation.org

Gerald A. Harrison
Purdue University
Ag Econ Dept
1145 Krannert Bldg.
West Llafayette, Ind. 47907-1145
Ph: (765) 494-4216
Fax: (765) 494-9176
e-mail: harrison@agecon.purdue.edu

Robin Heard
USDA NRCS
One Credit Union Place, Suite 340
Harrisburg, Pa. 17110
Ph: (717) 237-2203
Fax: (717) 237-2238
e-mail: rheard@pa.nrcs.usda.gov

Ralph Heimlich
USDA Economic Research Service
1800 M St., N.W., Room 4098N
Washington, D.C. 20036-5831
Ph: (202) 694-5477
fax: (202) 694-5776
e-mail: heimlich@econ.ag.gov

Nick Hemling
W10052 Shorecrest Rd.
Beaver Dam, Wis.53916
Ph: (920) 885-3588
e-mail: nhemling@students.wisc.edu

Fen C. Hunt
USDA NRCS
STOP 2890
1400 independence Avenue, S.W.
Room 6009-South Bldg.
Washington, D.C. 20250-2890
Ph: (202) 720-7671
Fax: (202) 690-0639/2966
e-mail: fen.hunt@usda.gov
Voice Mail: (9001) 720-7671

John M. Huie
Purdue University
Krannert Bldg., Room 660
West Lafayette, Ind. 47907-1031
Ph: (765) 494-4298
e-mail: huie@agecon.purdue.edu

Douglas Ihrke
University of Wisconsin-Milwaukee
Bolton Hall
P.O. Box 413
Dept of Political Science
Milwaukee, Wis. 53201
Ph: (414) 229-6808
Fax: (414) 229-5021
e-mail: dihrke@csd.uwm.edu

Carole Jett
USDA NRCS
P.O. Box 77103
Washington, D.C. 20013-8103
Ph: (202) 720-6580
Fax: (202) 720-8520
e-mail: carole.jett@usda.gov

Jeff Jones
American Farmland Trust
401 Edwards Street
Ft. Collins, Colo. 80524
Ph: (970) 484-8988
Fax: (970) 484-8098
e-mail: farmland@frii.com

Kathy Judd
USDA NRCS
1350 W. Prairie Drive
Sycamore, Ill. 60178
Ph: (815) 756-3236
Fax: (815) 756-1132
e-mail: kathy.judd@il.nrcs.usda.gov

Joe King
Public Affairs
Northern Illinois University
DeKalb, Ill. 60115
Ph: (815) 753-4299
Fax: (815) 753-3299

Steven E. Kraft
Dept Ag Bus Econ
Southern Illinois University
Carbondale, Ill. 62901-4410
Ph: (618) 453-2421
Fax: (6180 453-1708
e-mail: sekraft@siu.edu

Dennis Pate
SWCS
9644 Quail Ridge
Urbandale, Iowa 50322
Ph: (515) 284-4393
Fax: (515) 284-4394
e-mail: dennis.pate@ia.nrcs.usda.gov

James R. Martin
USDA NRCS
685 Larry Power Rd.
Bourbonnais, Ill. 60914
Ph: (815) 937-3233 ext. 114
Fax: (815) 937-3268
e-mail: jim.martin@il.nrcs.usda.gov

James Mc Mahon
The Nature Conservancy
416 Main St. So. 1112
Peoria, Ill. 61602
Ph: (309) 673-6689
Fax: (309) 673-8986
e-mail: mcmahon@cyberdesic.com

Greg Millburg
DeKalb County Farm Bureau
1350 W. Prairie Drive
Sycamore, Ill. 60178
Ph: (815) 756-6361

Diana Morse
USDA NRCS
7113 Kipling Parkway
District Heights, Md. 20747
Ph: (202) 720-4772
Fax: (202) 690-1221

Lewis Nichols
USDA NRCS
8108 Appleton Road
P.O. Box 218
Belvidere, Ill. 61108
Ph: (815) 544-2677
Fax: (815) 544-4218
e-mail: bcswcd@sltic.com

Pete Nowak
University of Wisconsin
Dept. of Rural Sociology
1450 Linden Drive
Madison, Wis. 53706
Ph: (608) 262-1510
Fax: (608) 262-6022
e-mail: pnowak@facstaff.wisc.edu

John Parkey
Dept of Agricultural Economics
Purdue University
Krannert Building
West Lafayette, Ind. 49707
Ph: (765) 494-7960

Bryan Petrucci
Director, Farms Division
American Farmland Trust
P.O. Box 987
DeKalb, Ill. 60115
Ph: (815) 753-9347
Fax: (815) 753-9348
e-mail: bpetrucci@niu.edu

Andrew Potter
IL Agri News
420 Second Street
LaSalle, Ill. 61301
Ph: (800) 426-9438
Fax: (815) 223-5997
e-mail: agrinews@theramp.net

Howard D. Poulson
WI Farm Bureau
P.O. Box 5550
Madison, Wis. 53705
Ph: (608) 828-5700

Bernadine Prince
American Farmland Trust
1200 18th Street, N.W., Suite 800
Washington, D.C. 20036
Ph: (202) 331-7300
Fax: (202) 659-8339
e-mail: bprince@farmland.org

Jerry Sanderson
DeKalb County Farm Bureau
7068 Rich Road
DeKalb, Ill. 60115
Ph: (815) 756-2062

Max Schnepf
USDA NRCS
Federal Bldg, Room 152
100 Centennial Mall North
Lincoln, Neb. 68508
Ph: (402) 437-4081
Fax: (402) 437-5165
e-mail: mschnepf@np.nrcs.usda.gov

John A. Schnittker
Schnittker Associates
1637 Calzada Avenue
Santa Ynez, Calif. 93460
Ph: (805) 686-5260
Fax: (805) 686-5262
e-mail: jasjad@silcom.com

Trent Shaskan
Center for Agriculture in the Environment
American Farmland Trust
P.O. Box 987
DeKalb, Ill. 60115
Ph: (815) 753-9347
Fax: (815) 753-9348

Dr. Gerald E. Shively
Purdue University
1145 Krannert Bldg.
West lafayette, Ind. 47907
Ph: (765) 494-4218
Fax: (765) 494-9176
e-mail: shively@agecon.purdue.edu

Harry Slawter
USDA NRCS
3018 Bosshard Dr.
Madison, Wis. 53711
Ph: (608) 224-3005
Fax: (608) 224-3010
e-mail: harry.slawter@mw.nrcs.usda.gov

A. Ann Sorensen
Director
Center for Agriculture in the Environment
American Farmland Trust
P.O. Box 987
DeKalb, Ill. 60115
Ph: (815) 753-9347
Fax: (815) 753-9348
e-mail: asorensen@niu.edu

Dr. Patrick A. Stewart
Arkansas State University
Dept of Political Science
2203 East Aggie
State University, Ark. 72467
Ph: (870) 972-3048
Fax: (870) 972-2720

Denyse Sturges
Center for Agriculture in the Environment
American Farmland Trust
P.O. Box 987
DeKalb, Ill. 60115
Ph: (815) 753-9347
Fax: (815) 753-9348
e-mail: dsturges@niu.edu

Megan Terebus
Agricultural Conservation Innovation Center
2234 South Hobson Avenue
Charleston, S.C. 29405
Ph: (843) 740-1325
Fax: (843) 740-1331

Kris Thorp
Center for Rural Affairs
P.O. Box 406
Walthill, Neb. 68067
Ph: (402) 846-5428 ext 25
Fax: (402) 846-5420
e-mail: krist@cfra.org

Wilbur Watson
DeKalb County Farm Bureau
4152 Old State Road
Kirkland, Ill. 60146
Ph: (815) 522-6342
Fax: (815) 825-2274

Charles Whitmore
USDA NRCS
7025 New Washburn Way
Madison, Wis. 53719
Ph: (608) 224-3001
Fax: (608) 224-3010

Doug Williams
Senator Tom Daschle
509 Hart Office bldg.
Washington, D.C. 20510
Ph: (202) 224-2321
Fax: (202) 224-2047
e-mail: doug_williams@daschle.senate.gov

Cynthia Wilson
American Farmland Trust
1200 18th Street, N.W., Suite 800
Washington, D.C. 20036
Ph: (202) 331-7300
Fax: (202) 659-8339
e-mail: cwilson@farmland.org

Jeffrey Zinn
Congressional Research Service
Library of Congress
1st Independence S.E.
Washington, D.C. 20540-7450
Ph: (202) 707-7257
Fax: (202) 707-3342
e-mail: jzinn@crs.loc.gov

Anita Zurbrugg
Center for Agriculture in the Environment
American Farmland Trust
P.O. Box 987
DeKalb, Ill. 60115
Ph: (815) 753-9347
Fax: (815) 753-9348
e-mail: azurbrugg@niu.edu

# Appendix 3

## Biographies

*where available*

**George E. Allen** - lives with his wife, Paula, and three children in the town of Easton, southern Washington County, New York. He is the majority owner and manager of Allenwaite Farms, Inc., a 6th generation farm consisting of 840 head of dairy cattle operating on 1,280 acres of cropland with the help of 10 full-time employees. He is also president of Advanced Dairy Genetics, Inc., an organization which integrated advanced management concepts, computer modeling and biotech applications to accelerate genetic progress in dairy herds in the Northeast. Locally, he is chairman of the Washington County Agricultural Opportunities Committee, an advocacy group for the promotion of agricultural development in this regions.

**Sandra S. Batie** - was born in Connecticut and raised in Richland, Washington. She received her baccalaureate degree from the University of Washington in 1967 with a major in economics. She earned her M.S. degree and her Ph.D. degree at Oregon State University in agricultural economics with a speciality in natural resource economics She graduated in 1973.

After graduation, Dr. Batie joined the faculty of Virginia Polytechnic Institute and State university; a position she held until 1993. She joined the Michigan State University faculty as the Elton R. Smith Professor in Food and Agricultural Policy, Department of Agricultural Economics in September 1993. She has had a distinguished career as an economic policy analyst, specializing in natural resource, agricultural and rural development policy issues at both the federal and state levels. She is also researching sustainable development policies.

Dr. Batie has sharpened her analytic skills and policy relevance with two sabbatical leaves. The first was with the Conservation Foundation, where she studied and wrote about federal conservation policy. The second was with the National Governor's Association, where she specialized in state policy with respect to rural development and groundwater management.

Dr. Batie has actively served on commissions and boards that are related to her expertise. For example, she has served on committees of the National Academy of Science, Board of Agriculture, the Center for Central Europe and Eurasia Affairs, and the Office of Technology Assessment; and she was a trustee of Winrock International and the International Rice Research Institute. Dr. Batie has also traveled internationally with different delegations; her most recent trips have been to Eastern Europe and Africa. She has served on the Board of Directors and as president of both the American Agricultural Economics Association and the Southern Agricultural Economics Association.

Sandra Batie is an accomplished researcher, teacher, author and speaker, and she has numerous publications and presentations to her credit. She and her husband, Robert E. Batie, a professor in the Fisheries and Wildlife Department at Michigan State University, have a son, Neal. They reside in Mason, Michigan.

**Norman A. Berg** - was raised on his family's farm in Minnesota. Berg received his B.S. from the University of Minnesota and his M.P.A. from Harvard University. In 1979, he was appointed chief of the U.S. Department of Agriculture Soil Conservation Service, now Natural Resources Conservation Service. Berg also served as deputy and associate chief of SCS. His SCS career included field work in Idaho and South Dakota. A career conservationist who has devoted his professional life to studying, understanding and managing a variety of resource conservation issues, Berg spent nearly 40 years with SCS, retiring in 1982. Berg also served as a U.S. Marine in WWII. In May 1982 Berg was appointed as senior adviser to American Farmland Trust. In January1983 he began serving as the Washington, D.C. representative for the Soil and Water Conservation Society. Berg is also a member of the Board of Supervisors for the Anne Arundel Soil Conservation District (Md.). Berg has received numerous awards and in 1998 the secretary of agriculture named Berg as chief emeritus, NRCS. Berg and his wife, Ruth, reside in Severna Park, Md. They have four daughters, five granddaughters and five grandsons.

**Karl Czymmek** - is a former crop production/pest management consultant turned lawyer. He grew up on a crop and livestock farm in the Finger Lakes Region of New York State and holds a B.S. degree in Agriculture from Cornell University and a J.D. degree from University of Buffalo School of Law. Karl is currently utilizing his unique combination of education and experience working with farmers to develop and implement a Purchase of Agricultural Conservation Easement program for the New York City Watershed region in the Catskill Mountains of New York State. Present activities include member of The Empire State Food and Agricultural Leadership Institute class of 1999, Council member of the Empire State Chapter of the Soil and Water Conservation Society and production of pumpkins and specialty melons. The Czymmek family resides in Downsville, New York and includes spouse Anne and daughters Meredith and Madeline.

**Otto C. Doering** - is a public policy specialist who has consulted overseas for the Ford Foundation, the National Academy of Sciences, and the governments of Malaysia and Indonesia. He served the U.S. Department of Agriculture working on the 1977 and 1990 farm bills. From 1985 to 1990, Professor Doering directed Indiana's State Utility Forecasting Group projecting energy demand and long-range planning needs. He teaches resource economics, public policy, research methods and the economic geography of world agriculture. Professor Doering's recent publications include: "Domestic Farm Policy and the Gains from Trade" in the American Journal of Agricultural Economics (Nov. 1986), as well as papers on the impact of changing agricultural chemical use (for USDA, 1990) and the impact of different federal policies on agriculture and the environment (for EPA, 1991). He has been a Director of the American Agricultural Economics Association and twice received its Distinguished Policy Contribution Award. Professor Doering also received the AAEA's Extension Economics Teaching Award and twice received recognition for Quality of Communication.

**David E. Ervin** - became the Director of the Henry A. Wallace Institute for Alternative Agriculture Policy Studies Program in July 1996. Prior to joining the Wallace Institute, he was Professor in the Department of Agricultural and Resource Economics at Oregon State University, where he headed the Department from 1991 through 1993. He was a visiting senior analyst at the Office of Technology Assessment's Environment Program from 1994-1995. Dr. Ervin also served as Chief of the Resource Policy Branch, Resources and Technology Division, at the U.S. Department of Agriculture's Economic Research Service from 1988-91. His work has focused on natural resource and environmental policy

related to agriculture and rural areas. He holds B.S. and M.S. degrees in agricultural economics from The Ohio State University, and a Ph.D. degree in agricultural and resource economics from Oregon State University. He received the President's Citation, Soil and Water Conservation Society, in 1995; and the Award of Merit, 1990 Farm Bill Analysis Team, USDA, Economic Research Service.

**Ralph E. Grossi** - Since August 1985, Ralph E. Grossi has served as president of American Farmland Trust, a national nonprofit organization working to stop the loss of productive farmland and to promote farming practices that lead to a healthy environment. AFT has received the President's Environment and Conservation Challenge Award.

Grossi, a third-generation Marin County, Calif., farmer, graduated from California Polytechnic State University in 1971 and has been managing partner of Marindale Ranch, a family partnership raising black angus specialty beef. He holds a number of national awards in his field, including the 1976 Outstanding Young Farmer and Rancher of the California Farm Bureau Federation and the 1985 Feinstone Environmental Award.

Grossi was a founder and chairman of the Marin Agricultural Land Trust which protects Marin County, Calif., agricultural land by acquisition of conservation easements. From 1977 to 1979 he was a member of the California Agricultural Water Problems Advisory Committee; from 1979 to 1981, president of Marin County Farm Bureau; and from 1980 until he became president, a member of AFT's Board of Directors. He currently serves on the boards of directors of the Charles Valentine Riley Memorial Foundation, the Wildlife Habitat Council, Alpha Gamma Rho Education Foundation, the President's Council of the Wallace Institute for Alternative Agriculture and the U.S. Implementation Board for the North American Waterfowl Management Plan. He also has been involved with numerous other dairy and farm-related organizations.

Grossi, his wife, the former Judy Lamb, and their three daughters live in Rockville, Md.

**Thomas J. Hoogheem** - and his staff provide environmental support to the Monsanto field sales organization worldwide. This support includes all environmental training of the sales organization and customers, field management for all product spills and accidents at the customer level, the company's well water cleanup programs, surface water protection programs, dealer site environmental assessments and trade association work.

M. Hoogheem has spent his entire professional career in environmental protection. He received both a B.S. and M.S. in Environmental Engineering from the University of Illinois. He is a registered professional engineer. He has spent the last 20 years with Monsanto in various positions responsible for regulations, legislation, water, air and soil sampling, and other environmental operations. Most recently, he has been named Environmental Stewardship Director for the Acetochlor Registration partnership.

Tom has been married for 22 years to his wife Becky and they have three daughters.

**Paul Johnson** - was appointed Chief of the Soil Conservation Service in January 1994. Prior to his appointment, he was an Iowa farmer and former state legislator well known as an architect of environmental legislation.

As a representative in the Iowa General Assembly from 1984 to 1990, he was a major architect of Iowa's Groundwater Protection Act, a model used nationwide for its emphasis on research, education and voluntary approaches to water quality. He also authored the Iowa Resource Enhancement and Protection program, the Iowa Energy Efficiency Act and the Iowa Integrated Farm Management Program.

Mr. Johnson has been actively involved in conservation issues since he started farming in 1974. He raised, corn hay and Christmas trees, and had a dairy herd and sheep near Decorah in northeast Iowa. He served as an assistant commissioner for his local soil conservation district. He has been named conservation legislator of the year by several organizations in Iowa and was named to the Iowa Conservation Hall of Fame by the Wildlife Society.

**Sally Puttmann** - and her late husband, Dwight, recruited their successor and currently she and her partner, Joe Hlas operate a grain and hog operation in Woodbury County in Western Iowa.

Puttmann has served eight years on the State Soil Conservation Committee and is currently serving on the advisory board for the Leopold Center for Sustainable Agriculture located on the Iowa State University campus. She is a member of the Iowa Farm Bureau Federation Board of Directors, representing farmers in 11 counties in west central Iowa.

**Pearlie S. Reed** - was named chief of the Natural Resources Conservation Service by Agriculture Secretary Dan Glickman effective March 1, 1998. The NRCS works directly with private landowners to help them implement conservation measures, and with a broad array of state and local groups to sustain and enhance environmental quality.

In February 1997, Mr. Reed was named as acting assistant secretary for administration for USDA. In December 1996, he became team leader of the USDA's Civil Rights Action Team, which was created by the Secretary to do a thorough audit of USDA civil rights issues inside and outside the Department.

A 28-year USDA career employee, Mr. Reed is known for his strong leadership, clear vision, and keen understanding of how to integrate and implement massive change. For his leadership in conservation initiatives, Mr. Reed received the 1998 Professional Service Award from the National Association of Conservation Districts. He also received the 1998 USDA Silver Plow Honor Award. In 1996, he received the Distinguished Presidential Rank Award-the highest award that can be bestowed upon a career Senior Executive Service member. That same year he received two USDA Honor Awards-as an individual and as a group leader-for his vision and leadership in developing implementing the most comprehensive reorganization in the 60-year history of the NRCS, formerly the Soil Conservation Service. The reinvention of NRCS has resulted in a more efficient and cost-effective agency with a strong commitment to customer service and conservation partnerships.

Mr. Reed was appointed on January 3, 1994, as associate chief of NRCS. From 1989 to 1994, he served as SCS state conservationist in California, where he was responsible for managing, leading, and directing

a comprehensive soil, water, and resource conservation and development program for the state. He also led the USDA Drought Task Force in California. He received a USDA Honor Award in 1993 for his managerial commitment and leadership to equal opportunity and civil rights. He has also served as state conservationist in Maryland and as deputy state conservationist in Arkansas.

Mr. Reed served in the SCS national headquarters in Washington, D.C., from 1977 to 1981 in several positions, including financial manager, budget analyst, and administrative officer. In 1979, he served as administrative officer for the National Agricultural Lands Study.

He began his career with the SCS in 1968 as a student trainee at Walnut Ridge, Ark. Upon graduation, he went to Wisconsin as a soil conservationist. He later served as district conservationist in Sheboygan, and then as personnel officer and budget and accounting officer in the state office in Madison.

He is a native of Heth, Ark., and graduated with honors in 1970 from the University of Arkansas at Pine Bluff with a B.S. degree in animal husbandry and agricultural business. He received a Master of Public Administration degree, with honors, from The American University in Washington, D.C., in 1980.

**William Richards** - was appointed Chief of the Soil Conservation Service on December 16, 1990. Prior to his appointment, he was an Ohio farmer well known for his pioneering work in conservation tillage. He began his farm operation in 1954 with 140 acres of neglected bottom land and was among the first farmers in the nation to practice conservation tillage on his entire acreage.

A graduate of The Ohio State University in agricultural economics, Mr. Richards received the Distinguished Service Award from The Ohio State University College of Agriculture in 1980. He has served on planning and review committees and has been a visiting instructor in agricultural economics classes at that university. He also attended the Harvard Business School's Agri-Business Executive Education Program. His farm is frequently visited by university classes, local schools and farm groups from other states and foreign countries to study conservation and residue management practices and equipment.

**R. Neil Sampson** - is a career conservationist with service in the Soil Conservation Service (now Natural Resources Conservation Service), the National Association of Conservation Districts, and the American Forestry Association (now American Forests). As President of the Sampson Group, Inc., a natural resources consulting firm in Alexandria, Virginia, he serves as a Senior Fellow with American Forests, where he coordinates scientific and policy studies for the Association. He is an Affiliate Professor in the Department of Forest Resources, University of Idaho, Moscow, Idaho.

As executive vice president of American Forests from 1984 to 1995, he launched the internationally-renowned Global ReLeaf program and the Forest Policy Center. He has written extensively on the forest health situation in the Inland Western region of the United States. He chaired the National Commission on Wildfire Disasters (1992-94), and served on the USDA Forest Research Advisory Committee, the Technical Advisory Committee to the Edison Electric Institute's Utility Forest Carbon Management Program, and the American Forest & Paper Association's Expert Review Panel to the Sustainable Forestry Initiative. In the international area, he has been involved in scientific studies on

the role of trees and forests in addressing climate change, as well as providing technical assistance to several international projects and programs.

Sampson is a 1960 graduate of the University of Idaho, where he received his B.S. degree in Agriculture (Crops and Soils). He earned a Master's in Public Administration from Harvard University in 1974. He has authored two books on soil conservation, and edited many books on natural resource topics in addition to publishing over 100 scientific and popular articles on natural resource topics. His latest publications are two small books, co-authored with Lester DeCoster: Public Programs for Private Forests (1997) and Forest Health in the United States (1998).

**Brent Sohngen** - has been an assistant professor in the Department of Agricultural, Environmental and Development Economics at The Ohio State University since 1996. He obtained a bachelor's degree from the Department of Agricultural Economics at Cornell University in 1991, and a doctorate from Yale University in 1996. During 1995 and 1996, he was Gilbert White Postdoctoral Fellow at Resources For the Future in Washington, D.C. Currently, Dr. Sohngen leads a research and extension program in environmental economics. The primary research and extension activities of this program are to investigate the impacts of climate change on timber markets; to explore the economics of cost share programs; and to develop cost-effective mechanisms for nonpoint source pollution abatement in watersheds. The mission of the program is to investigate contemporary economic issues, and to provide timely information to extension personnel and citizens regarding the economics of natural resource and environmental issues.

**Ann Sorensen** - has been director of American Farmland Trust's Center for Agriculture in the Environment since November 1992. The center, operated jointly with Northern Illinois University's Social Science Research Institute in DeKalb, Ill., serves as the focal point for AFT's public policy research efforts and its national sustainable agriculture program.

Previously, Sorensen had been assistant director of the Natural and Environmental Resources Division for the American Farm Bureau Federation in Park Ridge, Ill. At the farm bureau, she was responsible for agricultural production and environmental issues, including agricultural biotechnology, integrated pest management, pesticides, groundwater pollution, alternative crops, sustainable agriculture and agriculture pests.

Before joining the farm bureau, Sorensen was a postdoctoral fellow and research associate with Texas A&M University. She then worked for the University of Georgia's Department of Entomology as a postdoctoral associate and the Texas Department of Agriculture as an integrated pest management specialist. She started her career as a research assistant with the University of California-Berkeley's Department of Entomology and Parasitology where she has her Ph.D. in Entomology. Her areas of research include applied insect pathology, integrated pest management, social insect behavior and recombinant DNA work with insect viruses.

Sorensen has published a large number of scholarly papers, served on numerous committees and spoken frequently on agricultural and environmental issues. Sorensen resides in Oregon, Ill.

**Timothy W. Warman** - joined AFT in January 1993 and has been vice president for programs for American Farmland Trust since May 1996. He supervises the organization's Field, Land Protection and Public Education programs, Center for Agriculture in the Environment research initiatives, and Farms program. Warman also oversees AFT's federal policy program and maintains liaison with other agricultural and conservation organizations.

- Field programs includes AFT's regional field offices in Massachusetts, New York, Maryland, Ohio, Colorado and California that provide program and policy assistance to state and local farmland protection initiatives.
- Land Protection program works with landowners and local public and private programs to protect keystone farms.
- Farms Division helps landowners develop and adopt viable farming strategies and manages AFT's Cove Mountain Farm, a demonstration grass-based dairy farm in Pennsylvania.
- Center for Agriculture in the Environment in Illinois is AFT's agriculture conservation policy research division focusing on developing broadly acceptable natural resource protection strategies. CAE houses the Farmland Information Library, an Internet-based branch of the National Agricultural Library, maintained and operated by AFT.
- Public Education program uses a variety of vehicles to inform general audiences, youth and suburban consumers about the critical linkages between farmland and quality of life.
- Federal Policy focuses on reducing federal support for sprawl and farmland destruction and increasing federal support for state and local farmland protection and agricultural conservation efforts.

Before joining AFT Warman served for seven years as program manager for agriculture, economics and legislation in Montgomery County, Maryland's Office of Economic Development where he developed several innovations in farmland protection and agricultural economic development. Prior to his association with Montgomery County, he was an agricultural extension agent for the University of Maryland Cooperative Extension Service.

Warman has bachelor and master degrees in horticulture from the University of Maryland. He and his family reside in Rockville, Maryland.

American Farmland Trust