

*Can Farm Policy Do More to Help North Carolina's
Farmers – And the Environment?*

**Assessing Farmer Support for Conservation Programs in
the Farm Bill**

by

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ABSTRACT

This year, Congress is renewing our national farm policy in a piece of legislation known as the federal Farm Bill. The most recent Farm Bill, the Farm Security and Rural Investment Act of 2002, increased funding for conservation programs, but the majority of its dollars continue to subsidize producers of commodity crops. In North Carolina, 77 percent of farmers are not eligible for traditional subsidies, but instead produce a wide diversity of farm products. As a result, many environmental and agricultural groups are asking if farm policies can do more to help NC farmers get their fair share of federal funding. This study examines conservation policy options using a survey to gather farmer preferences for conservation provisions in the Farm Bill. Survey results showed farmers are most concerned about energy efficiency and resources such as soil and water on their land. The results also suggest there is a strong support for conservation programs and that a vast majority of farmers favor financial and technical assistance to address conservation goals. Many farmers felt that Farm Bill programs that assisted with soil erosion prevention, protected water quality, or created wildlife habitat would be useful in protecting or improving their farm's resources. I suggest that new farm policy should increase overall funding for several Farm Bill conservation programs, especially since cost and out of pocket expenses were the most significant barriers to implementing conservation practices. The NRCS and the Farm Service Agency should focus on educating more farmers about conservation programs and collaborate with farmers, extension agents, and non-profits to reach consensus on conservation goals and develop plans that are more efficient.

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***"If you know nothing of agricultural history, then you cannot understand
American history."***

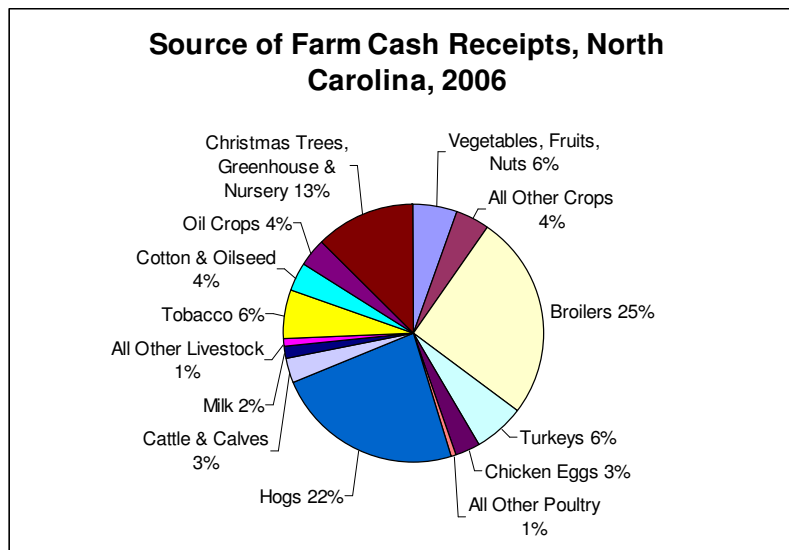
- Thomas Isern, Professor of History at Emporia State University

I. INTRODUCTION

Farmers and forest owners manage more than seventy-five percent of North Carolina's landscape, thus farming and forestry practices greatly affect our state's environment (Environmental Defense 2007). These lands provide habitats that support wildlife, filter groundwater supplies, regulate surface water flows, sequester carbon, and provide open space and outdoor recreation opportunities that improve the quality of life. Farming and forestry practices can also have negative environmental consequences on our state's natural resources, including water and air pollution, soil erosion, and loss of wildlife habitat. Recognizing these positive and negative impacts to our environment, policymakers have been devoting more attention and funding to conservation policies and programs. But can current farm policies do more to help farmers address North Carolina's most pressing environmental challenges?

This year, Congress is renewing our national farm policy in a piece of legislation known as the federal Farm Bill. The latest version of the Farm Bill, the Farm Security and Rural Investment Act of 2002, substantially increased funding for conservation programs, although the vast majority of its dollars continue to subsidize producers of commodity crops. In North Carolina, 77% of our farmers do not grow the crops that are eligible for traditional subsidies, but instead produce a wide diversity of farm products (Fig. 1) including fruits, nuts, vegetables, and livestock (Environmental Defense 2007).

Figure 1. The sources of farm cash receipts from all farms in North Carolina in 2006. (<http://www.ncagr.com/stats>)



Currently, the federal government spends billions of dollars to subsidize grains and other crops such as cotton and soybeans, while providing little support for other crops and livestock (American Farmland Trust 2006). This information suggests that crop diversification is a low priority in our current farm policy. Because of this funding distribution, most North Carolina farmers receive relatively little of Farm Bill spending. In fact, three out of four eligible North Carolina farm and forest landowners who seek USDA funding to offset the costs of improved conservation are denied assistance due to inadequate funding (Environmental Defense 2007). Increasing conservation incentives in the upcoming Farm Bill may help distribute more federal spending to our state's farmers and help share the cost of clean water, open spaces, and wildlife habitat.

Federal farm policy is strongly controlled by the United States House and Senate agriculture committees, and subcommittees. These committees are primarily composed of congressmen who represent districts that receive enormous farm subsidies. In contrast, environmentalists, hunters, fishermen, and a host of other interested parties are not well represented on the congressional agriculture committees and are fighting for relatively small pieces of a massive Farm Bill. With so many conflicting interests, a growing number of farmers, agricultural leaders, and conservationists are agreeing that federal farm policies, once vital to American prosperity, need considerable broadening to meet the needs of most farmers, the land, and the public (American Farmland Trust 2006)

State conservation agencies, environmental advocacy groups, and other non-profit organizations in North Carolina support farm policies that increase incentives to promote stewardship of agricultural lands. They are campaigning to increase conservation spending in the Farm Bill combined with reforms to outdated farm subsidies that can promote environmental quality, all while helping farm and forest owners remain profitable. American Farmland Trust reports that "most farmers and ranchers do not benefit significantly from current farm policies, and current farm policies do not adequately benefit those farmers they intend to support" (American Farmland Trust 2006). In fact, two-thirds of farmers in the U.S. do not receive any commodity subsidies according to USDA statistics (American Farmland Trust 2006). Conservation payments could provide new, reliable financial support for farmers. Under a conservation payments program, payments would be based on farmers' environmental stewardship. As a result,

farmers could obtain additional income, in exchange for the public receipt of values from clean water, clean air, and open space, all of which are derived from working farms and forests.

Conservation payments in the Farm Bill can act as an alternative for, or supplement to current farm income and environmental programs. For example, the Conservation Security Program in the 2002 Farm Bill provides payments to support farm income, but only to farmers who implement or maintain certain conservation practices such as conservation tillage or nutrient management. Many conservation programs have been successful in protecting the environment, but most are under-funded, leading to a backlog of farmers who request government assistance, yet are denied due to a lack of funds (Soil and Water Conservation Society 2004). Because there are several competing interests fighting for a larger share of farm program funding, environmental groups need to know farmers' conservation attitudes and interests in relation to Farm Bill funding so they can better focus their advocacy. This research project considers the future of federal conservation programs through a farmer-based study in North Carolina. The study will examine conservation policy options by using a survey to gather farmer preferences for conservation provisions in the Farm Bill.

Most research related to farm conservation focuses on farmers' decisions to use conservation practices (Ervin 1982), characteristics of farms that have adopted conservation practices (Lambert et al. 2006; Lambert et al. 2007) or the role of farm policy in improving a specific environmental management goal (Brewer et al. 2004; Burger 2006; Burger et al. 2006). The USDA's national survey asked agricultural producers' preferences on current policy issues and future policy directions related to the next farm bill. Responses were clustered by regions so that North Carolina farmers' opinions were combined into the "South" region's responses, which also included Texas, Florida, Georgia and Alabama (Luben et al. 2006). The literature review revealed a lack of information on farmers' opinions of the usefulness of Farm Bill assistance programs in addressing environmental issues on their land. More specifically, studies based in North Carolina were needed that could reveal what types of assistance programs in the Farm Bill can benefit the most farmers in the state.

II. RESEARCH OBJECTIVES

- Evaluate farmers' environmental concerns and barriers to implementing conservation practices on their land.
- Measure the usefulness of conservation programs for North Carolina farmers in addressing environmental concerns.
- Identify what types of assistance programs in the Farm Bill will benefit the most farmers in North Carolina.
- Address policy implications about the future role of Farm Bill conservation programs in North Carolina.

III. BACKGROUND

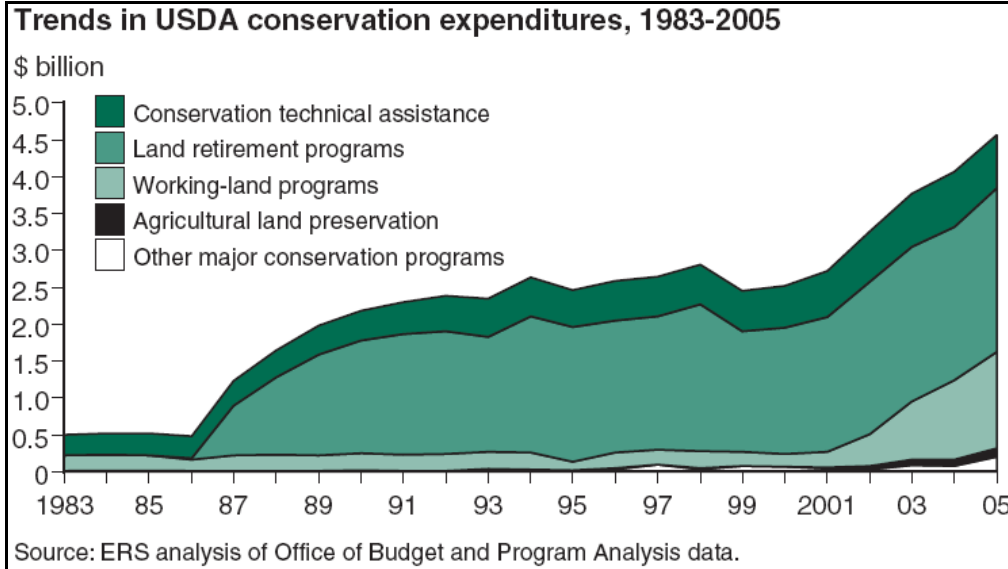
Current Farm Bill Conservation Programs

Conservation programs historically focused on maintaining the productivity of cropland and assistance was directed towards vegetative, engineering, and crop management measures to control soil erosion (USDA 2006). From the mid-1980s until 2002, the bulk of conservation funds went toward land retirement: paying farmers to remove environmentally sensitive land from crop production for a specific period. As of January 2007, about 10 percent of U.S cropland has been retired from production (Claassen et al. 2007).

The 2002 Farm Bill substantially increased conservation funding and directed the largest share of new spending to programs emphasizing financial assistance for conservation on working farm and forestland. It authorized greater spending for several programs created under prior Farm Bills, including the Environmental Quality Incentives Program (EQIP), and it established new programs, such as the Conservation Security Program (CSP). The increased funding for conservation on working lands, and the focus of these programs on livestock-related issues may have increased conservation participation by farmers who are not interested in land retirement (Claassen et al. 2007). The result has been a back-log of farmers waiting for federal conservation funding. In Fiscal Year 2005, USDA funding for conservation programs reached \$4.7 billion, up

from \$3 billion in FY 2001, reflecting the 2002 Farm Bill’s historic increase in conservation funding (Fig. 2).

Figure 2. USDA conservation expenditures have increased from 1983 to 2005.



USDA conservation programs use voluntary approaches to address natural resource issues. These approaches can avoid the inherent difficulties in regulating non-point sources of pollution and can minimize economic harm to farmers by educating them and providing them with incentives to improve production practices (USDA 2006). The USDA’s Natural Resources Conservation Service (NRCS) and the Farm Service Agency (FSA) manage several voluntary conservation programs that offer farmers a range of options for assistance with stewardship practices:

- (1) Land retirement programs generally remove land from agricultural production.
 - **The Conservation Reserve Program (CRP)**, offers annual rental payments and cost sharing to establish resource conserving cover, usually grass or trees, on environmentally sensitive land. Since 1996, farmers have also had the option of enrolling land through a continuous signup program focused on developing riparian buffers and other working-land conservation practices. CRP also includes the Conservation Reserve Enhancement Program (CREP), a federal-state partnership to further local conservation goals in specific geographic areas.

- **The Wetland Reserve Program (WRP)** was first implemented in the early 1990s to retire and restore wetlands that had been converted to cropland. At the end of 2006, WRP enrollment was roughly 1.85 million acres (Claassan et al. 2007). The program restores and protects wetlands through cost share assistance and long-term or permanent easements.

(2) Working-land programs provide technical and financial assistance to farmers who install or maintain conservation practices on land in production.

- **The Environmental Quality Incentives Program (EQIP)** provides financial and technical assistance to assist farmers with conservation and environmental improvements on working lands. Farmers can receive incentive payments for adopting conservation practices or be reimbursed up to 75 percent of the installation costs (Lambert et al. 2006). EQIP's focus on livestock increased in 2002, with 60 percent of funding targeted towards practices relating to livestock production.
- **The Wildlife Habitat Incentives Program (WHIP)** provides cost sharing to landowners and farmers to develop and improve wildlife habitat.
- **The Conservation Security Program (CSP)** was authorized by the 2002 Act. It rewards on-going environmental stewardship and provides farmers incentives for improving soil, water, and related resources on their land. Unlike EQIP, CSP can reimburse farmers for continuing conservation practices already in place.

(3) Agricultural land preservation programs purchase rights to certain land uses, such as development, in order to maintain land in agricultural use.

- **The Farm and Ranch Lands Protection Program (FRPP)** provides funds to State, Tribal, or local governments and private organizations to help purchase development rights and keep productive farmland in agriculture.
- **The Grassland Reserve Program (GRP)** improves and conserves native-grass grazing lands through long-term rental agreements or permanent easements.

Renewable Energy Programs in the Farm Bill

Many of the federal programs that currently support renewable energy production and agriculture-based energy production in particular, are outside the scope of USDA and the Farm Bill. Renewable energy's role in the 2002 Farm Bill is concentrated on grants, loan, and loan guarantees to foster research on agriculture-based renewable energy and to promote the adoption of renewable energy systems. USDA's Bioenergy Program, whose funding expired in FY2006, has been the primary exception in that it provided incentives to expand actual production of bioenergy (Johnson et al. 2007).

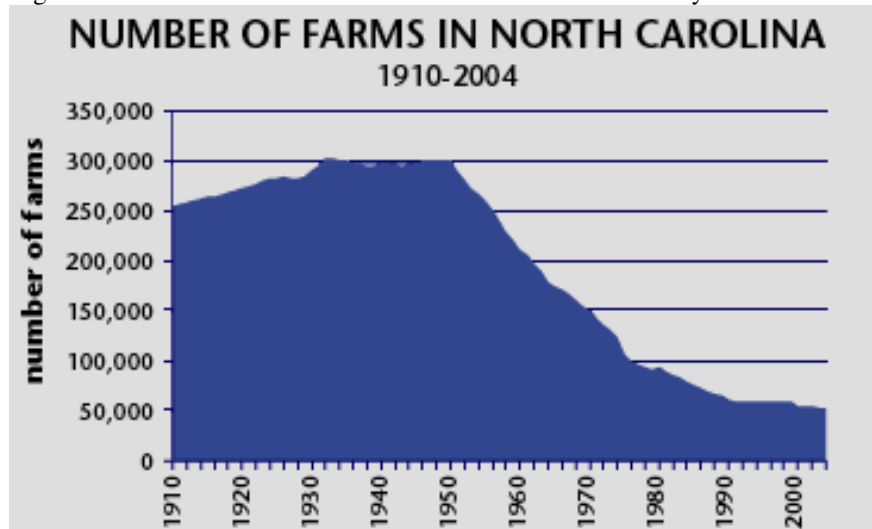
Many policymakers view agriculture-based biofuels as both a catalyst for rural economic development and a response to growing energy import dependence. Renewable energy policy initiatives are now included in almost every farm bill proposal. The USDA proposed a new energy title (IX) in the 2007 Farm Bill that would provide \$1.6 billion in new funding for the development of cellulosic ethanol production including a biomass reserve for cellulosic feedstock, loans, grants, and Forest Service funding for research on the use of woody biomass. The primary question is how such programs will be funded given existing budgetary constraints (Johnson et al. 2007).

Agriculture in North Carolina

North Carolina's agricultural industry, including food, fiber and forestry, contributes \$66 billion annually to the State's economy, accounts for 19% of the State's income, and employs over 17% of the work force (NCDA 2007). Yet, farm employment and the number of farms continue to decrease. The number of farms in North Carolina dropped dramatically from its peak in 1948 of 302,000 farms to 52,000 farms in 2004 (Fig. 3). The most dramatic declines have been in the farmlands of the East and Southeast regions (NCREDC 2006). USDA's most recent data confirms North Carolina's continuing decline in farm numbers by reporting 4,000 less farms since 2004 (USDA 2008). North Carolina now has less than 16 percent of the farms it had in the late 1940s.

Even with fewer farms, North Carolina continues as a national leader in agriculture. North Carolina ranks eighth nationally in farm income and has a diverse agricultural sector (NCREDC 2006). The state's farmers lead the nation in production of tobacco, Christmas trees, and sweet potatoes and are second in hogs, trout, and turkey

Figure 3. The number of farms in NC has decreased dramatically since the 1950s.



Source: US Department of Agriculture

production. North Carolina also ranks high in broilers, strawberries, blueberries, tomatoes, cucumbers, apples, and peanuts (USDA 2002). The eastern coastal region leads the state in agricultural production, but the diversity of the sector means that agriculture is an important element of the rural economy in all regions of the state (NCREDC 2006).

According to the 2002 USDA Census of Agriculture, the average net farm income in North Carolina was \$28,869 and nearly 64 percent of farms made less than \$10,000 in sales while 16 percent made over \$100,000 in sales (USDA 2002). In 2005, one fifth of subsidized farms in North Carolina received 92 percent of all subsidies paid to the state. However, only 12 percent of our state's farmers grow crops that are eligible for traditional farm subsidies. As a result, North Carolina ranks 35th in federal farm spending even though it ranks eighth in total farm sales (Environmental Defense 2007).

Agriculture and the Environment

There are two important trends in North Carolina agriculture that has led to an increased concern for our state's natural resources. First, there is considerably less land in crops today than in the past, but more inputs, including fertilizers and organic animal wastes, and higher yields per acre have more than made up the difference. Second, animal agriculture has replaced row crops as the leading source of income. There are more hogs, turkeys, and chickens than there has ever been in North Carolina (Lilly 2006).

Over fertilization and concentrated discharges of animal waste can lead to large

amounts of nutrients finding their way to surface water flow. This nonpoint source (NPS) pollution occurs throughout the state, but is most concentrated in the Coastal Plain and Piedmont regions where agriculture is most dominant. Groundwater supplies can be contaminated from high nitrate concentrations created by agricultural runoff and waste lagoons. NPS pollution has been identified by the NC Division of Water Quality as the primary source of degradation of freshwater rivers and streams in North Carolina. According to the North Carolina Nonpoint Source Assessment Report, agriculture is the largest source of stream-use impacts in the state. Of the 30% of stream miles, which are impacted negatively, agriculture is suspected of impacting approximately 65%. In addition, agriculture is thought to be the primary source of NPS pollution in estuarine areas. The approach taken in North Carolina for addressing agriculture's contribution to the NPS pollution problem is to encourage voluntary participation supported by financial incentives, technical and educational assistance, research, and regulatory programs (NCDENR 2007).

V. METHODS

Methodology

Government programs designed to assist various communities often rely on results of surveys to determine program effectiveness (Rea and Parker 2005). In addition to descriptive and behavioral data, surveys can solicit, as their primary focus, the respondent's attitudes and opinions about a variety of conditions and circumstances. The primary objective of such studies is to be predictive and future-oriented (Rea and Parker 2005). To gather a broad range of information regarding Farm Bill conservation programs, I created a survey instrument (Appendix 1) based on my research of Farm Bill policy conducted over the summer of 2007 for Environmental Defense.

Survey Design and Implementation

To collect the data, I designed a web-based survey through an online software program called Survey Monkey. I consulted with experts from Environmental Defense, the Natural Resources Conservation Service (NRCS), and Farm Service Agency to help

develop and refine my survey questions related to Farm Bill conservation programs. After the expert review, I administered a pre-test of the draft questionnaire to assess the overall quality of the questionnaire's construction, mainly question clarity. For the pre-test, I selected seven respondents that included one farmer, three experts in survey design, and three knowledgeable colleagues.

To survey North Carolina farmers, I obtained my sampling frame from a variety of sources; I first generated a list of 225 farmer emails through the Carolina Farm Stewardship Association catalog and the N.C. Department of Agriculture website. To increase sample size, I relied on contacts with farmers, farmer advocacy groups, environmental groups, and county extension agents in different parts of state to forward my survey to potential respondents. This type of non-random sampling is known as snowball sampling and is particularly beneficial when it is difficult to identify potential respondents (Rea and Parker 2005). Snowball sampling works well for web-based surveys and exploratory research, although they do not employ random sampling procedures and may or may not represent the population well (Sue and Ritter 2007).

Email invitations, which included a link to the survey, were sent to potential respondents and the survey remained open for fifteen days. Many of the farmers' emails were blocked through computer spam software and therefore only 188 emails were useable. Ten days after the initial implementation, a follow-up email was sent to the list of farmers to remind respondents to complete the survey and thank those who had. This method almost doubled the number of respondents.

Data Analyses

After the surveys were collected and the online invitation period closed, all responses were downloaded to a spreadsheet, coded, and analyzed. The survey questions were close-ended and consisted of multiple choice (one answer or multiple answers) and rating (Likert) scale questions. The rating type questions are useful when surveying the frequency of something like behavior or attitude. A Likert scale is considered an "agree – disagree" scale (Brace 2004), and gives respondents a series of attitude dimensions. For each dimension, the respondent is asked whether, and how strongly, they agree or disagree to each dimension using a point rating scale. Likert scales are given scores or

assigned a weight to each scale, usually from one to five. The purpose of the Likert scale is to sum the scores for each respondent (the response average), and the intent of the Likert is to represent different aspects of the same attitude (Brace 2004). Several questions provided an open-ended space at the end to allow respondents to provide additional comments to their answers.

The survey included several types of questions that can be grouped together and served to meet the study's objectives. These categories include: (1) farmer demographics; (2) farm operation scale (land type, sales, size in acres); (3) perception of environmental problems or resource concerns; (4) barriers to implementing conservation practices; (5) usefulness of particular conservation program (current or potential) in assisting farmers with environmental concerns; (6) preferences for type of assistance (financial or technical); and (7) source and outreach for farm bill program information

Frequency distribution graphs and tables were compiled for each question to summarize the frequency of responses of each category of a variable. In addition, cross-tabulated contingency tables were generated for bivariable analysis. Contingency tables add an explanatory dimension to the frequency tables by revealing any influence one variable may have on another (Rea and Parker 2005). In the design of the survey, a question on farm location was included to compare responses based on this independent variable. For example, a contingency table would be used to compare farmers' perceptions of environmental issues and preferences for government assistance based on whether the farm was located in eastern, central, or western North Carolina. Knowing the influence this variable may have on farmers' attitudes and opinions is useful when recommending what conservation programs would be most useful across the state.

Advantages and Disadvantages of Web-based Surveys

A disadvantage of the online survey methodology is that it is limited to populations that have access to email and a computer. The online population does not reflect the general population and this excludes the use of Internet surveys for projects aiming to draw conclusions about general populations (Sue and Ritter 2007). Some advantages to using the web-based approach are its convenience and cost effectiveness. Email questionnaires can be sent to hundreds of people by importing the distribution list

and hitting the send key (Rea and Parker 2005). Additionally, web-based surveys are the most economical means by which to collect data from respondents that are geographically dispersed (Sue and Ritter 2007). I wanted to collect data from a broad sample of North Carolina farmers from the mountains to the coast. I did not have the funds to administer the traditional mail-out technique or to conduct in-person interviews, which have the highest cost of all the survey methods (Rea and Parker 2005).

V. RESULTS

Demographics and Farm Operation Scale

The online survey received eighty-six total responses: fifty-four responses from the email list and thirty-two responses from the snowball sampling. The age distribution of farmers surveyed was similar to the Agricultural Census data for North Carolina (Fig. 4). There was a smaller distribution of producers age 65 and over among survey respondents (7%) compared to the agriculture census population (27%). Conversely, there were a larger percentage of survey respondents in the age range of 25 to 34 (4%) than in the agriculture census population (11%). The difference between samples among the older population is most likely due to the survey being distributed by email.

Figure 4. Age of respondents in the survey were compared with the North Carolina Agricultural Census data

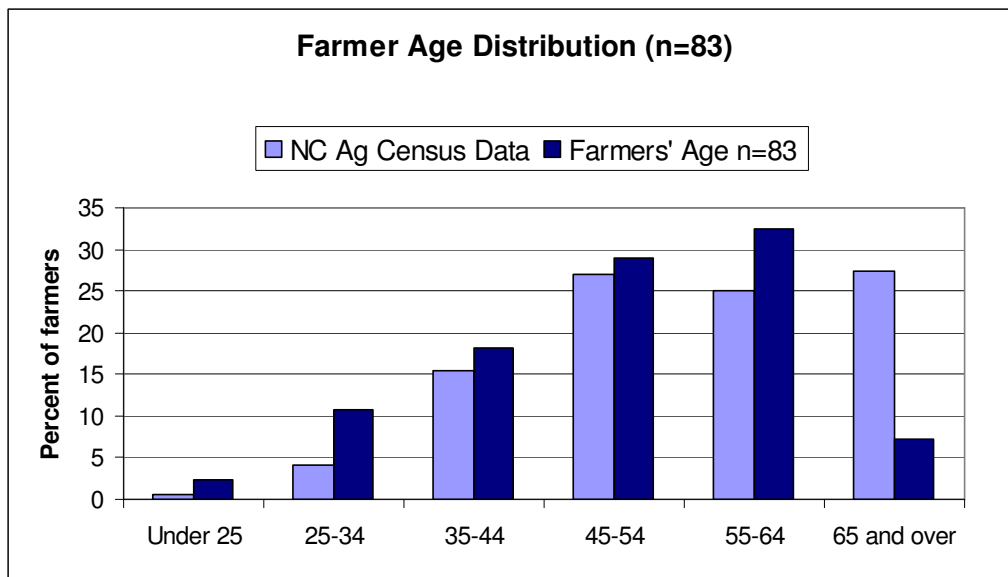
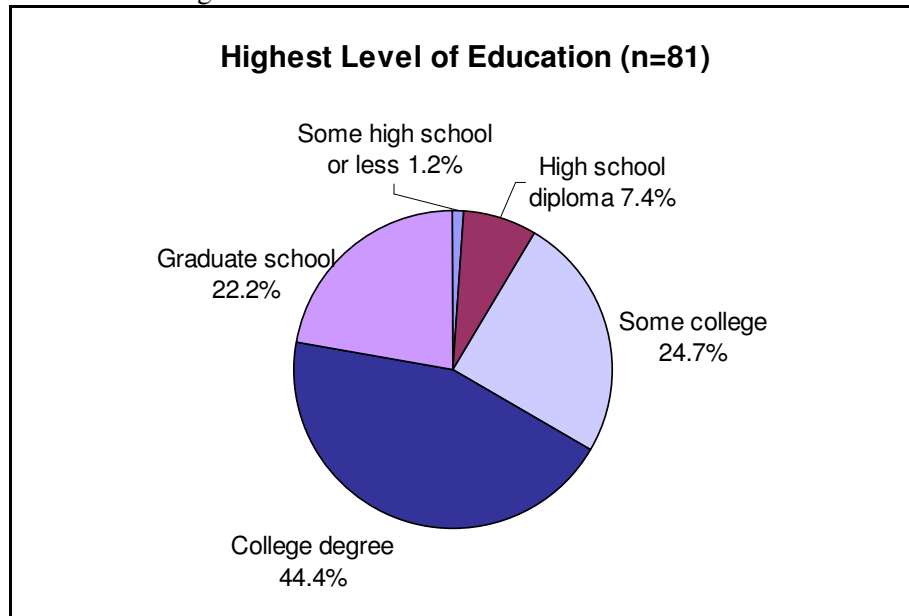


Figure 5 provides a breakdown of farmers' educational background based on the highest level of education achieved. Respondents were, as a whole, highly educated. The sample had well over half (69%) of respondents holding a college or graduate degree and nearly one quarter (24%) having some college education. Less than ten percent of farmers had less than a high school diploma.

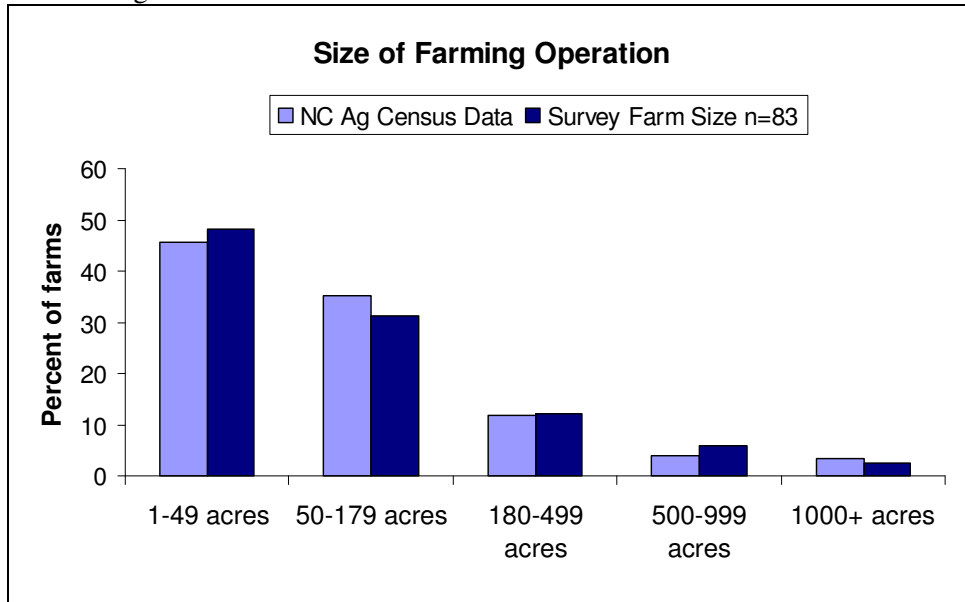
Figure 5. Respondent farmers were well educated with over 90% attending at least some college.



Compared to the census data, this sample was representative in terms of the size distribution of farming operations in North Carolina (Fig. 6). Nearly half (48%) of all farms in North Carolina are less than 49 acres in size. The distribution for farm size is skewed strongly to the left, with 1 to 49 acres being the most common farm size. Thirty percent of farms are 50 to 179 acres and twelve percent of farms are 180 to 999 acres. Few farms (less than 10%) are more than 500 acres.

In order to assess if there were differences in farmers' concerns and opinions across the state, respondents were asked to identify in which North Carolina region (mountains, piedmont, or eastern/coastal) their farm was located (Fig. 7). These responses were compared to the NC Census data (Fig. 8). The survey sample represents the mountain region well compared to the Census data with both results showing approximately one quarter of farms located in the mountains. In contrast, the percentage

Figure 6. Respondents' size of farming operation in acres compared to the North Carolina Agricultural Census data.



of farms in eastern NC (13%) is lower than the Census (28%). Most farms in the survey sample are located in the piedmont region (60%), which is higher than the Census data (47%).

Figure 7. The distribution of respondents' farms by region: mountain, piedmont, or eastern/coastal.

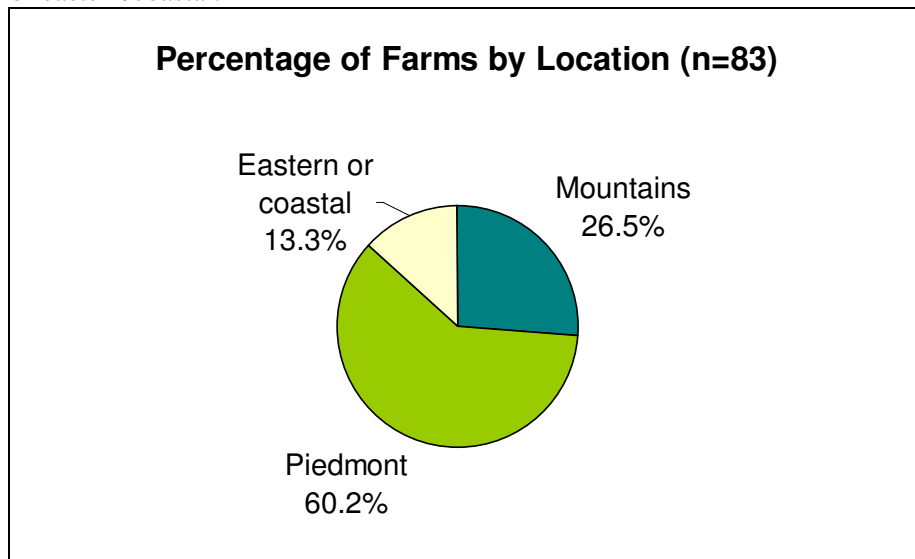
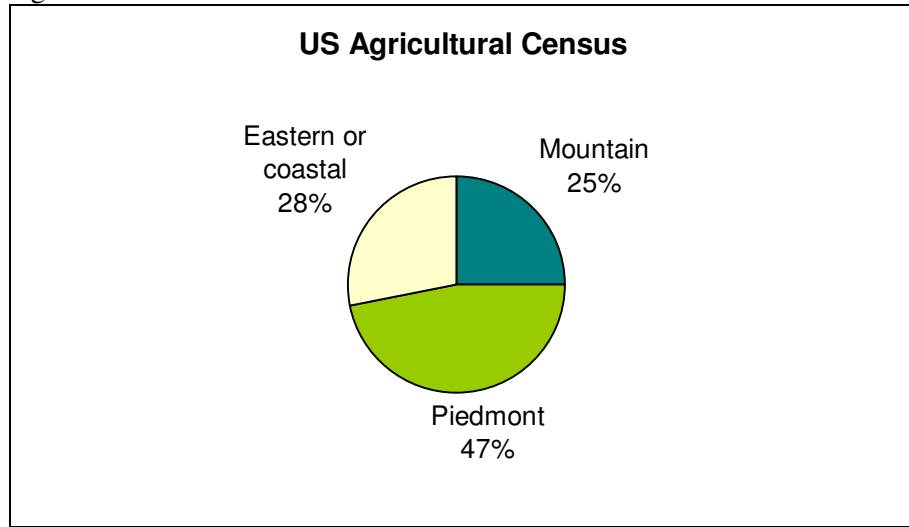


Figure 8. The distribution of farms by region in North Carolina from the US Agricultural Census data.



Farmer Perception of Environmental Problems/Resource Concerns

When asked about the level of concern for environmental or resource issues on their farms (Table 1), 85 percent of farmers were very to somewhat concerned about energy efficiency and water conservation. Four-fifths of respondents indicated the same level of concern for water quality protection (82%) and pest control (81%). Wildlife habitat protection, soil erosion, and forest health also ranked high for concern. Air quality associated with livestock production and wetland conservation ranked the lowest,

Table 1. Percentage of respondents who are very or somewhat concerned about the following environmental issues on their farm.

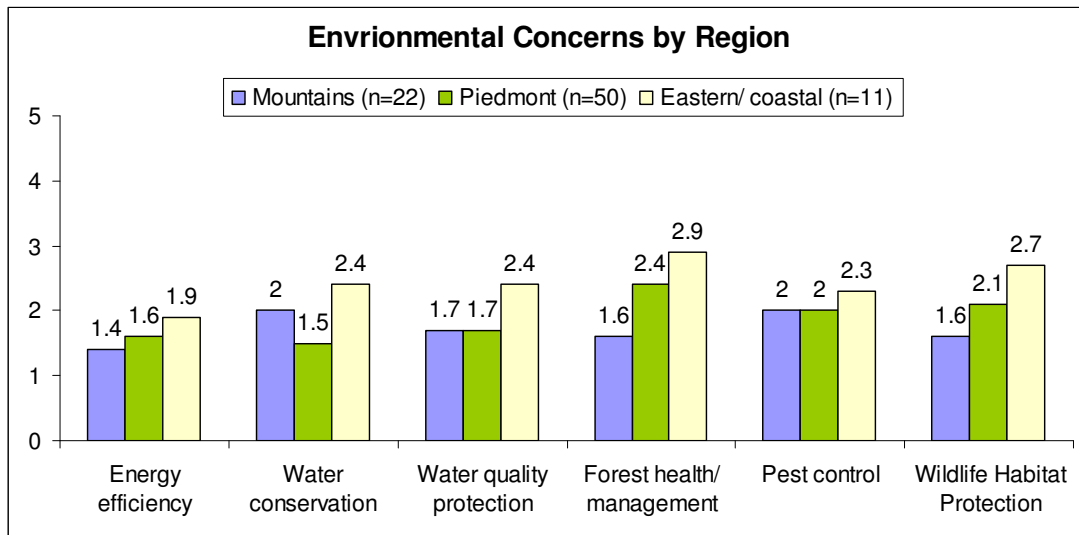
How concerned are you about the following issues on your farm?¹ (n=84)		
	Very or Somewhat Concerned (% farmers)	Rating Average
Energy efficiency	84.5	1.6
Water conservation	84.5	1.72
Water quality protection	82.1	1.8
Pest control	81	2.02
Wildlife habitat protection	72.6	2.07
Soil erosion from wind or water	73.8	2.16
Forest health and management	67.9	2.26
Management of livestock wastes	59.5	2.6
Wetland conservation/restoration	46.4	2.75
Air quality associated with livestock production	41.7	3.07
¹ Likert scale question where 1=very concerned, 2=somewhat concerned, 3=uncertain, 4=not very concerned, 5=no concern at all		

probably due to respondents without livestock or wetlands on their land choosing “no concern at all” for this option. Some other concerns not listed in the table include invasive species and neighboring farms non-organic spraying on their fields and near waterways.

Concerns by Region

Farmers’ perceptions of environmental problems or resource concerns on their land varied across regions (Fig. 9). Overall, the eastern/coastal region indicated they were least concerned with an average rating of 2.2. The mountain region indicated the greatest concern with an average rating of 1.5, followed by the piedmont region with 1.6. The rates were based on a Likert scale of “1” equaling most concerned to “5” equaling no concern at all. Rate averages were calculated for the region’s top three concerns. Energy efficiency was still the greatest concern across the regions, but the mountain region ranked forest health as the second highest concern, unlike the piedmont and eastern regions that ranked water quality protection as second.

Figure 9. Respondents’ rating of environmental concerns by region: mountains, piedmont, and eastern/coastal.

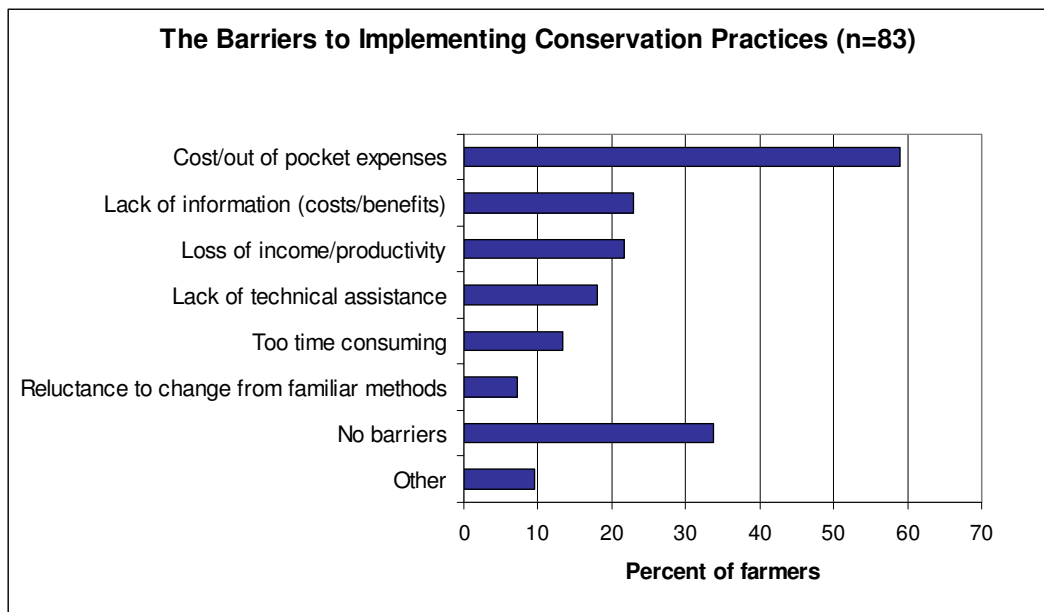


Barriers to Implementing Conservation Practices

Farmers were provided examples of conservation practices associated with state and federal conservation programs and then asked to indicate the barriers, if any, to

implementing conservation practices on their land (Fig. 10). The greatest barrier is cost and out of pocket expenses (59%), followed by a lack of information on the costs and benefits (23%). Thirty-four percent of farmers felt they had no barriers to implementing conservation practices and this was the option chosen most often after cost. Two farmers who chose the “other” option described the NRCS as the barrier due to a dislike of their conservation plans. Others commented on maintenance periods associated with cost-share programs or not wanting to be told how to use their land. A farmer who indicated they were reluctant to change from familiar methods of farming noted that organic certification was not respected. Another farmer who chose “no barriers” said they were already practicing several conservation practices on their farm.

Figure 10. Respondents’ barriers to implementing conservation practices on their farm.



Usefulness of Conservation Programs and Funding Preference

After identifying resource concerns and barriers to implementing conservation practices, I asked farmers how useful the following Farm Bill programs would be in protecting and improving their farm’s resources (Table 2). This question was also on a Likert scale of 1 (most useful) to 5 (no use at all). Based on the rating average, the three most useful programs would be assistance in preventing soil erosion through cover crops (2.04), protection of working farm and forest land through easements (2.08), and water

Table 2. Percentage of respondents who would find the following Farm Bill programs very useful to somewhat useful in protecting and improving resources on their land.

Usefulness of conservation programs in protecting and improving resources (n=84)		
	Very Useful or Somewhat Useful (% of Farmers)	Rating Average¹
Soil erosion prevention through cover crops	72.6	2.04
Working farm or forest land easements	66.7	2.08
Water quality through nutrient or manure management	59.5	2.48
Wildlife habitat improvement/ creation	60.7	2.49
Conventional to organic food production	56	2.55
Develop renewable fuels from crops/wood fiber	53.6	2.56
Carbon sequestration on forest land	33.3	2.91
Payments to restore/protect wetlands	40.5	2.98
¹ Likert scale question where 1=very useful, 2=somewhat useful, 3=uncertain, 4=not very useful 5=no use at all		

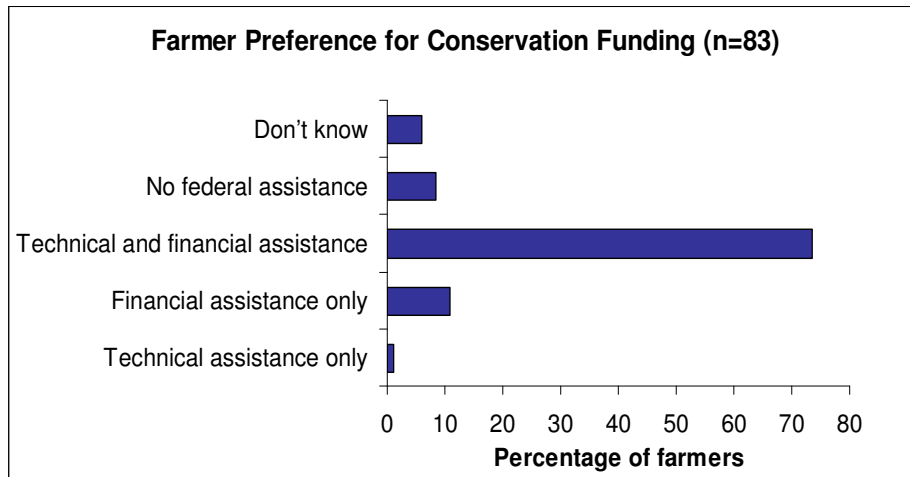
quality protection through nutrient or manure management (2.48). However, based on the percentage of farmers who find the program very useful or somewhat useful, wildlife habitat improvement (61%) is more useful than water quality (60%). Assistance transitioning from conventional to organic food production (56%) and development of renewable fuels (54%) also had a relatively high percentage of farmers choosing these options as very useful to somewhat useful.

Farmers were informed that Farm Bill conservation programs use technical or financial assistance to address environmental goals on private land and then were asked their preference for federal assistance. Survey results suggest farmers are in favor of federal assistance for conservation programs (Fig. 11). A total of eighty-six percent of farmers favored some form of assistance, whether through financial assistance only (11 percent) or through technical and financial assistance (74 percent).

Program Usefulness Across Regions

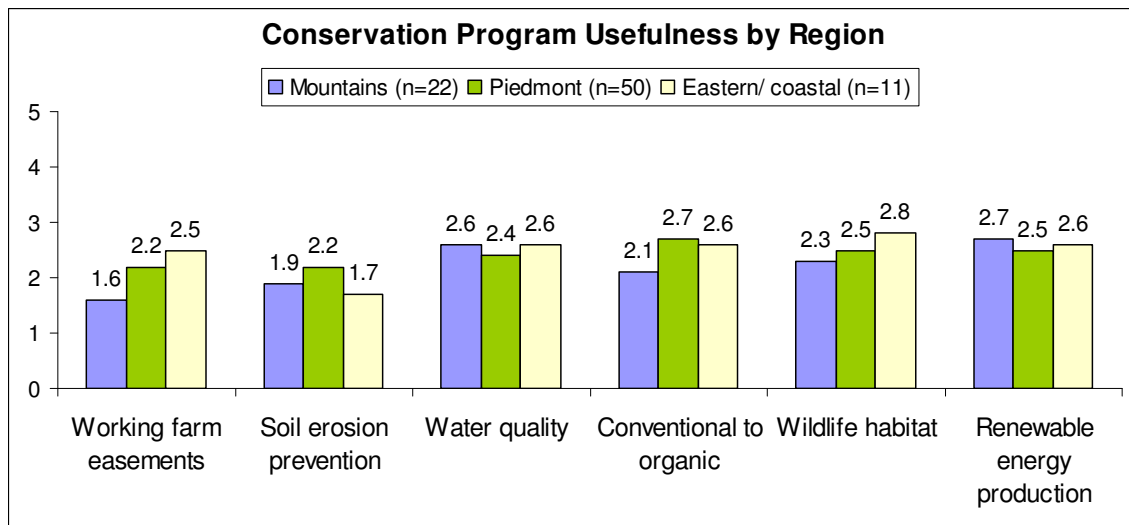
In comparing across regions, the usefulness of conservation programs also varied. The mountain region had the lowest average rating (1.8) for program usefulness overall (Fig.12). The piedmont and eastern regions both had a rating average of 2.3. Again, the rates were based on a Likert scale of 1 (most useful) to 5 (no use at all) and the average

Figure 11. Respondents' preference for federal conservation program funding.



were based on the region's top three programs. Easements to protect working farms and forest land was rated the most useful program in the piedmont and mountain regions. The eastern/coastal region rated soil erosion prevention through cover crops as the most useful program, followed by easements for working lands. The mountain region also indicated that assistance transitioning to organic food production would be a useful conservation program with a rate of 2.1.

Figure 12. Respondents' rating of conservation program usefulness by region in North Carolina.

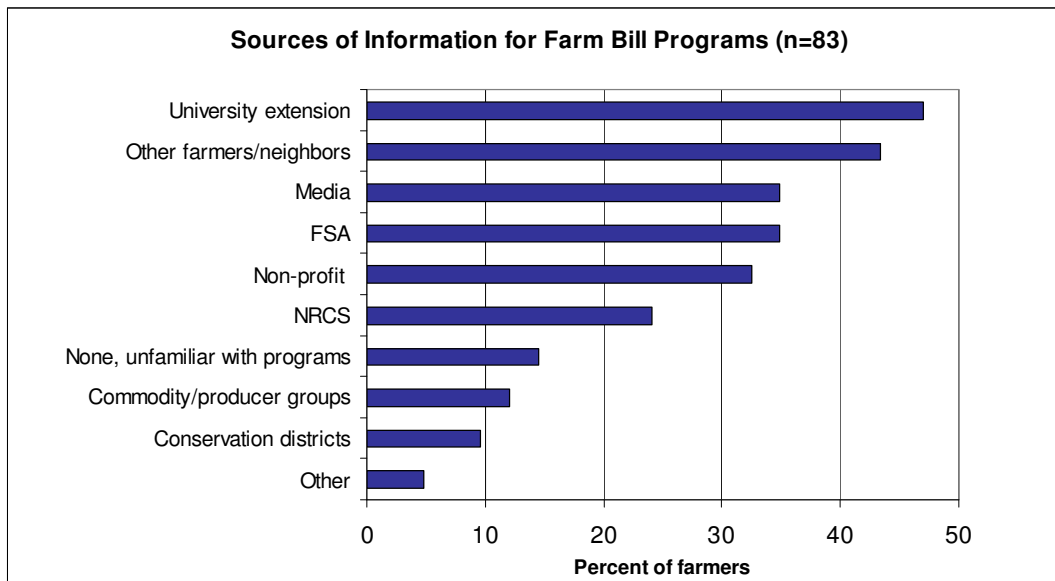


Information Sources and Outreach

Farmers were asked to identify their primary sources for getting information of

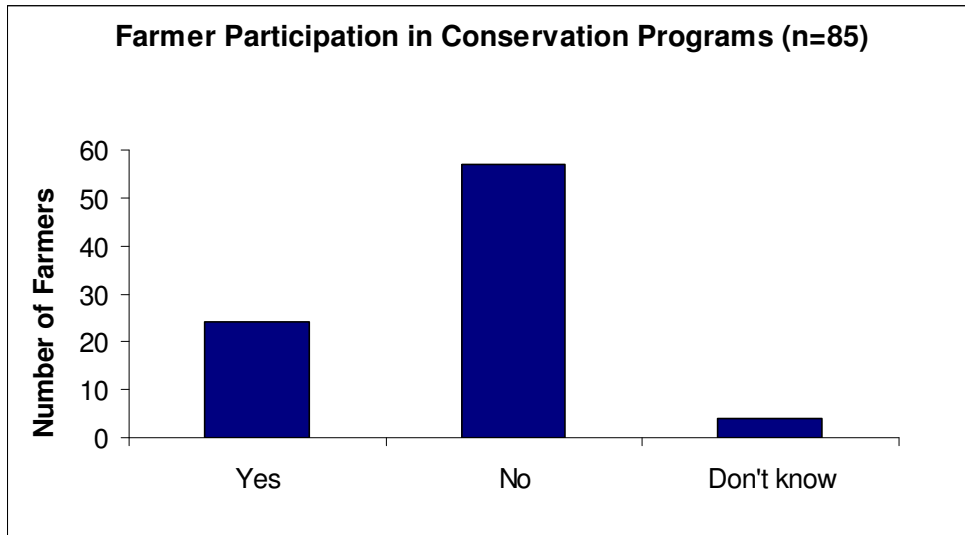
Farm Bill conservation programs (Fig. 13). Most farmers get their information from university extension agents (47%), and neighbors/other farmers (43%). They were followed by the media (TV, Internet, and magazines) and the Farm Service Agency (35%). The Farm Service Agency and the Natural Resources Conservation Service (NRCS) are the primary agencies for these programs, yet they are not the largest sources for program information. Fifteen percent of farmers indicated that they were unfamiliar with conservation programs. Other sources included list servers, the Farm Bureau, and crop production consultants.

Figure 13. Farmers' primary sources for obtaining information of Farm Bill programs.



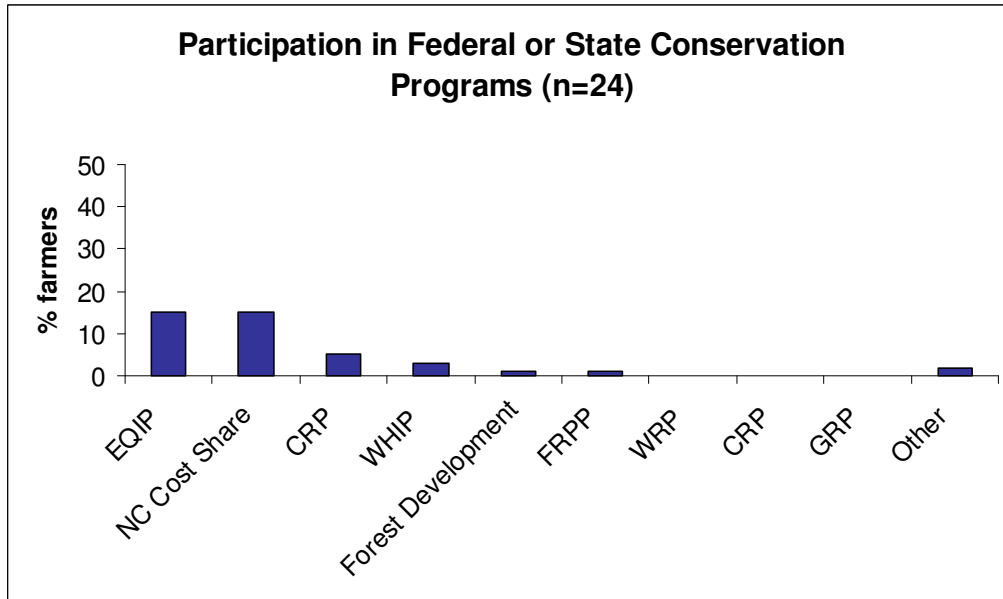
To assess farmers' familiarity with and participation in federal or state conservation programs, respondents were asked if they participated in programs and to check those programs in which they participated (Fig. 14 and 15). A large majority (67%) of farmers do not participate in conservation programs and five percent were unsure. Of those farmers who participated in the programs, over half (54%) participate in the federal Environmental Quality Incentives Program (EQIP) and the North Carolina Agriculture Cost Share Program, both working lands programs. A smaller percentage reported participating in the Conservation Reserve Program (17%) and the Wildlife Habitat Incentives Program (13%). One farmer participates in the Farm and Ranchland Protection Program (FRPP).

Figure 14. Percentage of respondents that participate in state or federal conservation programs in North Carolina.



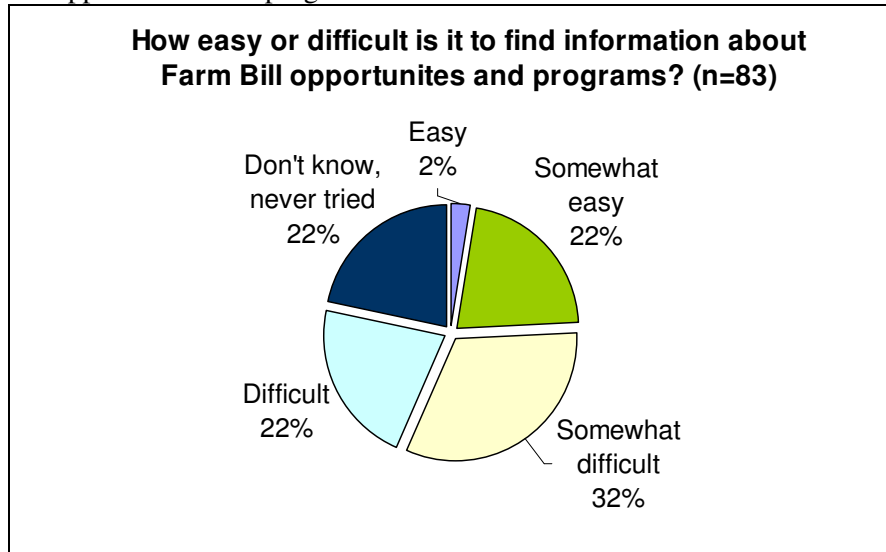
Farmers were asked how easy or difficult is it to find information about Farm Bill opportunities and programs to determine if state and federal agencies should provide more outreach to landowners. Most farmers (54%) believe it is difficult to somewhat

Figure 15. Percentage of farmers in the sample that participate in conservation programs



difficult to find information and nearly one quarter (22%) never tried (Fig. 16). Only two percent thought it was easy to find information about Farm Bill programs.

Figure 16. Farmers' opinions on their ability to find information about Farm Bill opportunities and programs.



One farmer felt it was “somewhat easy” to find information only if you had access to the Internet. Other farmers that said it was difficult to get information gave comments like “can’t decipher the gobbledeygook [the programs] are written in” or that “Farm Bill opportunities seem to apply to corporate farms only and not small farms.”

VI. DISCUSSION AND POLICY IMPLICATIONS

North Carolina farmers showed a high level of concern for energy efficiency and for resources such as soil and water on their land. The results from this survey also suggest there is a strong support for conservation programs and that a vast majority of farmers favor financial and technical assistance to address conservation goals. Many farmers felt that Farm Bill programs that assisted with soil erosion prevention, protected water quality, or created wildlife habitat would be useful in protecting or improving their farm’s resources.

In a recent national Farm Bill survey, producers prioritized several existing program areas for continued funding in the next farm bill (Lubben et al 2006). They ranked renewable energy and working lands conservation programs higher than traditional commodity program safety net tools, such as countercyclical and direct payments. This national survey supports the findings in this study and suggests that new

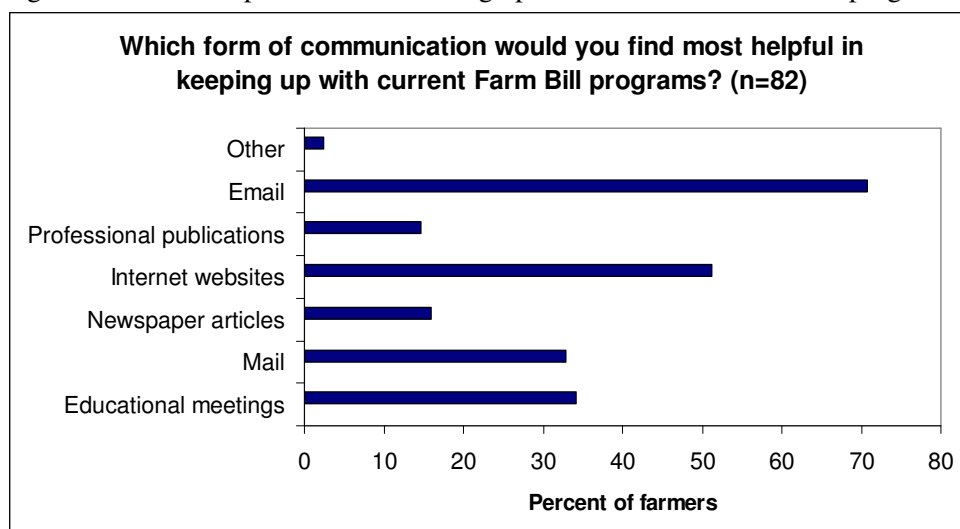
farm policy should increase overall funding for Farm Bill conservation programs and decrease funding for the commodity subsidies. Increased funding is the only way to address multiple and legitimate conservation priorities while avoiding competition for inadequate conservation funds among regions, priorities, and farmers (Soil and Water Conservation Society 2004). According to this study, cost and out of pocket expenses were the most significant barrier to implementing conservation practices on farm and forest land in North Carolina. One farmer who indicated that cost was the greatest barrier explained that they “did what they knew to do and could afford...” Conservation payments could reward farmers for sound land management and resource conservation by providing a reliable flow of revenue. Furthermore, taxpayer money could support cleaner water and air, farmland preservation, and renewable energy development, instead of supporting a small percentage of commodity farmers that focus on production output rather than resource conservation.

Farm policy could encourage more equity in conservation program funding. Land retirement programs, such as the Conservation Reserve Program and the Wetlands Reserve Program, receive the largest share of funding and most of that assistance goes to crop producers in the Midwest states (Soil and Water Conservation Society 2004). These programs are important in conserving valuable ecosystems, but decision makers should focus new conservation investment towards landowners who want to keep working the land rather than retire it. At this time, North Carolina leads the nation in loss of farmland to development. In the last 20 years, NC has lost 2.8 million acres of farm and forest land (Environmental Defense 2007) to developed uses. The Environmental Quality Incentives Program (EQIP), and especially the Farm and Ranchland Protection Program (FRPP) and the Wildlife Habitat Incentives Program (WHIP) are programs that support our working lands. In this study, farmers showed a strong support for Farm Bill programs that offered easements to protect working land. Additional funding can provide financial incentives to farmers to keep land in production and preserve our state’s rural heritage rather than succumb to development pressures. A conservation tool agencies can use are Purchase of Development Rights (PDR’s) in which a payment for the easement provides the farmer with needed monetary resources to stay in business.

Energy-related costs are a significant farm operating expense that can range from ten to thirty percent of operating costs depending on the type of farming enterprise (Natural Resources Conservation Service 2005). Energy efficiency was the primary concern for farmers across the state according to the survey. Energy conservation practices can reduce air pollutants and greenhouse gas emissions, in addition to reducing operating costs (Natural Resources Conservation Service 2005). Farm Bill programs can provide incentives for expanding on-farm energy conservation and renewable energy production and use. Many of the conservation practices that NRCS helps farmers adopt reduce on-farm energy needs. Such practices include conservation tillage to prevent soil erosion and fuel-efficient irrigation methods that also conserves water. Conservation programs could help farmers reduce their dependence on fossil fuels by developing solar or wind energy to generate electricity or they could offer incentives to expand renewable energy production with more environmentally sound methods that use woody biomass, crop and livestock wastes rather than corn-based ethanol.

This study revealed a lack of participation in Farm Bill conservation programs and a need to expand outreach, especially for the smaller farms in North Carolina. The United States Department of Agriculture agencies that implement these programs (NRCS and the Farm Service Agency) should focus on educating more farmers about conservation programs while making the programs more user-friendly with simple, easy-to-read forms. Providing information through Internet websites or email could be

Figure 17. Farmers’ preferences for being updated on current Farm Bill programs.



a helpful form of communication for farmers to be updated on Farm Bill programs and opportunities (Fig. 17). Farmers may also find educational meetings about conservation programs useful.

Finally, programs should be more flexible at the local and regional level to address specific resource needs. Currently, local NRCS district conservationists provide technical assistance for all of the Farm Bill programs and address a myriad of conservation objectives. The dramatically increased scale of the Conservation Title in the 2002 Farm Bill, both in terms of higher funding and a greater emphasis on working land, created a larger demand for technical services from this agency. Capacity to deliver high quality technical advice, consistently and within a reasonable amount of time, may be a serious limitation to achieving conservation goals on agricultural land in the state. There could be a local collaboration NRCS and FSA staff with farmers, extension agents, and non-profits to reach consensus on conservation goals and develop more efficient plans. Funding through the Farm Bill could provide grants to these local agencies, and organizations to increase technical capacity and facilitate locally led projects.

VII. CONCLUSION

Currently, policymakers face important choices as they renew our national farm policy. Two-thirds of farmers do not receive traditional commodity subsidies and there is growing public skepticism about how well they work to keep people on the land or promote stewardship. Conservation could and should become the basis for a new vision of agricultural policy, a policy that will benefit many more farmers and reward them for being good stewards of land, water, and wildlife. At a minimum, conservation policy and programs should be strengthened to help more farmers address the environmental concerns that they face on their land. Advocates of farm policy that increases conservation incentives should focus their efforts on supporting programs that protect working lands while helping the farmers be more energy efficient and conserve their valuable resources. Agricultural subsidies and incentives can be based on land stewardship and support policies that assist farmers investing their land, labor, and capital to produce a better environment.

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Appendices

Appendix 1: Farmer Survey

1.

Thank you for participating in this survey. The survey should take about 10 minutes to complete. Once you click the done button at the end of the survey, your responses will be submitted.

2.

Some examples of conservation programs at the federal level (Farm Bill) and the state level include: Environmental Quality Incentives Program (EQIP), Conservation Reserve Program (CRP), Conservation Security Program (CSP), NC Agriculture Cost Share Program, plus several others.

1. Are you currently participating in any state or federal conservation programs?

Yes (continue to next question)
 No (skip to question number 3)
 Don't know

2. In which conservation program(s) do you participate? (check all that apply)

Conservation Reserve Program
 Environmental Quality Incentives Program
 Wetlands Reserve Program
 Conservation Security Program
 Wildlife Habitat Incentives Program
 Grassland Reserve Program
 NC Agriculture Cost Share Program
 Forest Development Program
 Farm and Ranch Land Protection Program
 Other (please specify)

3. How concerned are you, now or in the future, about the following issues on your farm?

	Very Concerned	Somewhat Concerned	Uncertain	Not Very Concerned	No Concern At All
Pest control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wildlife habitat protection/enhancement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Management of livestock wastes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Air quality associated with livestock production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water quality protection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soil erosion from wind or water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forest health and management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy efficiency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wetland conservation/restoration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Add comments (optional)	<input type="text"/>				

4. Some examples of conservation practices included in federal and state conservation programs are: use of cover crops, water control structures, nutrient management, no-till cropping, field borders and buffers along streams.

Which reason(s) listed below best explain the barrier(s) to implementing conservation practices on your farm?

- Lack of technical assistance (such as education or training)
- Lack of information on costs and benefits
- Reluctant to change from familiar methods of farming
- Too time consuming
- No barriers
- Cost/out of pocket expenses
- Loss of income/productivity
- Other (please specify)

5. Farm Bill conservation programs use technical or financial assistance to address environmental goals on private land. Technical assistance includes information or training. Financial assistance includes incentive or cost share payments. Please indicate your preference for federal assistance:

- Technical assistance only
- Financial assistance only
- Technical and financial assistance
- No federal assistance
- Don't know

6. If provided by the Farm Bill, how useful would assistance (technical or financial) in the following areas be to you in protecting and improving your farm's resources?

	Very Useful	Somewhat Useful	Uncertain	Not Very Useful	No Use At All
Development of renewable fuels from crops or wood fiber	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creation or improvement wildlife habitat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payments to restore, protect, or enhance wetlands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establishment of cover crops to prevent soil erosion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improvement of water quality through nutrient or manure management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transition from conventional to organic food production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protection of working farm or forest land through easements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carbon sequestration on forest land	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. How easy or difficult is it to find information about Farm Bill opportunities and programs?

- Easy Somewhat easy Somewhat difficult Difficult Don't know, never tried

Add Comments (optional)

8. Please identify your sources for getting information on Farm Bill or state conservation programs.

- University extension agents
 Natural Resources Conservation Service
 Farm Service Agency
 Other farmers/neighbors
 Conservation districts
 Commodity or producer groups
 Non-profit organizations (CFSA, environmental groups, etc)
 Media (magazines, Internet, television)
 None, I'm unfamiliar with the programs
 Other (please specify)

9. Which forms of communication would you find most helpful in keeping up with current Farm Bill conservation programs?

- Newspaper articles
 Professional publications
 Internet websites
 Email
 Mail
 Educational meetings
 Other (please specify)

10. Do you own or rent your land?

- Own
 Rent

11. What type(s) of land do you own/rent?

- Row crop fields
 Pasture
 Orchards/Horticulture areas
 Forest
 Stream/Pond
 Hay land

Other (please specify)

12. Which category below best describes your farm?

- Residential - main occupation is something other than farming (gross sales less than \$100,000)
- Low sales - main occupation is farming (gross sales less than \$100,000)
- High sales - main occupation is farming (gross sales of \$100,000 to \$249,999)
- Commercial - farms with gross sales of \$250,000 or more

13. How long have you been farming?

- Less than 3 years
- 3-5 years
- 6-10 years
- More than 10 years

14. What size is your farming operation?

- 1-9 acres
- 10-49 acres
- 50-179 acres
- 180-499 acres
- 500-999 acres
- 1,000 or more acres

15. Which area of North Carolina best describes where your farm is located?

- Mountains
- Piedmont
- Eastern or coastal
- Sandhills

16. What is your age?

- Under 25
- 25-34
- 35-44
- 45-54
- 55-64
- 65 and over

17. What is your highest level of education?

- Some high school or less
- High school diploma
- Some college
- College degree
- Graduate school

Appendix 2: Frequency Distributions

Figure 1: Number of years respondents have been farming.

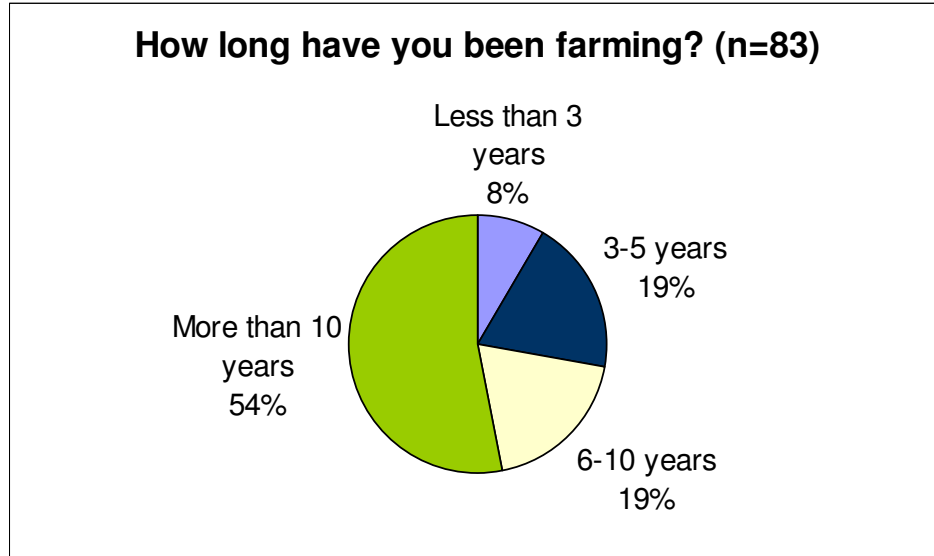


Table 1: Farm typology according by gross sales and primary occupation.

Which category below best describes your farm? (n=83)	
	Farmer Percent
Residential - main occupation is something other than farming (gross sales less than \$100,000)	44.6%
Low sales - main occupation is farming (gross sales less than \$100,000)	37.3%
High sales - main occupation is farming (gross sales of \$100,000 to \$249,999)	7.2%
Commercial - farms with gross sales of \$250,000 or more	10.8%

Figure 2: Percentage of respondents that own or rent their land.

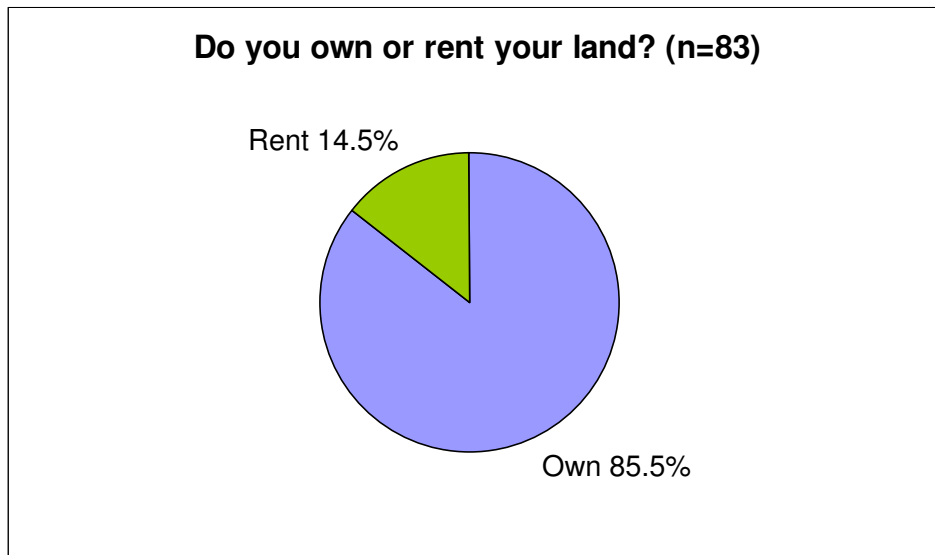


Figure 3: The distribution for types of land that farmers own or rent.

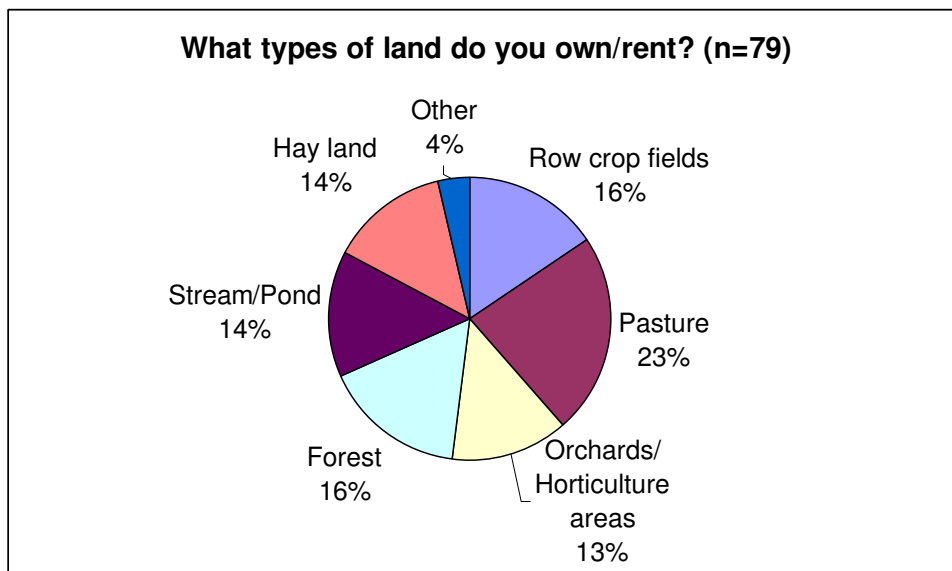


Table 2: Respondents' level of concern about environmental or resources issues on their farm based on a Likert scale.

How concerned are you, now or in the future, about the following issues on your farm? (n= 84)						
	Very Concerned	Somewhat Concerned	Uncertain	Not Very Concerned	No Concern At All	Rating Average
Energy efficiency	51	20	4	7	0	1.6
Water conservation	47	24	2	8	2	1.72
Water quality protection	43	26	2	8	3	1.8
Pest control	29	39	3	11	2	2.02
Wildlife habitat protection/enhancement	34	27	6	14	2	2.07
Soil erosion from wind or water	32	30	2	11	7	2.16
Forest health and management	31	26	6	11	8	2.26
Management of livestock wastes	22	28	4	19	10	2.6
Wetland conservation/restoration	18	21	17	18	9	2.75
Air quality associated with livestock production	14	21	11	19	18	3.07
Likert scale question where 1=very concerned, 2=somewhat concerned, 3=uncertain, 4=not very concerned, and 5=no concern at all.						

Table 3: Respondents' rating of the usefulness of Farm Bill conservation programs on their land based on a Likert scale.

If provided by the Farm Bill, how useful would assistance (technical or financial) in the following areas be to you in protecting and improving your farm's resources? (n=84)						
	Very Useful	Somewhat Useful	Uncertain	Not Very Useful	No Use At All	Rating Average
Establishment of cover crops to prevent soil erosion	35	26	10	8	4	2.04
Protection of working farm or forest land through easements	36	20	18	2	7	2.08
Improvement of water quality through nutrient or manure management	24	26	11	11	10	2.48
Creation or improvement wildlife habitat	15	36	14	12	6	2.49
Transition from conventional to organic food production	25	22	12	11	12	2.55
Development of renewable fuels from crops or wood fiber	23	22	14	12	10	2.56
Carbon sequestration on forest land	11	17	35	6	13	2.91
Payments to restore, protect, or enhance wetlands	17	17	16	17	16	2.98
Likert scale question where 1=very useful, 2=somewhat useful, 3=uncertain, 4=not very useful, 5=no use at all						

