Climate change and agriculture: Preparing educators to promote practical and profitable responses

Final Report for ENE05-091

Project Type: Professional Development Program
Funds awarded in 2005: $113,106.00
Projected End Date: 12/31/2007
Matching Non-Federal Funds: $5,891.00
Region: Northeast
State: Vermont
Project Leader:

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Project Information

Summary:

Climate change presents potential agricultural opportunities (e.g., extended growing season) as well as risks (e.g., increased pest pressure). This project developed educational tools and a training for agricultural service providers to help them assist farmers in making informed choices within the context of a changing climate. Two day-long trainings were held, on March 4, 2006 in Baltimore MD, and again on April 7, 2006 in Windsor CT that covered our current knowledge of greenhouse gases and climate change, changes in temperature and precipitation patterns in our region, potential impacts (positive and negative) on crops and livestock, implications for pest, soil, and energy management, and outreach to farmers. Ninety-nine people attended the trainings. They were given a CD and a notebook with PowerPoint presentations and fact sheets written specifically to help service providers use the information with their clientele.

A follow-up survey of training participants was conducted in April 2007. The response rate was 70% (69 people). Of these, 55 (80%) said they used the information from the training in their work, reaching a total of 17,970 other people.

A comprehensive web site, www.climateandfarming, was developed to supplement the training and to make the information widely available. Thirteen fact sheets, 11 powerpoint presentations, and 6 case studies developed for this project are on the site, available for downloading. There is also an extensive set of links to reputable sources of information on climate change and renewable energy. From January through June 2007, the site received an average of 5,418 hits per month.

Performance Target:

Performance Target: Within 12 months of the training, 150 agricultural service providers in the Northeast will offer information to their clients on opportunities and risks for agriculture associated with climate change, with a focus on practical and

profitable farmer responses.

We were not able to document that the target as written was achieved, but the project has had significant impact. Of the 99 people who attended the training, 69 responded to the follow-up and of these, 55 said they used the information in their work. Of those, 46 respondents gave a specific number of people they had reached with the information, totaling 17,970. In addition, the project coordinator has reached several thousand people through presentations on climate change and renewable energy. The project web site reaches over 5,000 people/month.

Introduction:

The UN Intergovernmental Panel on Climate Change recently reported that climate change is already upon us. For example, the Northeast average annual temperature has increased 1.8 F since 1900. Bloom dates of lilacs, apples and grapes in the Northeast are four to eight days earlier than in the 1960s. Crops and their pests are affected by rising atmospheric CO2 concentrations, as well as changes in temperature and precipitation. Climate change will alter performance of some crops as well as interactions between plants and pollinators, insect pests, diseases, and weeds.

Climate change presents potential agricultural opportunities as well as risks that will affect food security and rural economies. This project addresses the need to provide agricultural service providers with knowledge and tools necessary to assist farmers in making informed choices within the context of a changing climate.

Face-to-face trainings as well as a comprehensive web site were developed to provide practical, research-based information in easy-to-use modules for service providers to use in their work with a variety of audiences. The modules cover current scientific knowledge regarding greenhouse gases and climate change, changes in temperature and precipitation patterns in our region and projections for the future, potential impacts (positive and negative) on plants, animals, and different types of agriculture, and implications for pest, soil, and energy management in relation to farm profitability.

Cooperators

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Educational Approach

Educational approach:

Two dozen conference calls took place among the project planners and cooperators to develop the educational content of the trainings, notebook, and web site. An advisory group of seven agricultural service providers (beneficiaries) from the Northeast was recruited to provide feedback during the planning process. Four members were in extension, one was a soil scientist with NRCS, one was the director of a statewide organic farming association, and one was a lecturer specializing in renewable energy. The group came from New York, New Hampshire, Connecticut, and Vermont.

This was the final agenda for the trainings:

“Climate Change and Agriculture: Promoting Practical and Profitable Responses”
A Professional Development Workshop for Extension and Agricultural Service Providers

March 7, 2006 at the Maritime Institute, Baltimore MD. Repeated on April 4, 2006 at the Ramada Inn, Windsor CT.

8:00 Introduction
8:15 Overview of greenhouse gases and climate change. Art DeGaetano,Department of Earth and Atmospheric Sciences, Cornell University
8:45 Climate change in the Northeast: past and predicted. Cameron Wake,Climate Change Research Center, University of New Hampshire
9:15 Potential impacts of climate change on crops. David Wolfe,Department of Horticulture, Cornell University
9:45 Potential impacts of climate change on dairy and other livestock. Larry Chase, Department of Animal Sciences, Cornell University
10:15 Break
10:30 Break Out Groups with Speakers and Discussion
11:00 Insect and disease management in a changing climate. Curt Petzoldt and Abby Seaman, IPM Program, Cornell-Geneva Experiment Station
11:30 Climate change, CO2, and weed management. Lewis Ziska, Crop Systems and Global Change Laboratory, USDA-ARS Beltsville, MD
12:00 Lunch
12:45 Soils and climate change: managing C and N. John Duxbury, Department of Crop and Soil Sciences, Cornell University
1:15 Energy use and greenhouse gases: NY dairies. Jennifer Wightman, Department of Crop and Soil Sciences, Cornell University
1:45 Climate change and biofuels: opportunities for farmers. John Duxbury, Department of Crop and Soil Sciences, Cornell University
2:15 Break
2:30 Challenges and opportunities for service providers. Vern Grubinger, Center for Sustainable Agriculture, University of Vermont
3:00 Reaction Panel and Discussion
3:30 Adjourn

In November 2005, the trainings were announced via e-mail to all state PDP coordinators and they were asked to pass on the web site with program and registration information on to Extension, NRCS, state agencies, and other

agricultural service providers. A follow-up reminder was sent in January 2006. A web site with the agenda and registration information was developed and promoted.

Despite aggressive efforts via e-mail and personal calls to contacts in the mid-Atlantic region, it proved difficult to recruit participants at the Baltimore site, where only two dozen people registered for the training. However, several influential people working in the office of climate change at USDA and NRCS did attend, and they brought information on the latest developments in those agencies that will affect farmers. The Windsor, CT training was reasonably well attended, with about 70 people. Had the training taken place one year later, when climate change was more fully in the public eye, recruitment may have been more successful. In addition, a single two-day conference that included renewable energy (or some other format than a one-day workshop exclusively on climate change) might have been more attractive to service providers, but that is hard to say.

No milestones

Performance Target Outcomes

Performance target outcome for service providers narrative:

Outcomes

The follow-up survey showed that despite the low attendance at trainings, the participants reached a very large number of people. Less than half the participants reported reaching almost 1800 other people with information on climate change and agriculture in their work; this, in combination with web site usage, suggests that several times that number obtained and used information from this project in one way or another.

The comments by participants on the follow-up evaluation when asked to describe how they have used the information also shows that this project had a significant impact on the work of at least several dozen service providers. For example:

“Information has been used in educational programming both here in Maryland and Ghana, West Africa. It has been used in both formal and informal conversations with farmers and community leaders”

“I used material to design a class for the PA Envirothon Study Day in Potter County.”

“We have developed a Connecticut Atmospheric Resource Quality Management standard for incentive payments on practices to reduce particulate matter and greenhouse gases from agricultural enterprises. Some of the information from the training…was used in the justification for the standard.”

“Information from the workshops has been influential in my work.”

“Has given credibility to CCE for engaging in this discussion.”

“I was a skeptic of global warming before this training. I’m not anymore.”

“It has been very helpful for informing national publications which we use to help educate the public and other government agencies and NGOs.”

On a personal note, this project had a tremendous impact on the project

coordinator's work. He has given over two dozen presentations on climate change and renewable energy on farms to over 1,500 people across the region and at the 2006 national SARE conference in Wisconsin. Working with local farmers, he obtained nearly $200,000 in grant and gift funds to implement an on-farm oil seed processing and community biodiesel production project. In the summer of 2006, he taught a three-credit course to 18 students at the University of Vermont called 'Renewable Energy on Farms." None of this would have happened without his exposure to the issue of climate change and agriculture and the link to renewable energy on farms as a result of this project.

Additional Project Outcomes

Assessment of Project Approach and Areas of Further Study:

Future Recommendations

There are many issues linked to climate change, such as carbon trading, local food systems, nitrogen fertilizer use efficiency, energy conservation, and of course all types of renewable energy technologies and applications. In addition, the design of farming systems needs to be critically analyzed and new systems developed to cope with what is likely to be a very different climate and energy world in the future. The new Northeast SARE Agro-Ecology call for proposals addresses that head on. In the meantime, all of the issues listed above could benefit from efforts similar to this project that boil down the most accurate information and present it in a form that educators and service providers can use to help people make good decisions.

Potential Contributions

As the climate continues to change, and if energy supplies and prices become more volatile, as many expect, the work of this project will become more relevant than ever. In addition to the educational products developed, the network of service providers and researchers working to help farmers adapt to a changing climate was also strengthened.