

An educational program for training extension professionals and vocational agriculture teachers on high-tunnel technology

Final Report for ENE03-076

Project Type: Professional Development Program

Funds awarded in 2003: \$79,154.00

Projected End Date: 12/31/2006

Matching Non-Federal Funds: \$35,718.00

Region: Northeast

State: Pennsylvania

Project Leader:

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Project Information

Summary:

The use of high tunnel technology for extending the cropping season and in some instances even permitting year around production of certain horticultural crops continues to enable small to medium sized growers in the Northeast and Mid-Atlantic region of the United States the opportunity to increase their farm income, while providing consumers and restaurants in the region the opportunity to purchase fresh, locally grown horticultural crops for a longer period of time.

Performance Target:

Of the 180 University/County Extension Educators, Crop Consultants, Vocational Agriculture Teachers and Master Gardeners attending the training programs, 45 will develop their own educational program to disseminate the information they gained to growers or assist growers in building a high tunnel or will provide growers with production information on horticultural crops being grown in high tunnels. The knowledge they gain from participating in the workshop and then share with growers will help growers provide fresh, locally produced healthful food products and flowers over a longer period of time to their customers. Extension of the growing season will increase grower's profitability while at the same promoting sustainability and good stewardship of resources, such as water, fertilizer and other inputs. The Vocational Agriculture Teachers from the Northeastern/Mid-Atlantic Region of the United States that will attend the training program will either build a high tunnel at their educational facilities or incorporate high tunnel technology into their curriculum or both. The Master Gardeners will answer questions on high tunnels.

To determine if we reached our performance target, all participants will be surveyed to ascertain how many used the information obtained from the workshops to

develop their own educational programs to educate /assist growers in setting up a high tunnel or answering questions pertaining to crop production or plan to construct a high tunnel at their school.

Introduction:

The goal of this project was to develop and deliver an educational program on the construction, management and economics of high tunnels to the frontline extension educators who can then reach out and impact an even wider audience of growers. County Extension Educators, both at the university and county level, and Crop Consultants are certainly on the frontline in the delivery of new information and technology to growers. The Vocational Agriculture Teachers are training the agriculturists of tomorrow. These groups of educators seemed to be the ideal ones to offer training on high tunnels in an educational workshop environment. These individuals using the training they have received then developed their own educational programs and have passed on the information to growers and students throughout the Northeast/Mid-Atlantic region. In addition, two workshops were offered to Master Gardeners who assist extension personnel in answering gardening questions as part of their payback to extension for the training that they receive. We felt that they should have training in high tunnel technology so as to better answer questions posed to them on this technology by gardeners and commercial horticultural operations.

Educational Approach

Educational approach:

Each of the workshops is considered an independent milestone.

2003

One workshop was conducted in 2003 on September 4-5, 2003 at the Penn State University High Tunnel Research and Education Facility, Rock Springs, PA.

2004

Three workshops were conducted in 2004. Workshops were conducted on April 13-14, 2004 and June 29-30, 2004 at the Penn State University High Tunnel Research and Education Facility, Rock Springs, PA, while on September 3, 2004 a workshop was conducted at the Woodman Horticulture Farm, University of New Hampshire, Durham, NH.

2005

Three workshops were conducted in 2005. Workshops were conducted on June 20-21, 2005 and August 22-23, 2005 at the Penn State University High Tunnel Research and Education Facility, Rock Springs, PA, while on July 6-7, 2005 a workshop was conducted at the Kenneth Post Greenhouse Facility, Cornell University, Ithaca, NY.

2006

Two workshops were conducted for training of Master Gardeners in 2006. One workshop was conducted on July 1, 2006 at the Woodman Horticulture Farm, University of New Hampshire, Durham, NH while a second one was conducted on August 26, 2006 at the Penn State High Tunnel Research and Education Facility, Rock Springs, PA.

At the end of each workshop, participants were asked, "how many of you are planning on developing an educational program on high tunnels?" This provided us

with a rough idea of how we are doing toward reaching our performance target of 45 participants who actually organize/present an educational program on high tunnels, assist growers by answering questions on high tunnels, whether on construction, management of crops or economics or develop or plan to develop an on-farm high tunnel demonstration with a participating grower or if a vocational agriculture teacher they have incorporated high tunnels in their educational program, and if they are considering purchasing a high tunnel for use in their high school.

We conducted a total of 9 high tunnel workshops. The total number of attendees for the 9 workshops was 152, a number that did not include the presenters, those who assisted in the preparing for the meeting and meals, and others who happened to sit in on each workshop but were not formally registered.

The total number of participants in the workshops was 152. E-mail follow-ups were sent to participants that attended the 2003, 2004, 2005 and 2006 workshops inquiring how they have used the information and to ascertain if they have actually developed and delivered an extension educational program on high tunnels.

The responses to our e-mail inquiries provided us the information to see if we actually reached our performance target and increased the educational programming targeted to growers on the use of high tunnels by extension educators, crop consultants and vocational agriculture teachers and in reality reached a wider audience of growers and students in the Northeast and Mid-Atlantic region of the United States. The responses are listed at the end of the document and show that indeed attendees have been using the information.

No milestones

Performance Target Outcomes

Performance target outcome for service providers narrative:

Outcomes

The educational programs conducted at the various locations were similar in content and format as the sample workshop listed below conducted at High Tunnel Research and Educational Facility located at Rock Springs, PA. We had university and county extension educators and vocational agricultural teachers and Master Gardeners from Maine, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, West Virginia, Virginia, District of Columbia, Maryland, and North Carolina attending the workshops.

Sample Schedule and Topics for the Workshops

Day One

Registration and Coffee and Donuts at the High Tunnel Facility

Welcome and Background on High Tunnels and History of the Facility

Tips on Constructing a High Tunnel

The Production of Cut Flowers in a High Tunnel

Lunch provided

The Production of Small Fruit Crops in a High Tunnel

The Production of Vegetables in High Tunnels

Water, Soil and Nutrient Management in High Tunnels

Transitioning to Organic Production in High Tunnels

Disease Control Considerations in High Tunnels

Dinner on your own

Day Two

Coffee and Donuts at the High Tunnel Facility

Production of Sweet Cherries in a High Tunnel

The Use of Biocontrols for Managing Insect Pests in High Tunnels

How to Develop an Extension Programming Effort in High Tunnels

Lunch provided

Visit A Local Grower Using High Tunnels or have one speak

We reimbursed the participants for:

1 or 2 nights lodging depending on distances traveled.

Mileage up to 500 miles at \$0.375/mile (this went up as time went on and also we permitted some mileage in excess of 500 miles on a case by case basis)

We have developed an excellent High Tunnel Production Manual that was updated during the grant. The manual was provided each participant attending the workshop. Feedback that we have received is that the manual is serving as an excellent resource for the participants. They have copied parts for other people, or used it in their own training sessions or as teachers they have incorporated sections into the courses they teach at the high schools. In addition, a second publication was developed "Implementation of a Biocontrol Program for Insect Control in High Tunnels" and was given out to participants at the 2006 high tunnel workshops. For the Vocational Agriculture Teachers attending we were able to provide 8 hours of an ACT 48 Professional Education Activity, which was helpful to the vocational agriculture teachers.

Being able to support the travel, and lodging of participants for these workshops was really a positive thing given the severe reduction in funding being experienced by extension services and school districts in the Northeast. Almost every participant was expressed gratitude for the financial support to attend the workshops. They all had stories about their own extension services and the dramatic cuts in funding they were experiencing and the reduction of personnel through early retirements packages or outright layoffs. This is a situation that is making it difficult for extension educators to attend educational programs and being able to reimburse the participants was really very positive and greatly appreciated by all the participants. The idea of having some of the workshops in the northern reaches of the SARE Region in New Hampshire and New York and also in the southern portion of the SARE area at our high tunnel research and education facility worked very well. This way we covered the region better and made it more economical for participants.

In response to our e-mail survey we received positive responses from 41 attendees that have used the information from the workshops or the high tunnel manual to conduct educational programs on high tunnels, have used the manual in their programming efforts, while some have assisted growers

in developing plans for building a high tunnel. Some have even constructed high tunnels of their own. Some Vo-Ag teachers have even incorporated high tunnels into their curriculums. We were able to incorporate into several of the later workshops a new and exciting addition to the educational program for participants at our Penn State Facility was the opportunity to view a 30-foot wide by 96-foot long high tunnel at the Penn State University Horticulture Farm that is heated using Plastofuel (nuggets made of used agricultural plastic waste i.e. plastic transplant containers, plastic mulch, drip irrigation tape and tubing, hay bags, silage bags, nursery pots, etc.) burned directly in a boiler unit generating hot water, that was developed in South Korea. This project is a partnership between Jim Garthe in the Department of Biological and Agricultural Engineering, and the High Tunnel Research and Education Facility and a private entrepreneur from South Korea. This utilization of this currently perceived waste material to generate heat showed participants that even more year around cropping options were possible in high tunnels.

The original performance target was that 45 out of 180 participants would develop their own educational program to disseminate the information they gained to growers or assist growers in building a high tunnel or will provide growers with production information on horticultural crops being grown in high tunnels.

The achieved target was 41 out of 152 participants developed programs and supported high-tunnel adoptions as expected.

Another target was that the knowledge they gain from participating in the workshop and then share with growers will help growers provide fresh, locally produced healthful food products and flowers over a longer period of time to their customers. Extension of the growing season will increase grower's profitability while at the same promoting sustainability and good stewardship of resources, such as water, fertilizer and other inputs. The Vocational Agriculture Teachers from the Northeastern/Mid-Atlantic Region of the United States that will attend the training program will either build a high tunnel at their educational facilities or incorporate high tunnel technology into their curriculum or both. The Master Gardeners will answer questions on high tunnels.

Correspondence with participants indicates that this target was met, and that the knowledge was disseminated widely among educators, growers, Master Gardeners, and many other professionals in the agricultural community.

Additional Project Outcomes

Project outcomes:

Forty-one letters and e-mails from participants, not posted here for privacy reasons but included in the report, indicate that the essential concepts of the training were absorbed and that participants went on to explore new techniques in mulching, construction, production techniques, marketing, education, and other interest areas, and to pass the information along to their colleagues and to farmers. Some participants also sought and found funding for further research and farmer adoption.

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