2007 Specialty Crop Block Grant Program

Final Report

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ABSTRACT

Delaware farms grow produce crops estimated at over $58 million per year. 75% of the products are sold within Delaware or on the Delmarva Peninsula. Delaware's strategic location, located close to the key eastern markets in the country, including New York, Philadelphia and Washington, DC., means that 75 million customers are within an 8-hour truck ride. This presents a major opportunity for Delaware growers to expand both their markets and product offerings. Projects will be undertaken through this grant to assist Delaware's farmers in identifying new crops and products as well as assisting growers in identifying markets and marketing their products to an expanded marketplace.

Delaware's established specialty crops, such as lima beans, cucumbers and watermelons, face threats from diseases and increasing competition from growers in large states, such as California. A variety of projects will be undertaken to better assess the health of Delaware vegetable crop industry, protect the crops from diseases and increase the productivity and competitiveness of Delaware's crops.

The following are Delaware Department of Agriculture's (DDA) proposed activities to expand and strengthen Delaware's specialty crops.

Market Expansion and New Products:

- Delaware's Participation in "MarketMaker";
- Production and Marketing Possibilities for Ethnic Crops;
- Organic Production of Processing Vegetables - Research and Demonstrations;
- Development and Distribution of Marketing Materials.

Increase Competitiveness of Delaware Specialty Crops:

- Support Operation of the Cucurbit Downy Mildew Website;
- Lima Bean Research and Breeding Program;
- Watermelon Promotional Material;
- Health of the Vegetable Processing Industry Study.

OVERALL GOALS

The overall goal of the DDA Specialty Crop Block Grant proposal is to increase the size and competitiveness of Delaware's specialty crops industry.

Market Expansion and New Products

1. MarketMaker now Food Trader/ AgTrader

Summary

DDA planned to fund Delaware's participation in MarketMaker, a national network of state websites that connect farmers and processors with food retailers, consumers and food supply chain companies. The MarketMaker data base of food companies will enable Delaware producers to do demographic, geographic, and product based research to identify potential customers for their products. It will map potential markets by demographic characteristics and provide census profiles of the markets being targeted. It was intended that MarketMaker would provide Delaware specialty crops producers with a key tool for identifying and understanding markets and translating that understanding into real sales opportunities.

Delaware specialty crops farmers will have access to 100,000 potential commercial food manufacturing/distribution/retail/restaurant customers in New York, Illinois, Kentucky, Iowa and Minnesota for farm-based food products. As other states join, especially our neighboring states of New Jersey, Pennsylvania, Maryland, and Virginia, the customer base will increase to 250,000 firms.

The plan: Seventy percent of Delaware specialty crops producers will be introduced to MarketMaker through demonstrations, training, and fact sheets. Ten percent of the Delaware specialty crops growers will use MarketMaker within three years and will generate $1,000,000 of new sales receipts. All specialty crops processing firms in Delaware will utilize MarketMaker as a sales development tool.

Project Approach

The "Market Maker" project was substantially revised since application submission. The original approach which would have used an "established" system called "Market Maker," was scraped. **The system proved to be less effective than originally anticipated**.

Through networking with other states, we discovered that Maryland maintains a virtual marketplace site entitled **Food Trader** and **Ag Trader**. The websites were developed and are maintained by thee "University of Maryland through a contractor. The contractor is a branch of the EPA – the Environmental Finance Centers. The Environmental Finance Center at the University of Maryland (EFC) was contracted by the Delaware Department of Agriculture (DDA) to promote the online agricultural websites called Delaware Food Exchanges (www.defoodtrader.org and www.deagtrader.org) (hereafter "Delaware Farm Market") . The EFC crafted a marketing strategy which was designed to promote the site to both farmers and consumers throughout Delaware.

The marketing strategy was designed to promote the site simultaneously to producers and consumers within Delaware. The EFC project team initially planned to focus on restaurants as a way to increase "wanted" listings and connect farmers with local chefs interested in purchasing locally grown products. Early research was conducted to collect a list of restaurants that could be marketing targets. In addition, the project team targeted producers with existing Delaware Farm Market accounts as well as producers who had not created accounts.
The project team talked via phone on several occasions with Delaware Department of Agriculture to learn more about (1) how DDA is currently promoting the site and (2) ideas for

promoting the site in the future. The project team also had a call with the Executive Director of the Delaware Restaurant Association to talk about partnering on an advertising campaign

Goals and Outcomes Achieved

Delaware's SCBG Committee decided to move forward with utilizing the EFC to develop a similar site for Delaware. That site was developed and went live in January 2009. To date, $40,000 has been expended to develop and operate the site. We expended an additional $10,000 of DDA money to fund the site for the remainder of 2010.

We were excited about the opportunities which were afforded our producers and buyers through the new DE Food Exchange and DE Ag Exchange websites. Delaware's site could be viewed at: http://defoodtrader.org/ and http://deagtrader.org/. However, provision of the site did not create the volume of traffic and resultant transactions that we had hoped would occur. The following is a report of activities for both sites. It was difficult to track website activity in correlation to the original stated Goals and Outcomes, but it is likely that those original goals were not met. We have provided a great deal of information on website traffic in the report below.

Delaware Agtrader Information

2009 DeAgtrader.org has averaged just over 400 **unique visitors a month** to its website during the summer and into the fall. The numbers are as follows:

Unique Visitors

May 2009	444
June 2009	417
July 2009	472
Aug. 2009	473
Sept. 2009	406

There has been a total of 6583 total number of visits to the website since February. These visits averaged between 600-700 visits a month.

Number of Visits

May 2009	673
June 2009	623
July 2009	731
Aug. 2009	701
Sept. 2009	573

Most of the visitors found their way to *DeAgtrader.org* through the Delaware Department of Agriculture website and by connecting from the *DeFoodtrader.org* website.

Currently, *DeAgtrader.org has* 67 members registered on the website, almost all of whom are producers from Delaware. The total listings from February 2009 until October 2009 have totaled 101. As of October 26, 2009, there were 20 active listings. The listings on the website ranged from hay, straw, livestock and manure to supplies and special events. Most of the listings occurred in February and March and early summer. See below for a breakdown of monthly category listings on *DeAgtrader.org.*

Listings Posted by Create Date, 2009

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Animal care	0	2	0	0	1	0	0	0	0	0	0	0	3
Animal products	0	0	0	0	0	0	1	0	0	0	0	0	1
Bedding material	0	3	1	0	0	0	0	0	0	0	0	0	4
Beef	0	0	0	0	0	0	1	2	1	0	0	0	4
Christmas items (trees, ropes, wreaths, etc)	0	0	0	0	1	0	0	0	0	1	0	0	2
Compost and mulch	0	2	0	0	0	0	0	0	0	0	0	0	2
Cow	0	0	0	0	0	1	0	0	0	0	0	0	1
Dogs - Farm	1	0	0	1	0	0	0	0	0	0	0	0	2
Equipment	0	2	4	0	1	1	0	0	1	1	0	0	10
EVENT	0	2	5	0	0	1	2	0	0	0	0	0	10
Flowers	0	1	0	0	1	0	0	0	0	0	0	0	2
Fruit	0	0	0	0	0	1	0	0	0	0	0	0	1
Greenhouses/Nursery Supplies	0	0	0	0	0	3	0	0	0	2	0	0	5
Hay	0	1	1	1	2	1	0	2	1	0	0	0	9
Help Wanted	0	0	0	0	0	0	1	0	0	0	0	0	1
Horse	0	4	1	0	1	0	1	0	0	0	0	0	7
Horse Equipment	0	0	1	0	0	1	0	1	1	0	0	0	4
Livestock	0	2	3	0	0	0	0	0	0	0	0	0	5
Manure	0	2	0	0	1	0	1	0	1	0	0	0	5
Pigs	0	1	0	0	1	0	0	0	0	0	0	0	2
Poultry	0	1	0	0	0	0	0	0	0	0	0	0	1
Services	0	0	1	0	0	2	0	0	0	0	0	0	3
Sheep	0	2	3	0	0	1	0	0	0	0	0	0	6
Trees and shrubs	0	1	1	0	1	0	0	0	1	0	0	0	4
Value-added products	0	0	1	0	0	0	0	0	0	0	0	0	1
Vegetables	0	0	0	1	1	0	0	1	1	1	0	0	5
Wheat Straw	0	0	0	0	0	0	0	1	0	0	0	0	1
Monthly Totals	1	26	22	3	11	12	7	7	7	5	0	0	101

Delaware Foodtrader Information

2009 DeFoodtrader.org had a range between 400-500 **unique** visitors to its website during the summer months and into the fall. The numbers are as follows:

May 2009	595
June 2009	449
July 2009	472
Aug. 2009	422
Sept. 2009	445

There has been a total of 7840 total number of visits to the website since February. These visits averaged between 650-850 visits a month with the exception of April 2009 which had 1451 total visits because of successful marketing done by DDA.

Number of Visits

May 2009	871
June 2009	657
July 2009	758
Aug. 2009	646
Sept. 2009	735

The other exception to the average visits per month was on October 18, 2009, there were over 8000 hits to the Delaware website because of a press release for the Maryland website known as *Foodtrader.org.* There was a press release by Maryland Department of Agriculture and the University of Maryland announcing that seafood was now being sold on the website.

Most of the visitors found their way to *DeFoodtrader.org* through the Delaware Department of Agriculture website and by connecting directly from the *DeAgtrader.org* website.

There are 86 members registered users for the website. Out of that number, there are 51 producers; 25 consumers including 2 retail; and 4 charities. Those members who belong to *Deagtrader.org* use *Defoodtrader.org* with the same account log-in information so the numbers of total Delaware producers using the website is much more than 51. There are only 3 listings currently on the website. There have been 72 total listings on the website since February 2009. Out of those listings, 69 have expired or been deleted by the member. Not many people leave comments as to why they removed their listing but most stated it was sold or it was seasonal. We are unable to track exactly how many listings have been successfully sold because many people don't report back to give credit to the website for successful transactions.

Listings Posted by Create Date, 2009

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
All fruits and vegetables	0	0	0	1	2	0	0	1	1	0	0	0	5
All types of food	0	0	1	0	0	4	4	0	0	0	0	0	9
Beef	0	0	0	0	0	0	0	2	0	0	0	0	2
Blueberries	0	0	0	0	0	2	0	0	0	0	0	0	2
Charitable donations	0	0	0	1	0	0	0	0	0	0	0	0	1
Corn (sweet)	0	0	0	0	0	2	0	0	0	0	0	0	2
Cucumbers	0	2	0	0	0	0	0	0	0	0	0	0	2
Dairy - Cow	0	1	0	1	0	0	0	0	0	0	0	0	2
Dairy - Goat	0	1	0	0	0	0	0	0	0	0	0	0	1
Eggs	0	0	1	1	0	0	0	0	0	0	0	0	2
Events	0	0	2	0	1	0	0	0	0	0	0	0	3
Farm related products	1	1	0	0	0	1	0	0	0	0	0	0	3
Fresh cut flowers	0	0	0	0	0	1	1	0	0	0	0	0	2
Help Wanted	0	0	0	0	0	0	1	0	0	0	0	0	1
Herbs and spices	0	1	0	0	0	1	0	0	0	0	0	0	2
Kale	0	0	0	1	0	0	0	0	0	0	0	0	1
Lettuce	0	2	0	0	0	0	0	0	0	0	0	0	2
Meat - Beef	0	2	1	0	0	0	0	0	0	0	0	0	3
Meat - Bison	0	0	0	0	0	0	0	1	0	0	0	0	1
Meat - Emu	0	0	1	0	0	1	0	0	0	0	0	0	2
Meat - Goat	0	1	0	0	0	0	0	0	0	0	0	0	1
Meat - Pork	0	2	0	0	0	0	0	0	0	0	0	0	2
Meat - Poultry	0	5	0	0	0	0	0	0	0	0	0	0	5
Peas (Black eye)	0	0	0	0	0	0	1	0	0	0	0	0	1
Peppers	0	0	0	0	0	0	1	0	0	0	0	0	1
Potatoes (white)	0	0	0	0	0	0	0	1	0	0	0	0	1
Pumpkin	0	0	0	0	0	0	0	0	0	1	0	0	1
Salad Greens	0	2	0	0	0	0	0	0	0	0	0	0	2
Squash (summer)	0	0	0	0	0	1	0	0	0	0	0	0	1
Strawberries	0	1	0	0	2	0	0	0	0	0	0	0	3
Tomatoes	0	1	1	0	0	0	0	0	0	0	0	0	2
Value added products	0	0	1	0	0	0	0	0	0	0	0	0	1
Wine	0	1	0	0	0	0	0	0	0	0	0	0	1
Wool, fiber, Textiles	0	0	0	0	0	2	0	0	0	0	0	0	2
Monthly Totals	1	23	8	5	5	15	8	5	1	1	0	0	72

Notable Marketing Activity

March 2010

- Throughout the month of March, a graduate assistant conducted significant internet research to compile email addresses from 193 Delaware farms and 12 Delaware Commodity Boards and Associations.

- In early March, the project team developed a design for Delaware Farm Market brochures and magnets to use as promotional materials. A logo of a peach was chosen to represent one of Delaware's most popular crops. The project team spent a significant amount of time reviewing promotional materials from other AgTrader and FoodTrader sites to determine the most effective marketing materials for Delaware.

- In late March, the project team worked with a company called magnets.com to create and produce 1000 magnets – cut in the shape of a peach – with basic Delaware Farm Market contact information. Several proofs were created by the magnet printer, reviewed by the project team, and eventually refined to the present design.

- On March 18, the EFC hosted an informational table at the DC Healthy School Meals Workshop and Expo Fair in the hope that Washington DC schools, and vendors would be interested to buy from Delaware farms using the websites. The project team estimates that approximately 40 participants came by the table and picked up the promotional materials for both Maryland and Delaware Farm Markets.

April 2010

- Throughout the month of April, a graduate assistant devoted a significant amount of time to researching Delaware restaurants. A list of 96 restaurants, including their contact email address, was compiled. These restaurants were identified as likely to use locally grown and produced ingredients in their food preparation.

- In late April, the project team wrote and submitted an informational article for the May edition of the Morning Star Business Report. The project team also worked with the designers at the Morning Star Business Report to include a version of the promotional peach in full color.

May 2010

- In early May, the project team worked with University of Maryland Printing Services to design a brochure for use in promoting Delaware Farm Market. Several proofs were created by Printing Services, reviewed by the project team and eventually printed. 250 copies were produced on 50% pre-and post-consumer recycled paper.

- On May 11, an email blast was distributed to 193 addresses, inviting farmers to become new members of Delaware Farm Market. On the same day, an email blast was

distributed to all existing members describing EFC's renewed effort to recruit restaurants as new members. Both activities were conducted at no cost, except for staff time. Constant Contact reports the following statistics for the "new farmer" email blast:

o Total email messages sent:	193	
o Bounces:	40	20.7%
o Opened:	36	23.5%
o Clicks (to DE Farm Market):	3	8.3%

- The May edition of the Morning Star Business Report included an informational article about Delaware Food Trader as well as a large graphic of the promotional peach in full color. This edition was the annual edition dedicated to Delaware farmers, including a guide to Delaware Farmers' Markets. The May, June, and July editions also included the promotional peach in full color.

June 2010

- In early June, the project team also worked with the designers at Food Service Monthly to include a version of the promotional peach in full color. The project team worked closely with Food Service Monthly to modify the promotional peach design so that it fit with the publication's format. In addition, the project team worked to negotiate a suitable rate for the advertisement.

- On June 18, EFC attended a regional summit entitled Sowing Seeds Here and Now! Chesapeake Urban Farming Summit at the Beltsville Agricultural Research Center, a federal facility in Beltsville, MD. Approximately 375 people from the mid-Atlantic region attended the summit. The event was organized by Engaged Community Offshoots, Inc. (ECO), a Prince George's County non-profit that promotes agri-entrepreneurship as a way to employ the community and produce food in urban and suburban settings. The EFC arranged for Delaware Food Trader promotional materials to be given out in the "goodie bags" that were handed out to each participant. In addition, Ms. Hughes networked throughout the summit and promoted Delaware Food Trader to several participants.

July 2010

- The July edition of Food Service Monthly, page 27, featured a ¼ page advertisement of the promotional peach in full color.

August 2010

- On August 10, 2010, a letter to restaurants was distributed via email to the 96 restaurateurs identified as likely to use locally grown and produced ingredients in their food preparation. The project team delayed sending out this letter to give Delaware Farm Market more time to populate with available products. Constant Contact reports the following statistics for this email blast:

Total email messages sent:	96	
Bounces:	11	11.5%
Opened:	14	16.5%
Clicks (to DE Farm Market):	3	21.4%

Lessons Learned

The process of attempting to promote an underutilized resource to Delaware producers and consumers of farm products resulted in a series of observations that could inform future projects.

- **Farmers are reluctant to post to Delaware Farm Market and, without products for sale, it is difficult to sell the concept to restaurants –** The project team has access to user statistics from the Delaware Farm Market and its e-mail marketing websites and observed these statistics throughout the project period. It was hoped that, following a surge in farmer participation, the project team would launch marketing to target restaurants. This surge never took place, despite the efforts of the project team to promote the website.

- **The Food Trader Network is witnessing a lull in participation at all five trader sites –** Delaware Farm Market is one of five "Food Trader" sites in use throughout the country. The sites participate in monthly conference calls to discuss successes and challenges surrounding maintaining, promoting, and improving the sites. The other sites, in Maine, Maryland, Kentucky, and New York, have also been reporting a lull of activity both on the part of producers and consumers. The site administrators have discussed the phenomenon and believe that the tremendous growth of the local food movement in the past two years has potentially rendered the Food Trader sites obsolete. While the Food Trader sites were an important tool for stimulating the buying, selling, and trading of local food, the local food economy may have expanded to the point that Food Trader is no longer needed. The site administrators cite factors like (1) the grassroots expansion of local food maps, (2) the tremendous increase in farmer's markets over the past one to two years, and (3) resources like Market Maker that have helped farmers establish themselves in a local, niche market.

- **Marketing is expensive and some good ideas were scrapped due to the small budget** – For example, the project team considered joining the Delaware Restaurant Association (DRA) as an Allied Member to gain access to membership; however, this proved to be cost prohibitive. Additional activities that were too costly to fund included the mailing of promotional magnets to farmers and publishing in local Chamber of Commerce newsletters ($150/each). Placards, table tents, posters, and window clings for restaurants were also good marketing ideas that were not pursued due to budget constraints. Any of these activities could have resulted in reaching more users and increasing the traffic on the Delaware Farm Market site.

- **Delaware Restaurant Association was reluctant to partner without a more developed plan and financial support –** The Executive Director of DRA was enthusiastic about getting DE restaurants to incorporate local foods into their menus; however, before committing to assist with promoting Delaware Farm Market, wanted a detailed marketing plan and a detailed budget for the program. The project team believes a campaign could be mounted to incorporate local foods into DE restaurant menus, but it does not necessarily need to be tied to DE Farm Market. It was anticipated that once a restaurateur would utilize DE Farm Market to find a local farmer with ingredients s/he needed for his/her restaurant; however, after making initial contact and establishing a supply, the restaurateur would contact the farmer directly for future needs.

Due to less than favorable participation rates, DDA will not maintain this site. We do believe it was an effort worth undertaking/attempting. Such a project had been discussed for several years in Delaware and hopes were high for its success; but, the results to not meet either expectations or minimal levels of participation which would justify continuation of the project. It was difficult to track activity on the websites in correlation to the original stated Goals and Outcomes, but it is likely that those original goals were not met.

Contact Person
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2. Production and Marketing Possibilities for Ethnic Crops

Project Summary
"Delaware State University will identify and evaluate ethnic crops that can be grown successfully in Delaware. For the successful crops, value-added product opportunities from those crops will be identified as well as marketing avenues for the crops and value-added products."

The growth in ethnic populations in Delaware and its neighboring states presents an opportunity for Delaware farmers to expand their crop base to produce ethnic vegetables, often high-value crops that are increasing in demand for local, fresh, high quality availability.

It was expected that producers would benefit from ethnic crops through the ability to increase diversity into their production system. If a farmers main produce is corn and soy bean, he may be able to transfer a small percentage of his land to ethnic crop production. Producing ethnic

crop can be an additional source of income to the farmer. A livestock farmer can do the same thing. Ethnic crops can also be used in a crop rotation system. For example, on a piece of land, a farmer can plant a tomato crop the first year, then plant a calabaza (a West Indian pumpkin) crop the following year. Of course, production of ethnic crop should be done only when you have a market to sell the produce.

Project Approach

The ethnic crop expansion program consisted of multiple efforts made to increase awareness of alternative options of food production that is available to them. One such alternative option is the inclusion of ethnic crops in their agricultural systems. So to increase producers and consumers of ethnic crops, a variety of activities were done to illustrate the benefits of growing ethnic crops in Delaware.

Demonstration plots were established at University of Delaware research station in Georgetown, and the Delaware State University research station in Smyrna. Planting materials of ethnic crops were distributed to producers for demonstration purposes as well as for market possibilities. Presentations were given at the 2009 Delaware AgWeek and Small Farm Series of workshops as well as at other forum. In addition taste test and ethnic sample distribution were done to evaluate flavor, taste and desire for these foods. Even the youths were exposed to ethnic crop production through a youth garden program initiative.

Goals and Outcomes Achieved

A total of four new crops were evaluated for production performance under Delaware conditions. These include the Kabocha Squash, Snow Peas, Mei ching Choi and Mizzen. Scotch Bonnet hot pepper, aji dulce hot peppers, callaloo spinach, calabaza squash, tomatillo and ethnic egg plant are either their second or third year of evaluation. These crops are popular in Hispanic, West Indian, Hispanic and Latino Communities. The program calls for the four new crops each year.

A total of 10 farmers have planted ethnic crop through the Ethnic Crops expansion program. However is believe the number is believed that a lot more farmers are growing ethnic crops in Delaware. These farmers do either direct marketing to, farmers markets or do specialty/contract farming with hotels and restaurants. Approximately twelve more farmers have expressed interest in growing ethnic crops next year.

One area of concern is the absence of immigrant farmers in the production of ethnic crops. A few immigrant farmers are interested in crop production but securing land and acquiring land for farming have proved to be very difficult for them. In addition, there is a need to increase the number of workshops and farm visits to reach more farmers. Hopefully this will increase the number of farmers who are growing ethnic crops. Furthermore, a survey of producer growing ethnic specialty food needs to be done to get a more accurate measure of the number of farmers growing ethnic crop.

Marketing outlets have expressed interested in buying ethnic crops that are grown in Delaware. After seeing samples of callaloo, a Chinese grocery store wanted to buy three hundred pound of the spinach per week. The Farmers market in Newcastle was also interested in buying Callaloo and peppers based on the quality of the samples they were given this year. There is a great need to work with farmer in harvesting, post harvesting and marketing requirement associated with ethnic vegetables

From May of 2007 to October 2008 a total of fifteen thousand dollars ($15,000) were spent on Ethnic Crops Expansion program. Two thousand dollars ($2,000) were used to purchase inputs for crops demonstration on 3 sites over two growing seasons. Thirteen thousand dollars ($13,000) were used to hire student and seasonal labor to plant, maintain, and harvest. These workers also participate in ethnic crop also assisted in generating information developing educational programs as well. This project was completed in 2008.

Lessons Learned

Initial observations are showing that selections of ethnic vegetables are growing in the Mid-Atlantic region. An increasing number of marketing outlets are selling ethnic crops that can be grown in Delaware. Most of the grocery chains stores are carrying ethnic produce that farmers can grow in Delaware. In fact farmers markets in Delaware carry a large assortment of ethnic produce. The Newark Farmers Market and the Newcastle Farmers markets in particular carry a large assortment of fresh ethnic produce in their product offering to consumers. Visits to ten marketing outlets in Philadelphia and the Washington Beltway have made apparent that the demand for some of these ethnic crops is high. These businesses have expressed interest in these crops if they were available on a regular basis.

Plans are in the works to increase immigrant farmer's participation in ethnic crops production in Delaware. Approaches to correct this problem will include, but not limited to, working with immigrant association as intermediaries to attract more immigrant farmers to grow ethnic crops. In the upcoming period more work will focus on cost of production and enterprise budgets for ethnic crops grown in the Mid Atlantic region. Also more work will be done in identifying the specific types of marketing information that farmer need to know when growing ethnic crops. Thus in the very near future a minimum of ten production and marketing factsheets in the Ethnic Crop Series will be available to producers of ethnic crop.

The production manual is work in progress and will be completed by the end of this year. The manual will then be distributed to producer via mailings, at workshops, conferences and farm visits. Ethnic crops were evaluated for three years for their adaptability to growing under Delaware Conditions. Every year 3 crops are evaluated and evaluated for growth performance. Thus it is has taken a few years to ensure that information generated on these crops are reliable for distribution to producers. As of 2010 (9) ethnic crops have been grown in Delaware on "demonstration farms" and at the University farm in Delaware. As soon as we complete the tenth crops in 2010 were will have the manual available to producers. Over 300 factsheets of each were distributed.

Factsheets on Scotch bonnet hot peppers, Calabaza Squash, and Amaranthus (Callaloo) Spinach have been distributed to producers through farm visits, workshops demonstrations, and on the internet. The site address for these factsheets is as follows:
http://www.desu.edu/cooperative-extension

The three factsheets are listed under the agriculture and natural resource publications.

Contact Person

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3. Organic Production of Processing Vegetables - Research and Demonstrations

"University of Delaware Extension Vegetable Specialists, in cooperation with Delaware's vegetable processing industry, will conduct commercial scale trials to evaluate production, quality, and cost effectiveness of organic production of vegetables for processing."

This project was scrapped and a substitute project was proposed and accepted.

4. Marketing Materials

"DDA will develop three marketing pieces: a directory and map of on-farm markets, farmers' markets and agritourism operations aimed at consumers; a guide to Delaware agricultural producers to provide marketing information to wholesalers and retailers and to any commercial enterprise looking to use or sell Delaware agriculture and value added products; and placards promoting Delaware products and providing recipes that use local products."

Project Summary

The map & directory was to inform the general public of the location of on-the-farm markets, farmers' markets and agritourism farms and to encourage their visit by providing them with a marketing piece that makes it easy to find the location of the place they want to visit. The guide to Delaware agricultural producers provided marketing information to wholesalers and retailers and to any commercial enterprise looking to use or sell Delaware agriculture and value added products. The placards increased public awareness of products available in Delaware that will lead to increased sales.

Project Approach

Map & directory - 57 agritourism and direct specialty crops marketing operations and 88 on-farm markets will receive additional marketing benefits and business from wide distribution of the map.

Guide to Delaware agricultural producers - 151 product sources will be listed under 25 categories.

Placards - This will benefit all farmers that produce items that are directly consumed by the public, ie vegetables, fruits, chicken, beef, etc.

Goals and Outcomes Achieved

The Farm Market Directory and Agritourism Map is completed. This revised directory includes Delaware's on-farm markets, farmers' markets, farms that promote agri-tourism, Christmas tree growers, retail garden centers and riding stables. To date, 16,000 of the 16,560 directories have been delivered. The directories have been delivered to all of our agri-tourism partners and Christmas tree growers for distribution during their upcoming season. The directories have also been distributed to Delaware chambers of commerce, libraries, visitor's centers/convention and visitors' bureaus, farm stands and garden centers. The Marketing team will continue to deliver the remaining directories in the spring to Delaware hotels, farmers' markets, farm stands, and at all the agricultural events/festivals that the Department of Agriculture attends..

The Produce Buyers Guide has been completed. Approximately 40,000 copies were printed. This new Produce Buyers Guide has been distributed to wholesalers, retailers and to any commercial enterprises looking to use or sell Delaware produce.

The marketing team finished the **placards** (recipe cards) promoting Delaware produce/products and distributed them to local farm markets.

Recipe Placards was developed and printed recipe cards /placards for distribution to the general public in support of and to market Delaware's specialty crops.

Quantity: 15,000 each of 15 originals; 225,000 total
Distributed: 200,000
Recipes: These are double sided and include when in season, nutritional value, how to choose, how to sore, and a recipe

Mushrooms/Asparagus, Spinach/Turnips, Strawberries/Peas, Blueberries/Broccoli, Cantaloupe/Cabbage, Cauliflower/Cucumbers, Potatoes/Peaches, Snap Beans/Squash, Tomatoes/Sweet Corn, Apples/Brussel Sprouts, Eggplant/Carrots, Honeydew Melons/Lima Beans, Watermelons/Peppers, Pumpkins/Greens, Sweet Potatoes/Chestnuts.

The farm market directory is posted at http://dda.delaware.gov/publications/Farm%20Market%20Directory%20and%20Agritourism%20Map%202008.pdf The other publications have been included in previous reports, but will be sent electronically on a separate CD.

Lesson Learned
DDA staff distributed copies of all the marketing materials. The projects proved to be very effective in getting consumer connected with producers. We received great feedback on the Map Guide Directory and Placards. The Buyers Guide did not provide the level of connection we hoped would result. Copies of all three marketing materials have been provided to USDA in past reports

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Increase Competitiveness of Delaware Specialty Crops

5. Cucurbit Downy Mildew Website

"To prevent losses from Downy mildew on Delaware's pickling cucumbers, watermelons, cantaloupes, pumpkins, squash, and other cucurbit crops, DDA will support the operation of "Cucurbit Downy Mildew Website", housed at the University of North Carolina, that tracks the progress of downy mildew disease northward each spring."

Project Summary
Delaware producers grow 6,000 acres of pickling cucumbers for processors. This acreage supports two processors and a seasonal packing shed that in total employ 1,200 people. In 2004, a new strain of the fungus disease Downy mildew (Pseudopersonora cubensis) caused devastating losses, reducing crop yields by over fifty percent. Critical to achieving control of the disease is developing advance knowledge of the diseases annual, seasonal progress northward from its origins in the southern states. With this knowledge, extension personnel, in cooperation with the industry can alert growers to begin the proper preventative fungicide programs.

Project Approach
It was planned that seventeen producers of pickling cucumbers and one hundred watermelon producers will have access to the Predictive website generated by North Carolina State University. Delaware partnered with other jurisdictions to fund the Cucurbit Downy Mildew

Website. A very positive cost benefit ratio results from investing $10,000 to help protect the $2 million of cash farm income from this crop, and the $35 million of salaries and sales of the manufactured product. The entire sum of $10,000 was transferred to North Carolina State University in support of the website in 2008.

Goals and Outcomes Achieved

The Cucurbit Downy Mildew Forecasting Website (http://www.ces.ncsu.edu/depts/pp/cucurbit/) generated disease tracking and forecast information throughout the 2009 growing season. That year the first detection of cucurbit downy mildew (CDM) on the Delmarva Peninsula was on June 20 in Northampton Co., Virginia. The disease was subsequently reported in Caroline, Dorchester and Talbot counties in Maryland with the first symptoms estimated to have appeared on June 30. CDM was not reported in Delaware until July 13, when it was found in the sentinel plot at the University of Delaware research farm in Georgetown.

The Cucurbit Downy Mildew Forecasting Website allowed Delaware farmers and Extension personnel to track the movement of the disease up the East Coast and know when to begin scouting carefully for the disease and when to begin applying fungicides. After CDM was reported in Caroline, Dorchester and Talbot counties in Maryland on July 6, Delaware growers were advised to begin applying fungicides in an article the July 10, 2009 Weekly Crop Update Newsletter. This recommendation was made prior to the first detection of CDM in Delaware on July 13. The Cucurbit Downy Mildew Forecasting Website continued to generate disease tracking and forecast information in 2010.

The downy mildew forecasting website has continued to operate, and be used by growers, consultants and Extension personnel in Delaware however funding was provided for the support of the site by a DE Specialty Crop Block Grant ONLY in 2008. In subsequent years, the operators of the site procured other funding to support the site.

Lessons Learned

This project is considered complete and successful as documented above. The website will continue to operate in future years and provide useful information to minimize the spread of Downy Mildew. Each year Delaware growers plant approximately 800 A of pickling cucumbers, 3000 A of watermelons, and approximately 700 A of other cucurbit crops (slicing cucumbers, cantaloupes, pumpkins, squash), all of which are susceptible to cucurbit downy mildew. The 2004 downy mildew epidemic particularly imperiled the pickling cucumber industry in the state, because cucumbers are extremely susceptible to the new strain of the disease, and it was feared that the pickle grading facility that had recently begun operating in Delaware would leave the state – effectively ending pickling cucumber production in Delaware. The forecasting system has allowed growers, consultants and Extension personnel to track the progress of the disease in states to our south and initiate fungicide sprays before the disease appears without making costly and unnecessary applications “just in case”. The full dollar value of Delaware’s pickle industry is not published (it is not reported in the state’s ag statistics because of disclosure issues) but the forecasting website has made the difference between having a pickle industry and not having a pickle industry.

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6. Lima Bean Research and Breeding Program Final Report

"In 2004, University of Delaware Vegetable Crops Specialists began screening USDA plant material and plant introductions for yield, horticultural characteristics and Downy mildew resistance. Since then, crosses have been made with promising germplasm and commercial varieties for both baby and Fordhook lima beans. The University of Delaware will provide three years of testing of the progeny in three environments for yield, disease resistance, and horticultural characteristics."

Project Summary

The University of Delaware breed and evaluated new lines of lima beans in 2007, 2008 and 2009, with the objective of releasing one baby lima bean variety for commercial production in 2010. Improved, better yielding, disease resistant varieties will enhance the competitive position of Delaware's lima bean industry. Four processing companies will continue their operation in Delaware as a result, solidifying an industry that generates $35 million in goods and related services. One hundred growers will generate or save $100 per acre in cash farm income from the new varieties, or $1,300,000 of new cash farm income over the state's 13,000 acres.

Project Approach

The University of Delaware managed and staffed this research project in support of Delaware's significant vegetable processing industry. Details concerning the field trails are found in the next section of this report. It was planned that four processing companies will continue their operation in Delaware as a result, solidifying an industry that generates $35 million in goods and related services. One hundred growers will generate or save $100 per acre in cash farm income from the new varieties, or $1,300,000 of new cash farm income over the state's 13,000 acres.

Goals and Outcomes Achieved and Lessons Learned

Baby Limas

Experimental baby lima bean lines developed by University of Delaware from crosses made in fall 2004 or fall 2005 were included in replicated yield trials with existing commercial varieties in 2008 (12 lines), 2009 (11 lines), 2010 (12 lines). In all three years the Delaware lines performed very well, with some producing significantly higher yields than the standard commercial cultivars. One particular line (DE0505002A) was tested in 2009 and 2010 and was the highest yielding variety in both trials. There are several other promising lines that performed well in all three trials.

Crosses between downy mildew resistant lines were made in the greenhouse in fall 2008 and screened for resistance to race F of this disease in the field in summer 2009. Progeny of the resistant plants were screened for resistance to downy mildew race E in summer 2010 and seed collected for further breeding work.

Fordhook Limas

Six lines derived from the fall 2005 crosses were planted in single plots for yield testing in 2009. (A replicated trial had been planned, but insufficient seed was produced at the winter nursery location.) Five of the lines produced higher yields than the standard variety, Concentrated Fordhook. Seed of promising Fordhook lines was increased in the greenhouse in winter 2009-10 and 25 Delaware Fordhook lines, along with the commercial standard, Concentrated Fordhook, were planted in a replicated yield trial in 2010.

Ten existing Fordhook varieties were screened for resistance to downy mildew races E and F in the field in summer 2009. One variety resistant to race E was identified, as well as one variety with resistance to race F. These two varieties were used in crosses made in fall 2009 to breed for resistance to downy mildew in the Fordhook commercial class.

White Mold Resistance Screening
A protocol used to screen snap and dry beans for resistance to white mold was tested in limas in the greenhouse in winter 2008-09. This method was used to screen 20 diverse lima bean varieties/landraces in a replicated trial in the greenhouse in December 2009. No lines with useful levels of resistance were identified.

Lima Genetics Research
Seed of a population of 120 recombinant inbred lines developed from the cross Bridgeton x Jackson Wonder was increased in the greenhouse in fall 2009/winter 2009-10 for characterization in field trials in summer 2010. This data will help us to understand the inheritance of important traits including green seedcoat and cotyledon color and plant habit and architecture.

Overall
Development of improved cultivars is a continuous process. U of D staff plan to keep working with promising lines from the breeding program and developing and testing new lines. Several of the baby lines are ready for larger scale testing and possible release as soon as sufficient seed is available. We have made some tentative arrangements for larger-scale seed increase for 2011. The four processing companies that contract limas in DE continue to contract limas in DE: Hanover Foods, Pictsweet, Seabrook Brothers & Sons and Townsends. The lima breeding program supported in this grant was initiated in 2004. On average it takes 10 years to get from "cross to variety release" in bean breeding program. The goal of having a variety released by the conclusion of this grant and in the hands of farmers is unrealistic. (I will add that this grant was not written by me, the lima bean breeder.) There have not yet been any varieties released by the program. I have been testing advanced lines for yield for three years and am presently having seed increased for on-farm trials with growers. I also expect to have a line with resistance to all known races of lima bean downy mildew in hand by May 2011. One major goal of the breeding program is the release of a variety with resistance to all races of downy mildew (which will reduce fungicide expenses for growers) and improved yield (which will increase gross income per acre for growers –assuming the processors don't lower prices!). I am well on my way to achieving this goal, but it hasn't happened yet, and probably will not for another 2 to 3 years.

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7. Watermelon Promotional Material

*"DDA will work with the Mar-Del Watermelon Growers Association to develop a regional brand, **"MarDel-icious""**.*

Project Summary
DDA worked with the Mar-Del Watermelon Growers Association to develop the "MarDel-icious" brand, and implement a marketing and promotional campaign to increase consumer awareness and sales by targeting the region's major chain grocery stores. It was hoped that this project would increase 2007 Delaware watermelon sales to the following Mid-Atlantic region grocery

chain stores: Acme, Walmart, Giant, Safeway, Ukrop's Weis, and Whole Foods. This affects 125 watermelon growers who plant 6,000 acres; 90 percent of the crop is sold to retail grocery stores.

Project Approach

DDA staff worked collaboratively with the growers association to develop a marketing strategy to increase the volume of watermelons sold from 6,000 truck loads per season (40,000 lbs. per truck) to 6,500 truck loads. The project was not tracked in this manner. However, the number of outlets now carrying the branded watermelons has increased

Goals and Outcomes Achieved, and Lessons Learned

The Marketing Team worked with the Mar-Del Watermelon Association in 2009 and 2008 to develop the regional "MarDel-icious" Brand and implement a promotional campaign to increase awareness and sales of Mar-Del Watermelon.

The design and artwork of the branding was completed. All Mar-Del Watermelon bins now carry the "MarDel-icious" branding. This brand name has been trademarked. The Mar-Del Watermelon Association created and expedited several radio ads and television ads promoting the new brand. **MarDelicious watermelons can now be found in Redners, Harris Teeter, Giant Foods, Wal-Mart and Sam's Club, Acme and BJ Price Club**.

Members of the Mar-Del Watermelon Association, the Delaware Department of Agriculture and the Maryland Department of Agriculture developed in-store promotions at retail stores promoting the MarDel-icious watermelons. A huge promotional event was held on the Rehoboth Beach Boardwalk in Delaware and the Baltimore Inner Harbor in Maryland. The National Watermelon Queen, Mar-Del, Florida and Alabama Watermelon Queens were at this promotions passing out slices of MarDel-icious watermelon. Several press releases were sent to the media promoting these events. A few of the events received local media coverage.

Lesson Learned

A branding strategy and campaign can be successful in increasing sales of targeted local produce items.

Contact Person

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Additional Information

The New "MarDel-icious" Brand

8. **Health of the Vegetable Processing Industry "Economic Impact Analysis of Specialty Crops on Delaware's Economy"**

"DDA will conduct a market and economic analysis of the state and regional vegetable processing industry."

Project Summary

Identify the challenges and barriers to the continued health and potential expansion of the industry and then use resultant report to develop policy recommendations for state, university, and the processors to consider.

Project Approach

The purpose of this project is to develop a quantitative economic analysis of the contributions of the specialty crops industry to Delaware's overall economy. Specifically, this economic analysis will focus on both the direct and indirect contributions of the specialty crops industry to the state. This will be the first comprehensive study of this nature for Delaware's specialty crops sector. The results of this work will enhance our ability to understand the diverse nature of the specialty crops industry and provide the public and policymakers with more accurate information on its economic contribution to the state. Enhance and strengthen the competitive position of Delaware's four vegetable processing companies operating today, consuming the crop production of 40,000 acres.

The report includes the potential cost saving opportunities in production, distribution, and marketing. New markets and new potential processed products utilizing the aforementioned crops will also be identified in the report. We reviewed this report's findings and recommendations with our vegetable producers during our annual AgWeek event in January 2011. There were between 350 to 400 attendees to the vegetable producer's sessions at the AgWeek events. In total, 3000 producers attend the annual AgWeek events.

Goals and Outcomes Achieved, and Lessons Learned

The purpose of this project was to develop a quantitative economic analysis of the contributions of the specialty crops industry to Delaware's overall economy. Specifically, this economic analysis focused on both the direct and indirect contributions of the specialty crops industry to the state. This is the first comprehensive study of this nature for Delaware's specialty crops sector. The results of this work will enhance our ability to understand the diverse nature of the specialty crops industry and provide the public and policymakers with more accurate information on its economic contribution to the state.

The project's overall goals and objectives were to: (and achieved)

1. Perform an economic impact analysis for the Delaware specialty crops industry
2. Develop state level input-output model showing the interactions of the various sectors of the economy and evaluate the contribution of the specialty crops industry to various sectors of the Delaware economy.
3. Generate impact multipliers showing direct, indirect, and induced effects of the specialty crops industry on Delaware's economy.
4. Provide estimated contribution of specialty crops industry expenditures on state output, income and employment creation
5. Provide a report for the Delaware Department of Agriculture summarizing the findings of the economic impact analysis for the Delaware specialty crops.

The project implementation process involved three critical phases. **Phase 1** was devoted to planning, gathering of information on similar specialty crops studies by other states, and

collaborations with NASS in the collection of secondary government data for the specialty crops industry. Also, IMPLAN software and regional data was purchased and set-up for the project. The first phase of the project is complete. **Phase 2** involved the actual development of the economic impact model specifications and analysis of state-level and industry-level data. Then, model adequacy will be tested via sensitivity analysis and simulation exercises. The second phase of the project is complete. **Phase 3** will involves final revisions to the analysis and the writing of reports detailing the process and findings of the project. The activities for the Phases 1, 2 and 3 are complete. Please refer to the attached report entitled "Economic Impact Analysis of Specialty Crops on Delaware's Economy".

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Additional Information
See Attached Report

9. Enhancing the Production of Processing Vegetable Crops in the Mid-Atlantic Region

Substitute Project for Organic Production of Processing Vegetables - Research and Demonstrations

Project Summary
As explained to USDA, this project was originally a substitute project for which we received approval to move forward to implement. However due to miscommunication at University of Delaware, one of the original projects was implemented. This caused a reduction in available funds for this project. Consequently, this project budget and scope were reduced. USDA recently granted approval for the proposed scope and budget reduction.

Project Approach
The Mid-Atlantic region is a major processing region with unique opportunities and advantages, but also unique challenges. The long-term goal of this objective is to provide science-based information outlining a more sustainable approach to processing vegetable production.

Six cropping systems have been identified to provide a range of crop rotations, tillage intensity, and cover crop utilization were initiated as a replicated trial. The trial is conducted at University of Delaware's Research and Education Center (UDREC), Georgetown, DE. Individual plots are 30 feet wide and 90 feet long.

Rye planted in fall of 2008 was either burned down early spring for the no cover crop treatments, sprayed in mid-April for some cover crop residue, and then late-April for heavy cover crop utilization.

Sweet corn was planted May 13, 2009. Base-line data on soil health and soil quality was collected and determined via analysis from the Cornell Soil Health Lab. Base line weed samples were also collected. Sweet corn yields and quality measurements were collected on August 8. Pickling cucumbers were seeded in specified systems in mid-August and yields collected in early October.

Rye cover crop and cereal barley was planted in October.

The specifics of the cropping systems are listed below.

The focus will be range of tillage intensity, crop residue returned to the soil, and crop rotations. These rotations will incorporate all aspects of crop production and are as follow:

System 1 Intensive vegetable rotation (minimal crop residue); intensive tillage; no cover crops
System 2 Intensive vegetable rotation (minimal crop residue); moderate level of tillage; moderate use of cover crops
System 3 Intensive vegetable rotation (minimal crop residue); moderate level of tillage; intensive use of cover crops
System 4 Intensive vegetable rotation (minimal crop residue); moderate level of tillage; moderate use of cover crops; maximize level of organic nitrogen
System 5 Intensive vegetable rotation (minimal crop residue), but diverse crop rotation; moderate level of tillage; intensive use of cover crops
System 6 Mixed crop rotation (moderate level of crop residue); minimal tillage; intensive use of cover crops

**Intensive tillage relies on chisel plowing, disking, and field cultivation (not mold board plowing); moderate tillage will utilize no-tillage for about half the crops and conventional tillage for half; and minimal tillage will use no-tillage for most operation and conventional tillage no more than once every two years.*

Goals and Outcomes Achieved

System 1 was conventional tillage peas with conventional tillage lima beans planted as a second crop. No cover in the fall of 2010.

System 2 had rye planted in the fall of 2009, with no-tillage peas planted this spring followed by conventionally tilled lima beans. Rye will be planted in the fall of 2010 with conventional tillage.

System 3 had rye planted in the fall of 2009, with no-tillage peas planted spring of 2010, followed by sorghum sudangrass planted in the summer. Kale was planted in late August for a fall crop. A late rye cover crop will be seeded.

System 4 had rye planted in the fall of 2009, with no-till snap beans planted this spring. Rye and hairy vetch will be seeded no-till in the fall.

System 5 had a rye cover crop in the fall, with spinach planted in early spring. Pumpkins were seeded after spinach harvest and rye plus hairy vetch will be seeded this fall.

System 6 was seeded to barley in the fall of 2009 and grain harvested in the summer of 2010. No-till double cropped-soybeans were planted and a late rye crops will be seeded.

A second year of soil health and soil quality was collected and determined via analysis from the Cornell Soil Health Lab. **No differences were detected in the soil health characteristics after only one year. However this project has established solid baseline data. The systems will be run for an additional 3 to 5 years which will be required for these systems to begin to show detectable differences between the treatments.**

Periodically, common crops will be grown in all systems to assess difference between treatments, as well as further soil health and soil quality analysis.

Lesson Learned

Even though funding for this project through the SCBG has been exhausted, the systems will be run for an additional 3 to 5 years, which will be required for these systems to begin to show detectable differences between the treatments. As a result, it is difficult to assess the important lessons learned this early in the research.

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