South Carolina Department of Agriculture

Specialty Crop Block Grant Program

USDA AMS Agreement #12-25-B-1486

Final Report

The Honorable Hugh E. Weathers, Commissioner

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Project One: Freewoods Farm Veggie Fest 2013

Project Summary:

The purpose of this project, Veggie Fest 2013, was to provide information and mini classes on the nutritional value of fresh vegetables, present ideas and recipes for healthy preparation of vegetables, and how to grow fresh vegetables at your home. Those attending Veggie Fest also had the opportunity to tour Freewoods Farm, and see how African Americans farmed during the early years of freedom. There were also opportunities to purchase fresh vegetables at each of the Veggie Fests.

Projects such as this are needed in all areas of South Carolina, where obesity has become a social and medical issue of epidemic proportions. The primary mission of Freewoods Farm is one of teaching the community about the African American connection to farming, and producing food for ourselves. The VeggieFest 2013 project is an educational outreach of Freewoods Farm and is a natural fit to the mission for two reasons. First, it continues the education of how to grow your own vegetables, and secondly, continues the education of teaching others how to prepare these vegetables. Bringing adolescents who have never been on a working farm together with elderly members of the community enables these two age groups to communicate and share experiences. This human connection is why the VeggieFest are important; with real stories and emotions to draw upon, the younger generation is more likely to remember and recreate what was learned that date.

VeggieFest is an appropriate and timely project in that it provides education towards healthy cooking and eating of locally grown vegetables. It is critical that more persons learn a healthier lifestyle to combat problems such as heart disease and diabetes. Vegetable consumption plays a large role in this fight, and the specific purposes of this project to sell fresh vegetables, and teach people healthy ways to cook these vegetables is very important during this health crisis.

The 'VeggieFest' concept project was first tested in 2010, and participant feedback was so great that Freewoods Farm has continued to offer "VeggieFests" through additional years of funding from the Specialty Crop Block Grant Program. Each year Freewoods Farm has tried to incorporate more persons participating in the event, as well as offer more dates of the "VeggieFests" at the Farm. Both of these efforts have resulted in more persons being involved with the VeggieFests.

Project Approach:

The purpose of these project activities was to promote the sale of fresh locally grown vegetables, encourage the consumption of locally grown vegetables, to provide information on the health value of eating, and how to grow your own vegetables. The vegetables discussed and given as examples during the Veggie Fests included collard greens, cabbage, peas, okra, squash/cucumbers, tomatoes, mustard greens, and turnips.

The project budget enabled Freewoods Farm Foundation to host three Veggie Fest days.

Date	Number of Participants	Weather
June 15, 2013	90	Inclement
October 19, 2013	130	Inclement
October 25, 2014	96	Good

All events were advertised, and then covered, by local papers and radio stations. The local specialty crop producers who brought vegetables for sale at the events sold out each time.

Each Veggie Fest began with a tour of Freewoods Farm. The classes were then given. The topics were "Nutritional Value of Veggies, How to Cook Veggies, Help in Buying Veggies", and "How to Grow Veggies in your Yard and Making Compost". After a lunch made from locally grown vegetables, the participants then visited a neighboring farm operation to hear from the grower successful tips that can be used at home.

The speakers selected to lead the Veggie Fests included a certified nutritionist from Conway Medical Center, a retired Clemson Extension Agent, and a teacher in the Health Promotion Program at Coastal Carolina University.

Goals and Outcomes Achieved:
All of the participants reported having either a new or renewed interest in growing vegetables (100% surveyed). In 2010, the average attendance to each event was 150 persons; 450 participants attended in total. The numbers from 2013 show a decrease from 450 people to 316. The rainy weather on two of the days of VeggieFest are most likely the cause for the decrease in numbers.

The best way to obtain the attendance of senior citizens and youth groups at VeggieFests is to work with existing organizations in which seniors and youths are involved. A second good approach is to identify persons (say five or six) who are working with seniors and youths and ask each one to invite a specific number of seniors or youth to the VeggieFest. Helping the groups with their transportation expenses is also necessary in obtaining their participation.

Of course having trained teachers to teach is very important for the success of the program. Teachers who are eligible and have the sufficient training and experience for teaches the mini-classes "Why Eat Vegetables (the Nutritional Value of Vegetables)", "How to Cook Vegetables without Destroying their Nutritional Value", and "Growing and Mulching Vegetables in your Own Yard" are found by reaching out to nutritionists at the local community college, and the Clemson Extension service.

Over the course of hosting the VeggieFest programs it has been noted that having a nearby home yard with growing demonstration area of vegetables has been very helpful. To that end, the project manager ensured that this was continued, so that the participants were able to see what really can be grown in their yards. This part of the class was greatly received and appreciated. These classroom trainings and living examples of the lessons are the main events of VeggieFests.

VeggieFest at Freewoods Farm serves an additional function. One of the primary missions at Freewoods Farm is to help African Americans appreciate our agricultural history. As a part of VeggieFests, we conducted tours of the historic farm where the age-old practices of farming with mules, plows, hoes are still in use. We talk about the role of farming in African American history during the first century of freedom. VeggieFests enables us to reach a wider audience. Alas, we still face the challenge of reaching certain groups of African Americans who believe that this history is better forgotten. We believe that one church group declined our invitation to a VeggieFest for this or a similar reason.

Beneficiaries:
The participants (316 persons) that learned about how to grow their own vegetables, and to cook these vegetables in a more healthy, nutritious way are the ones that benefitted from this project.

Lessons Learned:
Moving forward, a project such as this needs to have more than one assistant director. Midway through the project period, the volunteer in this role became unavailable. Transitioning another person into this leadership role midstream was challenging. In future events, two or three volunteers to assist will be recruited, so as to avoid this problem from occurring again.

Also, the project could be improved upon by developing a contingency plan for inclement weather. In the future, Freewoods Farm will try to have tents on hand, and extra umbrellas, etc., available for use should rain occur.

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Additional Information:
Information flyer about the event is below.

FREEWOODS FARM

9515 FREEWOODS ROAD

MYRTLE BEACH (BURGESS), SC 29588

VEGGIEFEST 2013

FREEWOODS FARM SYRUP ON SALE

CLASSES ON: WHY EAT VEGGIES
HOW TO COOK VEGGIES
HOW TO GROW VEGGIES IN YOUR YARD

TOUR FREEWOODS FARM
ENJOY LUNCH (ADULTS $8.00; UNDER 10: $5.00)

SATURDAYS, JUNE 15, 2013
9:00 AM TO 3:00 PM

Tour of Freewoods Farm: 9:00 AM
Classes: 10:30 AM to 12:30 PM
Lunch: 11:00 AM to 2:00 PM

FOR DIRECTIONS SEE: www.freewoodsfarm.com/
843 650 2064; 843 650 9139

PROJECT TWO: The Ornamental Horticulture Education Project 2012-13

Project Summary

The SCHI Education committee reviewed the evaluations from 2012 and brochures from other nursery association educational events then met to plan the 2013 educational program. Considering the suggestions from the evaluations, the criteria for the Specialty Crop Grant program, and what they felt would be needed by the industry in coming year they outlined the program from 2013. This committee is made up of nursery growers, university faculty, and direct influencers (Landscape contractors and garden center owners) of nursery products.

The 2013 program included topics such as business, environmental, pest and disease control, new plant uses, good management practices, and technology. After the committee meeting, SCNLA Executive Director Donna Foster contacted possible speakers, collected seminar titles and descriptions and confirmed the final program. She applied for Pesticide Applicators License CEU's and International Society of Arboriculture CEU's for relevant seminars. Once the program was complete the promotional pieces were developed, Foster provided all of the text and photos for the graphic artist to create the full color print materials (promotional postcards, free passes, brochure, and posters), and all were developed, proofed and sent to the printer. The first postcard mailing was on November 16, 2012, the 8-page brochure was mailed December 3, 2012, and the second postcard mailing was on December 30, 2012. Posters, free passes and conference brochures were mailed to growers/exhibitors so they could help promote the conference as they were requested during the months of November, December and January. SCNLA mailed the brochures and postcards out with "Address Service Requested" from the US Postal Service so that "bad" addresses (moved- no forwarding address, etc.) are returned to SCNLA then the mail file can be corrected. The mail service also provided a list of "bad" addresses so that the mail list could be updated more quickly.

On-line registration opened on November 21, 2012. Registrations would also be mailed and faxed in. In late December Foster sent each of the speakers a packet containing a copy of the program, a list of the audio/ visual equipment available, the speaker's hotel room reservation, and a speaker reimbursement form to be completed after the seminar.

The speaker/topic evaluation form was updated. To encourage attendees to complete the forms and turn them in a drawing for $50 would be made from the completed surveys that were turned in. In the weeks after the seminars the evaluations were tallied and will be used to plan other educational programs. (Evaluation tally is attached)

In the weeks following the conference, Foster thanked and reimbursed the speakers as they sent in their reimbursement information.

Project Approach

Our approach to the 2013 SCHI Educational Program was to provide a wide variety of educational topics for the nursery industry and its' "direct influencers" (landscape contractors and other installers, retail garden centers, etc.) at convenient times and with no increase in registration fees. Our industry is still feeling the negative effects of the weak economy. The seminar topics and speakers selections were made based on the input of the industry representatives on the committee, suggestions from the 2012 program and other industry events. The time of year for holding the conference was also important because it is slow for the industry, therefore a convenient time to be away from work. Several speakers asked to stay 2 nights because of travel distances or wanting to sit in on the entire program, which we

gladly accommodated because it makes them more accessible to attendees. Some people do not want to ask a question in a large audience but enjoy talking with speakers in a one-to-one situation. A speaker on occasion may also serve as a moderator. Our goal is to create an open inviting environment with speaker / attendee interaction inside the meeting room and out. We try to plan the program around information that attendees both need (business, environmental, etc.) and what they want (pesticide applicator recertification CEU's and new plant information). This combination makes a more attractive program for so many with limited time for educational programs.

Growers have the opportunity to order free passes, promotional stickers, event brochures, and posters to help promote the event. This helps to reach a broader group of direct influencers to the conference. All of the 2013 1,000 of the free passes were given out, 16 of the 20 posters were requested, 1,000 of the stickers were requested (the stickers are 2" oval stickers imprinted with the event name, date, website, location and contact phone number that growers can stick on their catalogs, outgoing envelopes, etc. to their buyers) and 850 brochures were given out by growers or at other industry events to help promote the conference. This is in addition to the brochures and postcards that SCNLA mails out.

Outcomes and Goals Achieved

Total seminar attendance was up 16% over 2011. The number of Pesticide Applicators License CEU's earned was up 12% and the number of International Society of Arboriculture CEU's earned was up 43% over 2011. The large increase in ISA credits is probably due to the fact that last year was our first year in offering these credits. The seminars all ran smoothly and stayed on time. The early morning breakfast/seminar program had even more attendees than in 2011 when we initiated the format. Having 58 attendees at a seminar that starts at 6:45 am is a total success!

Overall:
476 Pesticide Applicators License CEU's were earned
70 International Society of Arboriculture CEU's were earned
431 Total participants in the various educational programs
The registration list was used to add new attendees to our event mailing list. Fifty-one names were added this year.
667 speaker/topic evaluations were returned to SCNLA tallying and use in planning the 2014 conference and other educational events.

The evaluation tallies/topic evaluations are being submitted with the Revised Performance Report as Appendix A.

Beneficiaries

Participants that earned Pesticide Applicators' Re-certification credits were beneficiaries. These credits go toward renewal of their Pesticide Applicators' Re-certification License. Participants with Pesticide Applicator Licenses come from all segments of the industry. All of the topics were relevant to people in the "green" industry. The attendees are a broad range of landscapers and retail (direct influencers) as well as growers from across the state of SC. Some were employees; others were company owners which made for a good mix. This is important because they come from different perspectives; they may ask speakers different questions, thus hear answers with a new broader understanding. This was also a networking opportunity for growers and their customers to meet and talk.

Lessons Learned

Technology and social media were much "hotter" topics than they have been in the past. We should do more related seminars if the subject matter is directly related to our industry and not generic. Attendees would like to have more handouts. But we need to be able to provide them electronically to cut down on waste and costs.

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PROJECT THREE: Sensitivity of the Gummy Stem Blight Fungus to Newly Registered Fungicides

Project Summary

Fungicide resistance is a widespread problem facing specialty crop growers of melons in South Carolina. During the past 10 years, over 80% the gummy stem blight fungus, *Didymella bryoniae*, has become resistant to strobilurin fungicides (Cabrio, Quadris, and Flint) and to the fungicide boscalid (Pristine). The objective of this project was to determine the sensitivity of the gummy stem blight fungus (*Didymella bryoniae*) to the newly registered fungicides cyprodinil and fludioxonil. This project will enhance the competitiveness of specialty crops grown in South Carolina. Specialty crop growers will have current information on which to base their fungicide applications for most effective use of the money they spend on fungicides. Colony diameters of 97 isolates of *D. bryoniae* collected in South Carolina between 1994 and 2005 were measured on glucose minimal medium amended with cyprodinil or fludioxonil. Mean EC_{50} values were 0.051 and 0.091 mg/liter cyprodinil and fludioxonil, respectively. All isolates were considered sensitive to both fungicides. Thus, growers can use fungicides that include either of these active ingredients to manage gummy stem blight on cucurbit specialty crops grown in South Carolina.

Project Approach

Isolates of the fungus Didymella bryoniae used in the study included 18 isolates from cucumber, 14 isolates from cantaloupe, and 63 isolates from watermelon collected in South Carolina between 1994 and 2005. Twenty-three of the watermelon isolates came from greenhouse-grown seedlings. None of the isolates had ever been exposed to either cyprodinil or fludioxonil.

Colony diameters of 97 isolates of *D. bryoniae* collected in South Carolina between 1994 and 2005 were measured on glucose minimal medium amended with cyprodinil or fludioxonil.

The average cyprodinil concentration that reduced colony size by 50% was 0.051 mg/liter (or parts per million), with a range from 0.020 to 0.099 ppm. For fludioxonil, the concentration of 0.091 mg/liter reduced colony diameter by 50%, with a range from 0.306 to 0.206 ppm.

All isolates were sensitive to both cyprodinil and fludioxonil. The effective concentration that reduced the size of fungal colonies was about twice as great for fludioxonil as for cyprodinil. The maximum concentration observed for fludioxonil also was about twice as high as for cyprodinil. Since the gummy stem blight fungus attacks only cucurbits, which are specialty crops, this project benefits only specialty crops. Three watermelon growers in South Carolina cooperated by allowing access to their fields and greenhouse to collect diseased plant samples, which were the source of isolates used in this study.

Outcomes and Goals Achieved

The performance goal for the project was to determine the concentrations of the fungicide active ingredients cyprodinil and fludioxonil that inhibited growth of the gummy stem blight fungus. The goal was to test 75 isolates. In actuality, 97 isolates from South Carolina were tested.

The measureable outcome for the project is the number of South Carolina melon growers who have been trained in appropriate use of fungicides and how to prevent fungicide resistance in the gummy stem blight fungus. The goal is to train 100 growers. The benchmarks are 25 growers trained at the Expo and 75 growers trained at the Watermelon Field Day.

As a result of this project, 395 growers, agribusiness personnel, county Extension agents, and crop consultants have been trained in appropriate selection of fungicides for melons, fungicide rotation, and how to prevent fungicide resistance in the gummy stem blight fungus. The following six presentations were made to achieve this goal:

- "Vegetable Disease Update on New Fungicides," Midlands Vegetable Grower Meeting, Pelion, SC, 12 March 2014, 56 attendees.
- "Worst Case Scenario: Diagnosing and Managing 4 Cucurbit Diseases Simultaneously." 28th Annual Southeast Vegetable & Fruit Expo, Myrtle Beach, SC, 3 Dec. 2013, 40 attendees.
- "Cucurbit and Tomato Fungicide and Disease Update," Charleston County Commercial Vegetable Production Meeting, 4 Oct 2012, 65 attendees.
- "Worst Case Scenario: How to Spray Watermelons for Four Diseases at Once," Edisto REC Watermelon Field Day, July 12, 2012. Estimated 100 attendees.
- "Tomato and Watermelon Disease Control on Small Farms." Pee Dee Region Vegetable Meeting, Turbeville, SC, 8 March 2012. Estimated 100 attendees.
- "Watermelon Disease Update for 2012," SC Watermelon Association annual meeting, Columbia, SC, 1 Jan. 2012, 34 attendees.

In addition, a poster entitled "In vitro Sensitivity of *Didymella bryoniae*, the Cucurbit Gummy Stem Blight Pathogen, to Cyprodinil and Fludioxonil,' was presented at the 59th German Plant Protection Conference, Freiburg, 25 September 2014, to communicate results to international scientists. (Note that no funds from this project were used for travel expenses.)

Beneficiaries

The direct beneficiaries of this project are the 395 growers, agribusiness personnel, county Extension agents, and crop consultants who have been trained in giving scientifically sound recommendations to control gummy stem blight. Other beneficiaries are agrichemical businesses who supply fungicides to melon growers, since if they know which fungicides growers will be using, they can stock their inventories with products that will be sold. Other beneficiaries are some of the owners of the 651 watermelon and 411 cantaloupe farms in South Carolina, as reported in the 2012 Census of Agriculture. The value of the SC watermelon crop in 2013 was $38 million and the value of the cantaloupe crop was $6.2 million in 2013. (NASS pesticide data for use of cyprodinil and fludioxonil on watermelon and cantaloupe were not available in the 2010 report.)

Lessons Learned

The experiments progressed as expected, in part because standard techniques were used. Growers are very interested in having a recommended spray schedule supplied to them to be used as a guide throughout the season.

Contact Information

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Additional Information

A manuscript describing these results was submitted to the journal *Plant Disease* on 30 September; it is still in the review process.

PROJECT FOUR: Creating Profitable Strategies for Transitional and Organic Growers for Multi-Vegetable Cropping Through Unique Cover Cropping, Plasticulture and Alternative Fertilizer Technology

Project Summary

Organic farming is one of the fastest growing segments in U.S. agriculture. The demand for organic produce, specifically specialty crops like organic broccoli, kale, sweet corn, and tomatoes far surpasses the supply available. Each of these specialty crops grow extremely well in South Carolina and certified organic produce demands premium prices; up to three times the price for their conventional counterparts. Growers transitioning from conventional to organic agriculture are especially apprehensive of sustaining economic losses during the transition. The native soil in our state lacks fertility in abundance. Therefore, cover crops must be planted to reduce weed pressure, and organic fertilizers are added to produce marketable crops. This lack of fertility, especially nitrogen, is a huge hurdle that grower's face during the transitional period.

A unique southern cow pea cover cropping line (or variety) was recently released by the USDA. By using a strategy of planting this new variety, coupled with strategic organic fertilizer applications, plasticulture and double cropping spring planted sweet corn and tomatoes after a previous crop of broccoli and cauliflower, transitional and organic growers can be assured of a competitive profitable strategy for successful vegetable production.

Through the use of a newly released, reintroduced land-race cover crop line of cow pea USDA-1136 by the USDA, four high nitrogen protein based fertilizers at three fertility levels, in addition to double cropping plasticulture utilization for broccoli, cauliflower, sweet corn and tomato production were evaluated. Covercropping of USDA cowpea line 1136 along with plastic beds and annual winter ryegrass in the alleys not only adds approximately 525 $g/m^{2,}$ organic matter, but it also effectively reduced yellow nutsedge population over 70%. It was determined that double cropping plasticulture is successful and covercropping alone is not sufficient to supply the nitrogen requirements by a primary crop of tomato/sweet corn and requires a minimum of the lowest rate of 50 additional units of nitrogen from one of the four nitrogen sources with feather meal have the greatest yields. For a successful marketable double crop of broccoli/cauliflower then that rate jumps to a minimum of 100 additional units of nitrogen from any of the four nitrogen sources, however once again feather meal as the source had the greatest yields.

Project Approach

The purpose of this study was to identify methodologies and cultural system practices that make transitioning from conventional to organic vegetable production practical and attractive to South Carolina farmers. Through the use of a newly released, reintroduced land-race cover crop line of cow pea by the USDA, four high nitrogen protein based fertilizers at three fertility levels, in addition to double cropping plasticulture utilization for broccoli, cauliflower, sweet corn and tomato production; it is hoped that this transition is not only possible, but highly adoptable and profitable by South Carolina farmers.

First a USDA certified organic field located at Clemson CREC Organic Farm was selected as the research location. The field was sub-soiled and disked three times to improve aeration, drainage and aide in initial weed suppression. Pre-experiment soil samples were taken and total mineral, organic matter content and soil microbiological analyses performed to establish a baseline to examine the effects of the cover/double cropping and in-field crop rotation.

In both years, newly released USDA cowpea cultivar US-1136 was rhizobium inoculated and seeded at 50lbs/Ac. The crop was allowed to grow, fix nitrogen and suppress weeds until August 1st. The cowpea cover crop was mowed and disked to incorporate the organic material. Plants were allowed to grow to full canopy, just prior to full bloom and seed pod onset. Cover crop biomass and tissue samples were gathered for total mineral analysis and crop residues mowed into fine green-manure mulch and incorporated in the soil profile. A randomized complete block split plot experimental design was implemented and four high protein/nitrogen organic fertilizers at three rates applied on 25' long plots. Double rows 12" within and 14" between on 6' wide raised plastic mulched beds and irrigated with sub-surface laid drip tape and replicated four times. Winter rye grass seed was planted between the plastic beds as an intercrop to suppress weeds and add organic matter. Broccoli and cauliflower were transplanted, allowed to grow and Organic Material Review Institute (OMRI) approved insecticides applied according the label and as needed throughout the growing season to control insect pests. The crops were harvested with yield and quality data collected. Once the harvests concluded, broccoli and cauliflower plants were removed and sweet corn and tomatoes transplanted into the holes. Once again these crops were grown, harvested and yield and quality data was collected. At the conclusion of the first year cycle of cover crop, fall broccoli/cauliflower and spring sweet corn/tomato, the entire system was shifted in the field exactly 6' to the north to simulate a crop rotation and the entire sequence repeated. Of notable observations, was the dramatic decrease in weeds the 2nd year and the increase in yields and quality of the vegetable crops.

This study contained a built-in experimental design to avoid error typically associated with field research. However, excess summer rains prior and during cover crop production resulted in delays with field preparation yet with only minor crop production delays.

To date, this study has been visited and concepts disseminated to approximately 300 people from small and large scale growers, extension associates, professors, seed representatives, food processors, college and high school students.

The information passed along to South Carolina growers highlighted the usefulness of site specific cover cropping cultural practices, effectiveness of double cropping plasticulture and specific fertility recommendations. In addition, net reduction in weed populations, potential yield expectations and quality are to be published in the American Society of Horticultural Science HortTechnology Journal.

Ultimately, results from this project will be incorporated into the online resource "Organic Transition Handbook for Organic Produce Farmers" compiled by Eric Soderholm with the Carolina Farm Stewardship Association. Detailed statistical analyzed results will be published in HortTechnology.

Results were disseminated in "SEVEW Southeastern U.S. 2015 Vegetable Crop Handbook" with the addition of two of the four cultivars used in this study. Approximately 300 stakeholders directly benefitted from the transitional organic approach and data utilized in this project from the following workshops, field days and vegetable meeting talks in 2013-2014; Organic and Sustainable Farming Field Work Shop for Trident Technical College, Organic and Sustainable Specialty Grains Workshop, Coastal Research and Education Center Fall Tour on Organic Broccoli Trials, at College of Charleston lectures for both undergrad and graduate students including lab exercises at CREC, Sweet Corn trial results at Upper Midland Area Vegetable Production meeting, Organic Heirloom Vegetable and Specialty crops at CREC's Annual Field Day, Broccoli spacing trial at the National Annual Conference for the American Society for Horticultural Science and Organic Horticulture workshop, Organic research featured in Post News and

Courier, Garden and Gun magazine, Charleston Magazine, Modern Farmer Magazine, the New Yorker magazine, National Geographic magazine and an online documentary entitled "The Grain Divide" focusing on a repatriation of specialty grains as a component of the Vegetable/Grain/Legume classical transitional organic rotation. Currently organically certified seed increases for USDA-1136 are underway ultimately destined to waiting growers to incorporate into their farm plans.

Goals and Outcomes Achieved

This project was a success in that an additional crop rotation system and cover cropping for nutritional additives has been proven to be useful to organic and transitioning growers.

The following results were shared in person with close to 300 organic or transitioning to organic growers at on site workshops and field days. These direct on-farm consultations took place at the Charleston Edisto Research Center so that the attendees were able to see first hand the plasticulture and planting systems used in this trial.

The optimal cowpea cover cropping strategy as a rotation in a plasticulture system is drill the cowpeas at a minimum of 50 lbs/Ac in early May. For heavy weed pressures this rate can be increased to a maximum of 75 lbs/Ac to establish an earlier weed shading canopy. This crop should be allowed to grow until early to mid-August and then flail mowed and immediately incorporated, allowed to decompose. Four high protein/nitrogen organic fertilizers including blood meal, fish meal and soy-protein-isolate at three rates including 50, 100 and 150 units N/Ac respectively including a non-fertilized control was applied on 25' long plots. These treatments were then rototilled to incorporate and plasticulture installed as soon as possible depending on given weather conditions. The alleys between the plastic beds need to be seeded in annual winter rye grass at 100 lbs/Ac with either a drop hopper or broadcast cone spreader prior to transplant holes being popped. In the meantime transplants will have been seeded in the greenhouse and ready for planting by the second week in September. This series of events allowed for the maximum amount of weed suppression and organic matter accumulation. Rates of mineralization varied based on protein sources with blood meal %N being the fastest to mineralize, followed by soy protein feather meal and fish meal. Feather meal ultimately produced greater minimum yields of the primary crop of broccoli/cauliflower with bloodmeal at the 150 units N/Ac producing the greatest overall yields. For the double crop of sweet corn/tomato, are rates of blood meal were generally dissipated with the mineralization longevity of feather meal being longer lived and the higher rate of 150 units N/Ac producing greatest overall yields.

Beneficiaries

Approximately 1300 specialty crop producer beneficiaries may be impacted by this project in South Carolina as existing sustainable, transitioning or organic growers. The methods and systems that were developed as a result of this project provide a model for year round organic vegetable production for many of our state's growers.

Lessons Learned

The only significant difficulty was the excessive rainfall. As there is no control for this elemental factor, the primary lessons learned are the data results from the project.

Ultimately, the disseminated data from this project is site specific and generalities can be gathered and presumed for other similar soil characteristics and climate conditions. However, future projects will take into consideration the limits of this study and expand to include a standardized protocol utilizing multiple locations, soil types, climate conditions and include multiple cultivars. In addition, insights

learned from recommendations shared by stakeholders to their individual farming plans and needs will be strongly considered and incorporated into all future projects with regards to conducting research in sustainable, transitional and organic vegetable production research.

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PROJECT TITLE: Enabling Marker Assisted Breeding for Brown Rot Resistance/Tolerance in Peach

Project Summary

Brown rot of peach is the most important pre- and postharvest rot affecting peach fruit quality. The peach industry in South Carolina and other southeastern States is dependent on fungicides for brown rot control, but is faced with growing problems of resistance to key fungicides in *Monilinia fructicola*, the causal agent of brown rot in peaches. The development of varieties with resistance or tolerance to brown rot would alleviate many of these problems and be safer for the consumer and the environment. The goal of this project was to increase breeding efficiency for brown rot tolerant/resistant peach varieties producing high quality fruit and suitable for the southeastern USA by discovering markers associated with brown rot resistance in green and ripe peach fruit and enabling marker assisted breeding. Specific objectives included 1) determine the susceptibility in green fruit and ripe fruit rot of peach varieties currently grown and marketed in South Carolina and used in the peach breeding program; 2) utilize genotyping by sequencing and quantitative trait loci and/or association mapping to discover regions of the peach genome associated with tolerance and/or resistance to brown rot; and 3) facilitate marker discovery and Marker Assisted Selection.

Project Approach

Project activities were divided into two parts, phenotypic and genotypic data collection. Phenotypic data comprised of evaluating green and ripe fruit response to brown rot infection. Susceptibility of 150 F2 progeny and ~30 commercially grown varieties was evaluated using artificial inoculation of detached fruit. Fruit was harvested from May – August and May- September in 2013 and 2014 harvest season, respectively, near commercial maturity at the Clemson University Musser Fruit Research Center (Musser), Seneca, SC. Maturity index (IAD) (Ziosi et al. 2008) was measured and fruit was separated in the two maturity classes: green, IAD>0.8 and ripe, IAD <0.6. Five fruit from each class was selected for further inoculation. Brief protocol: each fruit was rinsed under running water for ~10seconds, lightly dried with paper towel and let sit for at least 10 minutes to completely dry. Each fruit was inoculated in two spots one on each cheek by placing plugs of fungal mycelia in previously prepared holes (Fig 1 Left).

Fig. 1 Phenotyping susceptibility of peach fruit to brown rot artificial infection. Left, Inoculation of peach fruit with *Monilinia fructicola*; Right, inoculated fruit under 100% humidity.

Inoculated fruit was placed in trays, with moist paper towel, covered with lids and wrapped in plastic to ensure high humidity (Fig. 1 Right). After 56 hours at room temperature, two perpendicular measurement of the diameter of the infection spread from the plug were measured and average value recorded for each inoculation spot on each fruit (Fig. 2).

Genotyping by sequencing was performed for 150 F2 individuals and F1 parent, advanced selection BY00p6343.

Specific results include:

- Fruit collected in 2013 from varieties subjected to a conventional spray program did not allow development of disease symptoms (Fig. 4). We hypothesized that spray residue may have inhibited growth of our fungus. Therefore, in 2014 fruit of 10 varieties at the Musser Farm were individually bagged in the field (**Error! Reference source not found.**) to protect from sprays, and disease symptoms were obtained following artificial inoculation (Fig. 5).

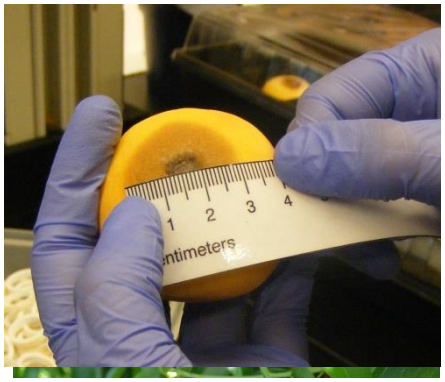

Fig. 2 Measurement of diameter of infection on fruit of F2 progeny.

Fig. 3 Bagged fruit.

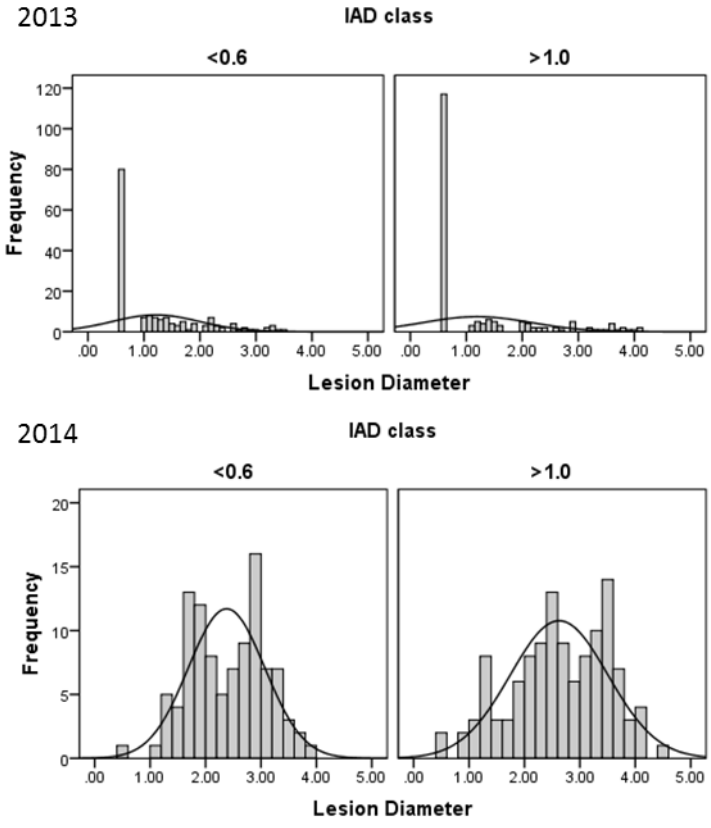

Fig. 4 Response of peach fruit flesh to artificial inoculation observed in 26 peach cultivars and 11 advanced selections in 2013 and 2014. Values represent lesion diameter averaged over 10 fruit. IAD - maturity class; <0.6 – ripe; >1.0 – green.

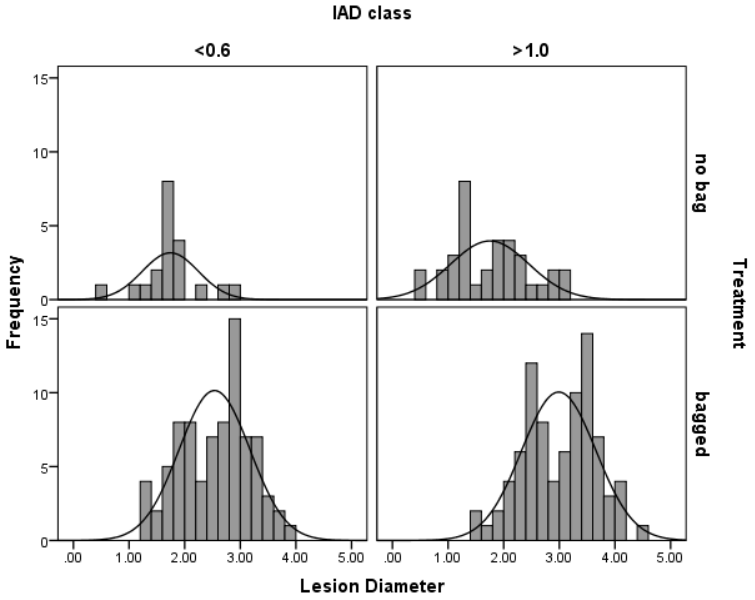

Fig. 5 Difference in response of peach fruit flesh to artificial inoculation between bagged and not bagged fruit of 26 peach cultivars and 11 advanced selections. IAD - maturity class; <0.6 – ripe; >1.0 – green.

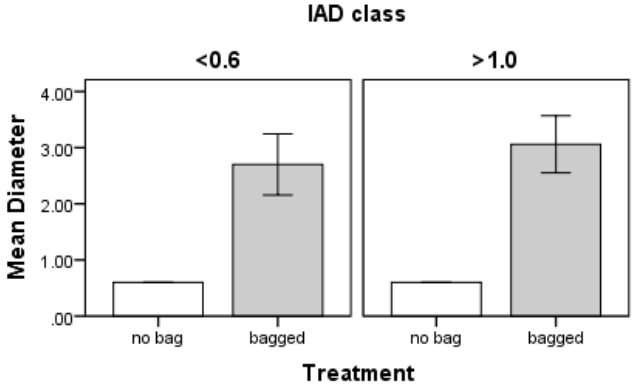

Fig. 6 Response of 'Harvester' fruit to artificial infection with brown rot under two different treatments, no bag/ bagged. IAD - maturity class; <0.6 – ripe; >1.0 – green.

- 'Harvester' fruit, tested under both treatments, bagged (2014) and not bagged (2013), revealed significant difference between the two treatments within the same maturity class ().
- No significant differences were observed between the maturity classes within the treatment ().
- These results suggest that evaluation of peach fruit flesh response to artificial inoculation with *M. fructicola* has to be performed using fungicide-free fruit samples. We show that fungicide-free fruit can be obtained when bagged from trees subjected to a conventional spray program. This approach will be implemented in newly funded SCRI project RosBREED (2014-2019).
- Fruit response to artificial inoculation was genotype dependent with significant differences observed among evaluated varieties in both maturity classes (Fig. 7). None of the varieties exhibited high tolerance to fruit flesh inoculation with brown rot.

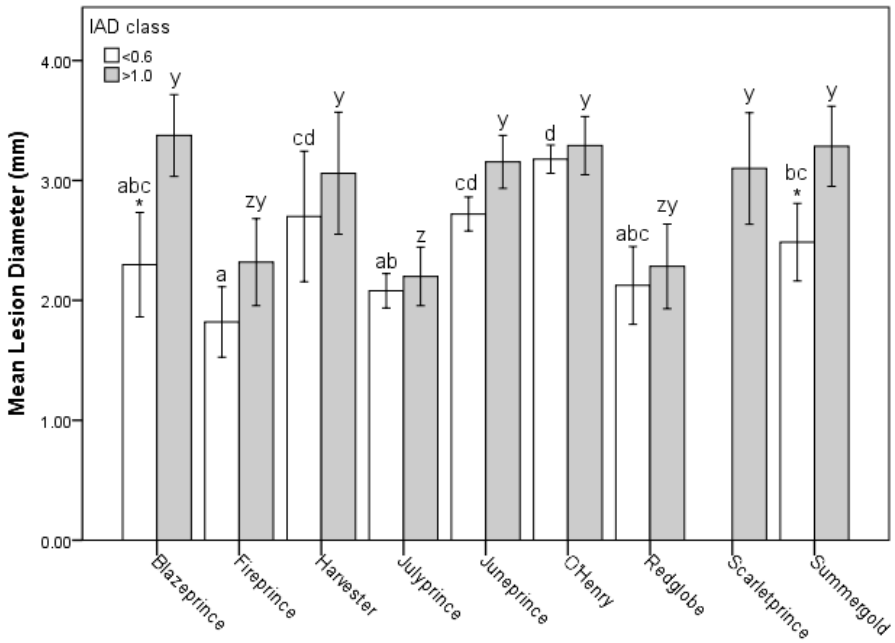

Fig. 7 Response of bagged fruit of nine peach varieties to artificial inoculation of fruit flesh with brown rot. IAD – maturity class; <0.6 – ripe; >1.0 green. Different letters designate statistically significant differences within each maturity class at the P<0.05 measured by Dunnett's T3 test.

- Statistically significant differences were observed within and between maturity classes, with more variability observed in ripe (IAD <0.6) than green (IAD >1.0) fruit category (Fig. 7). Mature fruit exhibited lower levels of susceptibility to artificial inoculation of the flesh with significant differences observed only in 'Blazeprice' and 'Summergold' between the two maturity classes.
- Phenotyping for fruit flesh response to artificial infection with brown rot on segregating progeny showed normal distribution from highly resistant to highly susceptible in both years and both maturity classes (data not shown), suggesting segregation of resistance alleles and confirming suitability of the population for mapping.
- Significant differences were observed between two maturity classes, with more mature fruit showing higher resistance to artificial infection (Fig. 8).
- Genotyping by sequencing generated 345,984 sequences, of which 83% found a match in peach genome and produced ~30,000 SNPs.
- A total of 1,679 informative SNP markers for the segregating progeny have been selected for linkage map development.
- The lack of immediate ancestors hampered our ability to correctly assign the markers and produce the linkage map. However, the data acquired will be essential for mapping the regions associated with the brown rot

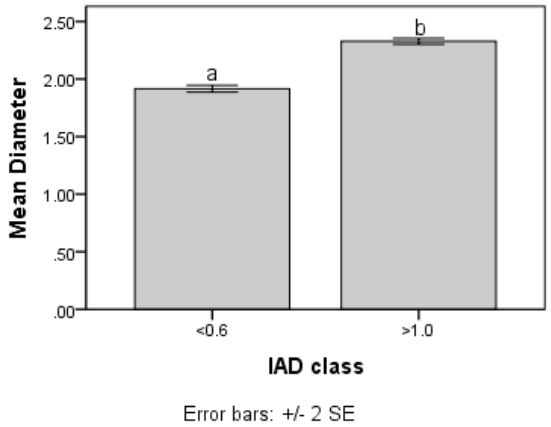

Fig. 8 Response of the two maturity classes of F2 segregated progeny to artificial fruit flesh infection with brown rot. IAD - maturity class; <0.6 – ripe; >1.0 – green.

resistance in peach genome using pedigree approach once the fruit response data have been collected for the all ancestors in the segregating progeny pedigree.

Goals and Outcomes Achieved

The goal of this project was to increase breeding efficiency for brown rot tolerance/resistance in high quality peach varieties suitable for growing in the southeastern USA by discovering markers associated with brown rot resistance in green and ripe peach fruit and enabling marker assisted breeding. This project is aimed to increase competitiveness of the South Carolina peach industry by developing new and improved varieties with genetic resistance, better fruit quality and nutritional value.

Sixteen varieties grown and marketed in SC, 37 accessions maintained in a *Prunus sp.* collection at Clemson University, representing peach germplasm and important parents used in the peach breeding program, and 150 progeny from population segregating for brown rot resistance were phenotyped for green and ripe fruit response to artificial inoculation with brown rot. A total of 6,340 brown rot response data points were collected. The protocol for artificial infection of peach fruit flesh was revised to include fruit bagging at the beginning of the season, to prevent deposit of fungicides and allow for fruit collection from orchards in commercial production. Genotyping by sequencing has been used to genotype segregating progeny and more than 1,500 informative markers have been selected for mapping. Differences in fruit response to artificial inoculation with brown rot have been detected and sources of higher tolerance/resistance will be used in the breeding program.

The long term goal of the project was to improve breeding efficiency for high quality peach varieties resistant to major diseases such as brown rot by applying marker assisted selection with association genetics.

Collected fruit response data along with markers generated via genotyping by sequencing provide a baseline for discovery and application of markers associated with fruit tolerance/resistance to brown rot. Marker-assisted breeding will help reduce time and cost of delivering new and improved peach varieties, improve breeding efficiency, and ensure delivery of new peach varieties with improved disease resistance that in turn should decrease fungicide application and increase competitiveness of the South Carolina peach industry in a global market.

Comparison of actual accomplishments with the goals established for reporting period:

Activity	Goals	Accomplishments
Phenotyping – fruit flesh reaction to brown rot artificial inoculation	Green and ripe fruit response to brown rot artificial inoculation evaluated in 200 accessions	200 accessions evaluated for response to artificial inoculation with brown rot
Genotyping by sequencing	150 individuals	Genotyped 150 individuals
Marker analysis and generation of linkage map	Analyze SNP markers and select an informative set for linkage mapping; Produce the linkage map	~30,000 markers analyzed and ~1,700 selected for linkage map; linkage map development in progress

Outreach activities and educational programs for South Carolina peach industry members included:

- Presentation at Southeastern Fruit and Vegetable Conference, Savannah, GA
    - January 9-11, 2014
    - 74 audience participants – mostly peach growers from SC and GA
- Presentation at ROSbreed industry meeting, Clemson University

    - October 18 & 19, 2013
    - 32 peach growers, 17 peer scientists in attendance
- Presentation at Upstate and Ridge area grower meetings
    - February, 2013
    - Combined 87 peach growers, six county agents

The expectation is that the long term goals of this project will be having a spray program for southeastern peach growers that will enable a significant reduction in fungicide applications. The economic impact of this achievement is difficult to calculate at this time, as prices are variable. Brown rot is one of the most destructive (and thus, most costly) diseases of peaches grown in the humid environment of South Carolina, and any major steps towards the conservation efforts of fewer chemical sprayings, coupled with an increased volume of marketable peaches during the season, will doubtless save millions of dollars over time.

Beneficiaries

South Carolina growers, consumers, and the members of the peach breeding program are the main beneficiaries of this project. There are six commercial packers and more than sixty five direct market growers in our state that grow peaches on approximately 14,000 acres. The annual value of the crop is more than $75 million dollars.

Resistance/susceptibility data acquired will provide base information in search for molecular tools for breeding resistant varieties in the future. Experiences with fruit inoculation has enabled development of more efficient phenotyping protocol that will be applied post grant and the results will continue to be shared with the growers. In addition, improved efficiency of the peach breeding program will ensure faster and more cost efficient delivery of peach varieties with the desired combination of traits.

Lessons Learned

- Chemical control practices in peach orchards effectively protect the fruit against brown rot and prevented artificially applied fungal mycelia from growing in the fruit flesh. Therefore, the evaluation of response to artificial inoculation with brown rot using fruit from commercial orchards requires fruit being bagged early in the season to protect from spray residue.
- Both green and mature fruit exhibited susceptibility to artificial inoculation of the flesh, with more mature fruit being less susceptible. The maturity stage might be more important for skin susceptibility/resistance due to high level of organic acids present.

Contact Information

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Additional Information

Ziosi V, Noferini M, Fiori G, Tadiello A, Trainotti L, Casadoro G, Costa G (2008) A new index based on vis spectroscopy to characterize the progression of ripening in peach fruit. Postharvest Biology and Technology 49:319-329

Project Title: SC Organic Farming Transition Outreach Project

Project Summary

The organic market continues to grow, with organic food sales in the US totaling approximately $29 billion in 2010, an eight percent increase over 2009. With its long growing season, high-quality agricultural resources, and proximity to large markets on the East Coast, South Carolina farmers could be grabbing a larger share of this market. However, South Carolina's farmers continue to face technical challenges in seizing a greater share of our state's organic market.

Federal cost share programs for adopting organic farming practices, such as the EQIP-OI, are a huge opportunity for South Carolina specialty crop producers to improve their competitiveness in the organic food market. A 2012 survey of state NRCS personnel nationwide found that 89% of states need assistance in implementation of conservation practices on organic farms, and that lack of soil and water conservation staff expertise in organic systems is a major barrier to successful implementation of the EQIP-OI. To address these needs, Carolina Farm Stewardship Association (CFSA) implemented the Organic Farming Conservation Outreach Program (OFCOP) in South Carolina in 2011-2012, through consecutive awards from the SC Specialty Crops Block Grants Program. Thanks in part to our work, the value of EQIP-OI contracts in SC increased by 463%, from $122,640 in to 2010 to $690,341 in 2011. We built on the expertise gained during the first years of OFCOP to continue to improve the competitiveness of South Carolina specialty crop producers by providing farmers and NRCS staff with tools to better implement conservation practices on organic/transitioning farms.

Project Approach

CFSA worked to improve the competitiveness of South Carolina specialty crop producers seeking to take advantage of the high-value market for organic produce by increasing access and utilization of the EQIP-OI program by organic/transitioning producers and increasing the number of SC producers transitioning to organic production in order to take advantage of new markets for organic specialty crops.

In order to increase the utilization of the EQIP-OI program we 1) reviewed job scenarios and payment schedules for conservation practices specific to organic/transitioning producers, 2) developed technical fact sheets to be included with job scenarios in order to provide district conservationists and organic and transitioning producers with technical information on how to implement conservation practices in organic systems, and 3) provided technical services to farmers to improve their ability to compete for NRCS cost share funding.

In order to increase the number of SC producers transitioning to organic production we conducted four training sessions on organic production practices. Training topics were identified through our work providing one-on-one consultation with producers, discussions with certifying agencies, site visits, and results from the 2013 Southern Sustainable Agriculture Research and Education's (SARE) annual advisory council meeting.

- Reviewed job scenarios and payment schedules of twenty-five EQIP-OI practices most relevant to organic and transitioning producers.
- Provided technical fact sheets to be included with ten job scenarios in order to provide district conservationists and organic and transitioning producers with technical information on how to implement the practice in an organic system.

- Provided consulting, as a certified Technical Service Provider (TSP), to farmers wanting to transition to certified organic production, leveraging materials created by CFSA under previous SC Specialty Crop Block Grant funding.

Goals and Outcomes Achieved

The goals of OFCOP were to: 1) increase access and utilization by organic/transitioning producers of NRCS EQIP cost share programs by developing technical fact sheets for job scenarios specific to organic/transitioning operations, providing training, and offer technical services to producers and 2) increase the number of SC producers transitioning to organic production in order to take advantage of new markets for organic specialty crops.

GOAL 1: Increase access and utilization by organic/transitioning producers of NRCS EQIP cost share programs by developing technical fact sheets for job scenarios specific to organic/transitioning operations and offering technical services to producers.

- Our Farm Services Coordinator became a certified NRCS Technical Service Provider in May 2013. He wrote Conservation Activity Plans Supporting Organic Transition (CAP 138) for two farmers, one for a hop farmer and one for a vegetable farmer.
- Reviewed 25 NRCS EQIP-OI job scenarios for conservation practices most applicable to organic and transitioning operations.
- Developed and published ten technical fact sheets on conservation practices for organic operations on CFSA's website.
- Conservation practices include; 1) Conservation Cover (327), 2) Conservation Crop Rotation (328), 3) Cover Crops (340), 4) Field Borders (386), 5) Hedgerow Planting (422), 6) Mulches (484), 7) Nutrient Management (590), 8) Seasonal High Tunnel (798), 9) Pumping Plant (533), and 10) Forage & Biomass (512). Forage and Biomass Planting was included because it is required when receiving cost share for Conservation Crop Rotation (328) as two years of sod is required in a six year crop rotation when implementing the Conservation Crop Rotation practice.
- Promoted the EQIP-OI program to 204 producers at four CFSA workshops (116) and through CFSA's online newsletter and list serves (88). Producers were directed to our website for more information on the EQIP-OI program and our guide *Applying for the Environmental Quality Incentives Program (EQIP)–Organic Initiative in the Carolinas*, which has been viewed by 670 individuals.

GOAL 2: Increase number of SC producers transitioning to organic production in order to take advantage of new markets for organic specialty crops.

- Conducted four training sessions, to 116 attendees, on organic production practices, in May and September. We partnered with the Clemson Sustainable Agriculture Department to provide organic training which allowed us to reach more producers and NRCS staff on a broader range of topics than anticipated for this year. Access to additional SC SARE grant money resulted in higher quality trainings with speakers that were not in our budget range.
- Two all day workshops on pest management for organic vegetable production were held at the Clemson Coastal Research and Education Center (Charleston, SC) and the Clemson University Madren Conference Center (Clemson, SC). Topics included management of key diseases and insect pests affecting vegetable crops in South Carolina and the region. Participants learned about identification and monitoring techniques for key diseases and insect pests and cultural and biological pest management methods specific to those key pests. They collected samples in the field and practiced identification procedures using a hand lens and/or microscope. Participants toured the Clemson CREC and Campus Organic Farms and learned about pest

management research and programs at both locations.

- Two all day workshops on organic soil fertility management with summer cover cropping demonstrations were also held at the Clemson Coastal Research and Education Center (Charleston, SC) and the Clemson University Outdoor Lab (Clemson, SC). The focus of the workshops was on management practices that enhance soil fertility and health, specifically in annual vegetable cropping systems. Through our partnership with the Clemson Sustainable Agriculture Program, we were able to bring in Ellen Polishuck, co-owner/operator of Potomac Vegetable Farms in Purcellville, VA, to provide nationally recognized expertise on organic fertility management.

We sent a survey out to over 200 specialty crop producers, including CFSA program participants, to determine the number of SC specialty crop growers who are transitioning to certified organic production and to collect information on the reasons participants choose not to transition to organic to help inform future training needs. Of the 40 who responded, twenty are either currently transitioning or plan to start the transition process in 2014. Twenty three respondents participated in a CFSA program; of those thirteen are either in the transition process or plan to be in 2014.

Respondents identified the cost of certification (38% of respondents), increased need or limited availability of labor (25%), effective pest management controls (22%), availability of organic-approved inputs (16 %), and lack of technical support from agricultural service providers (16%) as obstacles most challenging during the transition process to USDA Organic Certification.

Beneficiaries

Direct beneficiaries of this project were specialty crop producers who received technical information about the EQIP-OI program, and specialty crop producers and NRCS district conservationists who received technical assistance about organic production practices. Beneficiaries served are listed below:

TYPE of INFORMATION DISSEMINATION	NUMBER OF BENEFICIARIES
Viewed Online Resources	670
Attended a Workshop (Producers)	116
Received One-on-One Consultation	30
Received information on the EQIP-OI Program	204

Lessons Learned

It is difficult to determine how many specialty crop growers are in the transition process to certified organic production because they are not required to contact a certifying agent until they are ready to submit an Organic System Plan near the end of the required 3-year transition period where no prohibited substances can be applied. Because of this, there is no data regarding the number of growers who are transitioning. There is data on the USDA's National Organic Program website regarding the number of certified organic operations in SC. However, this data does not include the number of certified organic acreage or the number of growers in the transition process. It would be very useful if it did so we could track changes in the amount of certified organic acreage in SC. There is data in the USDA's 2011 Organic Production Survey about the number of acres that are certified in SC, however, this information is not current and only includes information from growers who completed a survey. Moreover, it does not include information on growers who are in the transition process. Therefore, it is difficult to determine how many growers are in the transition process. However, based on our survey results, 20 SC specialty crop growers are in the process of transitioning to certified organic production.

There is a lag time between initial conversations with growers that are eagerly considering the option of organic certification and when they actually begin the transition process. Many growers approach CFSA thinking that they understand and meet the requirements of the National Organic Program but find that there are a number of nuisances of which they were unaware. A great deal of time can be spent discussing the particulars of a growers operation and teasing out practices, inputs and recordkeeping issues that will be problematic when presenting an Organic System Plan to a certifying agent. The Organic Transition Handbook for Produce Farmers that we developed is very helpful at building baseline knowledge for growers. However, finding out the level of detail that is involved in certification may stifle the enthusiasm and progress of growers entering transition, thus inhibiting our ability to assist them. This realization has shifted how we approach working with growers, which begins with offering a short list of resources to review. We follow up with a phone call and take care to check back in with growers frequently to monitor their progress and be sure they are using the services we offer to clarify lingering, unasked questions.

We were not able to overcome obstacles in working with the SC NRCS to provide their employees with organic production training. We offered to organize sessions and/or contribute to organizational training conducted during the year. Our offers were cordially declined, disappointing our efforts. While surveys of their staff still show a need for training, state level staff feel that past training (led by CFSA) has, for the time being, provided sufficient information for field level NRCS staff. Moreover, we have had to modify the goals of our work plan in order to provide them with technical assistance called for in our work plan for this project. Rather than provide technical information via workshops, we developed technical fact sheets on organic production practices and how to implement conservation practices in organic systems. Unfortunately time constraints on SC NRCS staff precluded their review and further development of those technical fact sheets.

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Additional Information

- Technical fact sheets on conservation practices for organic specialty crop growers.
- Directed producers to *Applying for the Environmental Quality Incentives Program (EQIP)–Organic Initiative in the Carolinas*.

Project Seven: Rural Outreach to Promote Local Marketing of Specialty Crops and Revitalize Rural Communities

Project Summary

South Carolina's rural areas have the potential to substantially increase agricultural production and economic activity, especially with regards to specialty crop agriculture. Soils are fertile, water is abundant, and the growing season is extremely long. However, SC specialty crop farmers and the communities in which they live have been unable to realize sufficient economic returns needed to sustain their livelihoods and support rural economies. As a result, local rural farmers often experience much higher poverty and unemployment rates than their urban counterparts.

The South Carolina Coastal Conservation League (CCL) is a twenty-five year old nonprofit grassroots organization that works with local communities to improve their quality of life by revitalizing specialty crop production as a viable industry. As part of this goal, CCL launched GrowFood Carolina—SC's first and only local food distribution hub--to address producers' inability to tap into local market demand, a problem central to specialty crop producers. GrowFood Carolina provides essential marketing, sales, aggregation, and distribution infrastructure to specialty crop farmers in order to serve local and regional consumer demand.

The 2012 Specialty Crop Block Grant enabled CCL and GrowFood Carolina to effectively engage South Carolina's rural communities in a now ongoing conversation about new information, resources, and infrastructure for specialty crop producers. Our team hosted four meetings in key agricultural regions of the South Carolina. Local specialty crop experts attended and shared information and educational materials on new market opportunities. In addition, our team collected information from the attendees about current opportunities, challenges, and needs.

This project used an innovative and collaborative approach in order to market the meetings to new audiences that may not otherwise receive information on existing resources for specialty crop production. By partnering with SC Wildlife Federation and a coalition of tourism, agriculture, forestry, conservation, and economic development organizations, the Rural Resource Coalition SC, our team reached new producers and exposed existing producers to new opportunities.

Over the grant period, the collaborative team conducted four educational outreach meetings, informing local growers how to grow crops to meet market demand and how to utilize GrowFood Carolina as a food distribution hub to increase specialty crop production.

This outreach project has been critical to the success of SC specialty crop producers by helping to connect them to better infrastructure and networks. The meetings have brought together specialty crop producers, local marketers, government officials, and local food businesses to create a forum for regularly sharing resources and information. Meeting content focused on educating local growers on sustainable practices, specialty crop varieties and marketing, and food distribution options.

The overall outcomes include:

- Improved efficiency within specialty crop distribution systems;
- Increased education on good agricultural, handling, and manufacturing practices; and
- Increased local and regional specialty crop producers and businesses.

This project moved the local food system in a more sustainable direction for South Carolina's specialty crop farmers by bolstering a more vibrant local economy, particularly in our state's distressed rural communities.

Project Approach

The SCBG award facilitated an important connection between local specialty crop producers and consumers. Historically, the food distribution model in South Carolina has not favored local specialty crop producers, as evidenced by the fact that less than 10% of the 7 billion dollar's South Carolina consumers spend on food originates from in-state producers of specialty crops. Produce distributors, packing sheds, warehouses, and others serve large farmers adequately, particularly in the export arena. Conversely, small-scale specialty crop growers are relegated to road-side stands, unreliable pickup trucks, unknown buyers and markets, and unpredictable prices. Buyers, such as restaurants, grocery stores, and families experience a corresponding disconnect when trying to buy local products. They are unable to purchase local specialty produce in predictable quantity and quality.

The Specialty Crop Block Grant assisted our team in linking producers of specialty crops with local markets through outreach meetings, making rural producers aware of the resources available to them in their communities and through GrowFood Carolina.

There was a veritable need for this project, as evidenced by the inability of local specialty crop producers to market their products effectively. The consequence of this disconnect has been a legacy of rural poverty. Eighteen percent of South Carolina's population lives in poverty, but that figure masks the disparity between rural and urban areas. Rural counties, such as Allendale, Bamberg, Colleton, and Orangeburg are struggling with poverty rates of 40.4, 27.6, 22.6 and 26.7 percent respectively. By comparison, urban Richland County has a poverty rate of 17 percent and the state average is 18 percent. Similarly, unemployment rates in December 2011 were 17.3, 14.4, 12.2, and 14.2 percent in rural Allendale, Bamberg, Colleton, and Orangeburg counties, while the rate for urban Richland County was 8.3 percent. The need to revitalize rural South Carolina is clear. With the establishment of GrowFood Carolina as a regional food hub, the opportunity is available to take advantage of what rural South Carolina has historically done best: grow food.

GrowFood Carolina and the Coastal Conservation League collaborated successfully with the South Carolina Wildlife Federation to tap into the vast network supported by the Rural Resource Coalition SC, extending information to rural communities about new markets for specialty crops. As specialty crop producers have learned more about GrowFood Carolina and the Rural Resource Coalition SC, they have gained knowledge as to how to more effectively market and sell specialty crops. The outreach meetings created a healthy link between specialty growers and local buyers, allowing steadily increasing revenues to flow back to specialty growers and the rural communities in which they reside.

Goals and Outcomes Achieved

Our project was to host a series of four meetings over the two-year grant period. The meetings were targeted to rural specialty crop producers serving local markets, to educate and inform producers and community leaders about the opportunities available to them through GrowFood Carolina and other local food businesses in their relevant locations.

*A. Local Marketing Opportunities for Local Producers Outreach Series***

First Outreach Meeting: Jasper/Beaufort County – November 7th, 2012, Ridgeland

The number of farmers educated at the meeting was approximately 20, with an estimated additional 20 farmers who would learn about marketing opportunities indirectly through attendees. After this meeting, staff from GrowFood Carolina followed up with attendees with a survey and personal phone calls to measure the impact of the meetings and to determine, based on the feedback received, what steps need to be taken next in each community to further specialty crop production. A personal visit was made by Weatherly Thomas, SCDA's Food Safety Coordinator, to Brant Family Farm, as a result of the meeting. One farmer pursued Good Agricultural Practices (GAP) food safety certification.

Jack Shuler, Azeez Mustafa, Garrett Budds, and Sara Clow presented to the attendees. From this meeting, new growers began using GrowFood Carolina to distribute their produce.

The result of the surveys pointed to the fact that more information is needed on Good Agricultural Practices and networking among specialty crop producers. Every participant indicated an appreciation in participating in the outreach program and a willingness to work with GrowFood Carolina in the future, though many do not produce the volume necessary to market beyond the local farmers market. The lesson learned is that there are many resources available to producers in this region, but there is also a lack of collaboration among resource providers. GrowFood Carolina began actively addressing that concern by working with a local food distributor, Sea Island Local Outlet, an online business that allows consumers to order local food directly. We also set up multiple meetings with the Gullah Co-op that rents space to clean, process, and bag broccoli and collards for distribution to schools. We continue to actively connect these groups to create a network of specialty crop distribution and marketing opportunities. CCL recently added an employee, Kate Parks Schaefer, to our staff in this region (Beaufort) who will focus on improving these activities.

Second Outreach Meeting: Williamsburg County -- April 18, 2013, Browns Barbeque, Kingstree

Approximately 70 farmers attended the meeting. An estimated 100 farmers were educated indirectly from the farmers who attended the meeting. There was strong attendance from local cooperatives and agencies, like the Peoples' Farmer Cooperative and the Farm Service Agency, who assisted in carrying the information presented to a larger audience.

In our original proposal, we had thought that bringing in experts from other states would be the best use of funds. However, after consulting with local growers and nonprofits, we found that our intended audience was more receptive to local farmers and marketing experts as speakers. Therefore, we chose to have Ben and Carol Williams talk about their experiences transitioning their conventional row-crop farm to an organic specialty crop farm. In addition, they relayed their experience working with GrowFood Carolina.

GrowFood Carolina staff followed up with attendees with surveys and phone calls after the April 18th meeting. Surveys indicated that the audience learned new marketing strategies from the local speakers and that many of the participants were specialty crop producers who were not currently connected to local markets. Many participants have begun the process of learning what is required to sell through GrowFood Carolina as a result of the outreach program. In addition, we worked with Carol Williams to purchase a refrigerated cooler that provides needed infrastructure to growers in Georgetown County to maintain the cold chain from the field to the warehouse.

Third Outreach Meeting: Florence County – February 4th, 2014, Back Swamp Schoolhouse, Florence
Approximately 30 specialty crop producers attended the meeting for lively and informative conversation, led by Executive Director of the Pee Dee Land Trust, David Harper. An estimated 50 producers were educated indirectly as a result of the materials generated and relationships created.

Organic producers and aggregators, Jannie Dickson and Charlie Caldwell presented on organic specialty crop production and attracting local customers.

Surveys from this meeting showed that this region has tremendous potential to increase specialty crop production, distribution, and marketing. Campbell Coxe (Carolina Plantation) was motivational, and taught participants how to process, brand, and distribute their products. CCL and GrowFood Carolina will continue to partner with this region to tap into its potential as a specialty crop production node.

Fourth Outreach Meeting: Greenville County – May 20th, 2014, Greenville Technical College
Approximately 28 specialty crop producers attended the upstate meeting, which was located in Greenville. An estimated 90 producers benefited from the meeting indirectly.

Each of the educational outreach meetings has been organized and overseen by Lisa Turansky, the Program Director for Sustainable Agriculture at the Coastal Conservation League, in coordination with GrowFood Carolina, the SC Wildlife Federation, and the Rural Resource Coalition SC.

Again, Sara Clow and Jack Shuler presented, followed by Mike McGirr and Scott Park, leaders in the evolving upstate food hub, "The Feed and Seed." There was a panel discussion featuring Margaret Harrison from H&G Produce, Gwen McPhail from Tokeena Ranch and John Breaunig from Serenity Farm.

The surveys in this region were created and distributed through a partnership with Scott Park, Greenville County Planner, and his work on an upstate food plan. He spoke at the outreach meeting on the 2oth, and assisted us by visiting the following farms for one-on-one conversations:

Greenbriar Farms	772 Hester Store Road	Easley	South Carolina	29640
Iszy's Tomatoes	162 Joyce Road Liberty	Pickens	South Carolina	29657
Moon Dance Hollow Organic Farm	132 Apple Orchard Road	Mountain Rest	South Carolina	29664
Chattooga Belle Farm	454 Damascus Church Rd	Long Creek	South Carolina	29658
ALT Garden Delights	104 S. Staunton Court	Moore	South Carolina	29369
Heritage Farm & CSA	2024 Geer Hwy	Travelers Rest	South Carolina	29690
White's Jersey Dairy	5965 Mountain View Road	Taylors	South Carolina	29687
Jackson Farms II	1789 Gap Creek Road	Greer	South Carolina	29365
Mini Miracles Farm	708 Old Rutherford Road	Taylors	South Carolina	29687
Evergreen Farms of TR, llc	51 Tammy Trail	Travelers Rest	South Carolina	29690
ALT Brick House Farms	1139 Brick House Road	Gaffney	South Carolina	29340
Gentry Farms	369 Dials Church Rd	Gray Court	South Carolina	29645
Watsonia Farm	3755 S Carolina 23	Monetta	South Carolina	29105
ALT Parsons Produce	3111 Hwy 56 North	Clinton	South Carolina	29325
Bioway Farms	197 Bio-Way	Ware Shoals	South Carolina	

He did extensive surveying and completed a feasibility study, with our support. The study can be found here:

http://www.greenvillecounty.org/apps/LongRangePlanning/uploads/Feasibility_Study.pdf

Our partnership on this effort leveraged this grant in the upstate region to be the most effective program of the series.

A subcontract with the SC Wildlife Federation allowed us to promote and market the events through their existing network, website, and newsletters, as well as to reach out to all to coalition members. SC Wildlife Federation's participation in this project ensured strong attendance. Every meeting had a Facebook page created, and was listed on participating organizations' websites.

The four meetings covered the following information:

1. The mission and goals of the Rural Resource Coalition SC

   Rural Resource Coalition SC's mission is to capitalize on South Carolina's human and natural resources in order to improve the quality of life for all her citizens by promoting sustainable economic development in rural communities and wise stewardship of her land and water.
2. The mission of GrowFood Carolina

   GrowFood Carolina's mission is to help the local food market reach its full potential by securing the future of a regional food supply and ensuring that rural lands remain in agricultural use. Currently, GrowFood Carolina serves farmers primarily from the Lowcountry and Pee Dee regions but will eventually support other regions of the state as well. Additionally, GrowFood Carolina will provide an operational model for future food hubs in South Carolina and beyond.
3. How to begin producing specialty crops
4. How to market and sell specialty crops

Speakers from the Rural Resource Coalition SC set the work into a statewide context of support. Sara Clow from GrowFood Carolina educated growers and community members on the local market and available tools and resources available to specialty crop producers.

B. Economic Outcome

In the original proposal, GrowFood Carolina had secured approximately $73,000 in gross sales and had disbursed over $56,000 to participating growers. We projected that $112,000 would return to rural South Carolina within one year of the completion of the project as a result of outreach efforts.

Over the time period of this grant, and as a result of our outreach and education, GrowFood has returned $848,163 to rural specialty crop producers, grossing more than $1 million over that same time period. This success has built momentum in the communities and the partners we have engaged, such as the SC Department of Agriculture, the Pee Dee Land Trust, Jasper County staff, and the Upstate Feed and Seed. This major accomplishment was a direct result of the outreach efforts made possible through this grant. Every attendee who was willing to be contacted after the initial meeting has stayed engaged. In fact, new specialty crop producers, such as Jannie Dickson in Timmonsville and Campbell Coxe in

Florence, learned about GrowFood services at the outreach meetings, and are now key anchor participants in GrowFood Carolina. Participation in the food hub includes regular one-on-one contact to crop plan, monitor crops/harvest, and anticipate product delivery.

C. Enhanced Competitiveness of Specialty Crops

1. All advertisements and promotional materials were directed in content and distribution channels to specialty crop producers. We worked closely with the Rural Resource Coalition SC and the SC Department of Agriculture Specialty Crop Coordinator to ensure that participants were stakeholders in the specialty crop sector. Because of staff relationships with the farming community, we were able to reach out to specific specialty crop producers to recruit other specialty crop producers and to strategically tailor programming to that audience.
2. Outreach meetings were well attended by specialty crop producers who were connected to marketing and sales opportunities tailored to the needs of specialty crop producers.
3. Specialty crop products were offered and promoted as part of the event.
4. Local food businesses that work with specialty crop producers were the keynote speakers and provided resources to specialty crop producers.
5. Long term relationships between outreach meeting attendees and Sara Clow at GrowFood Carolina have been ongoing. GrowFood Carolina works exclusively with local specialty crop producers to market, sell, and distribute specialty crops to restaurants, retailers and institutions. As a result of these meetings, a number of attendees are able to sell specialty crops in new markets.
6. USDA, state and local agencies represented programs geared to specialty crop producers and provided producers with information and resources.
7. A true gauge of the effectiveness of this program is the effort to replicate similar specialty crop programs across the state.

Beneficiaries

A total of 114 specialty crop producers benefitted from this project directly in several key ways. They gained an awareness and understanding of what GrowFood Carolina and the Rural Resource Coalition SC do and the resources available to them as specialty crop producers. In addition, they learned how to begin producing specialty crops for which there is market demand. As many attendees have gone on to utilize GrowFood Carolina as a distribution hub for their products, they have realized increasing individual financial benefits, and spurred additional participation from other local growers. The more specialty crop growers participate and benefit financially, the more money flows to the communities in which they live, boosting local and state economies.

Local specialty crop farming has the potential to bolster rural economies as it effectively re-directs a portion of the revenue that has historically flowed out of South Carolina back into the state's rural communities. A multiplier effect is achieved when local growers, in turn, spend their income locally. A study by the University of Minnesota Extension Service revealed that small farms with gross incomes of $100,000 made almost 95% of their total expenditures within their local communities. Large farms with gross incomes greater than $900,000, on the other hand, return less than 20% to the local economy. Presently, large-scale farming provides relatively few rural jobs because public policy and technology have favored the replacement of human labor with chemicals and machinery. However, with more sustainable farming practices, product diversification, and opportunities for a reliable market, rural residents can begin to profit from their land. Moreover, with opportunities for local processing and value added to raw materials, rural farmers will enjoy higher returns on their products.

Lessons Learned

Outreach is a vital piece of any infrastructure project. In this endeavor, the importance of tailoring the message to the audience cannot be overstated. In the original proposal, we had thought that we would be flying experts from other states into South Carolina to educate the community. The lesson we learned was that we already had specialty crop experts in the communities we wished to engage. We decided to host meetings with local keynote speakers and put more of our staff time into marketing the meetings through individual phone calls and networking.

We also learned that the response rate for online surveys is very low, but when we printed the surveys and distributed them by hand at the meeting, the return rate was 100%.

Finally, a lesson we learned was that it is extremely difficult to get people to meetings, especially during the growing season. In the future, the outreach series could take place at an already occurring meeting, like Farm Bureau meetings or pesticide informational meetings. Adding the program to an existing meeting would likely increase participation.

Overall, the project was extremely successful, and one lesson we learned was that there was, and continues to be, a lot of momentum, excitement, and opportunity surrounding specialty crop production in our state.

Contact Person

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Additional Information

Flyer used to attract participants to the outreach program held in Kingstree:

SOUTH CAROLINA WILDLIFE FEDERATION

Rural Resource Coalition SC

GrowFood CAROLINA

Calling All Farmers & Farm Community Members!

Join the Rural Resource Coalition SC, GrowFood Carolina, and Millgrove Farms for an evening of information sharing and network building. The meeting will focus on rural support resources, sustainable farming methods and goals, and new market opportunities.

Rural Resources and New Opportunities

April 18th, 2013 from 6:00 p.m.-7:30 p.m.

Brown's BBQ
809 N Williamsburg County Hwy, Kingstree, SC 29556

Please RSVP no later than April 1st to Lisa Turansky at lisait@scccl.org or (843) 725-2059.

Dinner will be served.

Project Eight: Locking Up the Market – Creating a Processing and Distribution Facility in a SC Prison

Project Summary

ByTech Technologies, LLC, doing business as Trusted Farms ("Trusted Farms"), conducted a research study on the feasibility of creating a fruit and vegetable processing and distribution facility in an existing South Carolina prison. South Carolina currently has a limited number of processing and distribution facilities in the state. The lack of processing and distribution substantially limits the available markets for South Carolina farmers' crops, limits the prices farmers can obtain for their crops, and limits South Carolinians ability to enjoy locally produced food year-round.

The South Carolina Department of Corrections' (SCDC) Prison Industries Program (PI) offers a unique opportunity. Prison Industries operates facilities that utilize inmate labor to manufacture products, which are sold in the marketplace. By working in partnership with the Shi Center for Sustainability at Furman University and former SCDC Director Jon Ozmint, we conducted research and produced an action plan for creating a processing and distribution facility in a South Carolina prison.

Project Approach

The idea for this project arose after extensive conversations with specialty crop farmers all over the state. Many of these farmers explained that they had reached a limit with their direct markets (farm stands, restaurants, and community supported agriculture programs) and that they could survive but not grow without access to broader markets (grocery stores, wholesalers).

The purpose of the project was to conduct a research study on the feasibility of creating a specialty crop processing and/or distribution center in and existing South Carolina prison facility, which would be staffed by inmates (Proposed Facility). The goal of the project was to create a guide that would allow an organization – nonprofit, for-profit, or hybrid organization to begin a dialogue with the SCDC to define the Proposed Facility relative to the real needs that exist in South Carolina's agriculture and specialty crop industry. The long-term goals of the Project were to address the lack of in-state processing and distribution in South Carolina and to eventually increase the available markets for the state's specialty crop farmers.

The feasibility study **"Locking Up the Market—Creating a Processing and Distribution Facility in a South Carolina Prison"** is attached to this document as Appendix A.

This study began with the simple idea that we could create some type of processing and/or distribution facility leveraging prison labor and other SCDC resources. To understand how this process would work, you must understand Prison Industries. PI programs have been common in the United States since the 19th Century. Working helps occupy inmates' time, helps them learn useful habits and skills, and helps defray the cost of their detention. Most importantly, the skills inmates learn make it more likely they will be able to find employment upon release, which reduces the chances they will recidivate. For many years, PI programs operated solely to supply individual prisons or a prison system with products or services that would otherwise have to be purchased. Most states include work programs into their daily venues for the inmates. The Florida Department of Corrections and Washington State Department of Corrections both have similar models of food processing within their facilities, and should SCDC choose to expand their operations and include a value added plant designed to process fruits and/or vegetables.

The SC Department of Corrections has a long history in agriculture. Since the early days of the agency, SCDC has employed inmates on farms and in other agricultural operations to help offset their expenses.

The prison farm at Wateree River Correctional Institution near Rembert, SC, sits on 7000 acres. SCDC farms are also located at SCDC's Walden Correctional Institution in Columbia and MacDougall Correctional Institution in Ridgeville, SC. These three farms produce all of the eggs, milk and grits served to the state's inmates. Producing these items in-house saves the state's taxpayers $400,000 annually. To facilitate this type of production, SCDC has washing, cleaning and processing facilities in its statewide network. When we first approached SCDC with this Project, we were met with a great deal of interest.

SCDC has infrastructure across the state. We initially discovered several locations that could serve the needs of the Proposed Facility. With guidance from SCDC leadership, attention was focused on the Broad River Support Complex (Support Complex) in Columbia. The Support Complex is home to several different prisons and thousands of inmates of every security level. The Support Complex houses a facility that SCDC initially used as a processing plant (SCDC Facility) for crops grown on their farms. Given that SCDC had already built the facility and furnished it with equipment, we focused our efforts on determining whether it could be retrofitted into a processing plant for specialty crop farmers, or be put to another use.

The central location of the Broad River Support Complex in Columbia also offers the best solution from a logistical standpoint for the state's specialty crop producers. After discussions with local growers, four key points of perceived barriers became the main concerns shared about working with SCDC: logistical problems inhibit expansion of crop volume, the specialty crop growers in SC are geographically disbursed, the regulatory and sanitation standards required are too rigorous, and the liability insurance is not affordable.

The evaluation of the SCDC Facility was conducted by Mr. Jeff Dembiec of Asset Design, LLC, in Charlotte, NC. Mr. Dembiac is a food processing engineer and consultant with decades of experience designing and constructing food-related facilities. He is an expert in reviewing existing processing facilities, determining their most efficient use, and overseeing retrofits. With Mr. Ozmint's assistance, we scheduled a review of the SCDC Facility in November of 2013.

On November 7th, 2013, the team visited the Support Complex and learned that this facility is a standalone industrial building located in the middle of a group of warehouses where other PI programs operate and SCDC conducts other operational work. The facility is located just off Broad River Road outside of Columbia. The facility consists of an outdoor produce receiving and washing area, an indoor processing room, a refrigerated storage room and a small freezer room.

When our team arrived, much of the equipment was packed up because the SCDC facility is not currently operational and is being used mostly for storage. We first examined the outdoor produce receiving and cleaning area, which is covered by a metal roof. The stored equipment consists of two grading tables, two wash tanks with pumps, a number of carts, and a number of plastic totes for conveying produce from the receiving area to the interior of the building for processing.

We next proceeded into the indoor processing room, which is approximately 40 feet by 35 feet. The processing room includes three manually fed produce dicers and slicers that are operational. The processing room also contains an elevating conveyor that feeds a hot water blancher, which is four-foot in diameter by eight feet long. When the SCDC facility was operational, the blancher was used to scald fresh produce before it was packaged and frozen. The blancher is followed by a series of stainless steel tables with spray nozzles for cooling and manually conveying blanched produce. Following the spray

tables is a hand packaging station for bagging and sealing the produce. A number of carts were located nearby that were used to convey the filled bags to the freezer or refrigeration areas.

Down the hall from the processing room, there is a large refrigerated room and small freezer room. The freezer room is currently being used to store refrigerated meals for inmates. The small freezer room is located just next door. Both rooms are accessible to forklifts making it possible to transport products from room-to-room.

One of the first observations Mr. Dembiec made in his review of this facility was that the existing space is not large enough to be financially viable for commercial production. Typically, facilities similar to this would need around 2000 square feet of production space and another 1000 square feet of refrigerated space. Mr. Dembiec concluded that the prison facility is usable, but that any processing and/or distribution operation will need the use of additional surrounding buildings at the Support Complex. SCDC has other available spaces in adjoining buildings that could be used to provide ample production space. Mr. Dembiec proposed that as a facility is developed tractor-trailer refrigeration containers could be used at a low cost. In the long-term, if the Proposed Facility succeeded, additional refrigeration space would need to be built.

Mr. Dembiec proposed two options for the Proposed Facility: and individual quick freezing operation (IQF) or a raw packaging operation. Mr. Dembiec believes an IQF operation is possible because much of the quipment in the SCDC Facility is designed to produce a frozen packaged product. An IQF operation could be designed to include many of the vegetable products grown in the state, with the exception of leafy greens. However, a number of modifications would still need to be made. The SCDC Facility's existing equipment currently produces frozen products in blocks instead of loose in the bag as most consumers have come to expect. The inventory of useable equipment includes:

1. Liquid nitrogen freezing tunnels that would freeze produce as it passes through;
2. Cryogenic piping tank system to store and apply the liquid nitrogen to the product;
3. Vibratory conveyors to automatically feed the product into the liquid nitrogen tunnels;
4. Weighing equipment with an accurate scale system that can be calibrated to measure the weight of the frozen products;
5. Sealing equipment that will maintain the presentation of the product;
6. Metal detectors to ensure no foreign objects are in the product before shipping.

The total cost of this equipment and retrofitting would range between $300,000 and $400,000. Given the amount of frozen refrigeration space an IQF operation would require and that fewer of the SCDC Facility's resources could be used, the price of this plan would likely be too high to pursue. A list of suggested funding sources (public and private) to financially assist the expansion of this facility into an IQF operation is included in the attached Feasibility Report. But to name a few, the USDA Value-Added Producer Grant, the Department of Health and Human Services Community Economic Development Grant, and the Mary Reynolds Babcock Foundation, would all be appropriate financial resources for the SCDC.

The much more workable option is a raw packaging operation. This type of operation would require much less of an infrastructure investment, and most all of the existing equipment at the SCDC Facility can continue to be used. A raw packaging operation would also benefit more of the state's specialty crop farmers because the facility could purchase a wider variety of products. For example, squash and zucchini could be washed in tanks, inspected on tables, and packed for shipping. Other products, like

leafy greens, could be washed in tanks, cooled in the same tanks, and packed with ice for delivery. Under this plan, some additional equipment would need to be purchased:

1. Additional washers and tables;
2. Water treatment system for wash tanks;
3. High volume ice machine to keep products cool;
4. Refrigeration space to keep products cool before and after packing.

The total cost of this equipment and the retrofitting would range between $250,000 and $300,000. However, there are a number of ways these expenses could be offset. During the course of this study, we learned that SCDC had actually constructed the washers and tables, which means those items could be produced by SCDC at a below market rate.

Under either of these scenarios, a number of different areas need to be more thoroughly explored. The first is staffing requirements. Typically, a raw packaging or IQF operation would invest in automation to attempt to employ as few employees as possible and reduce costs. In this case, the Proposed Facility needs to be designed to take advantage of inexpensive inmate labor. Under normal circumstances, Mr. Dembiec would attempt to structure a low volume operation to require no more than 40-50 people. Mr. Dembiec suggested that we reduce upfront costs and invest in more labor-intense processed given the low cost of inmate labor. Depending on the type of model selected and further research, Mr. Dembiec suggested that we plan on using between 30-40 inmates in the beginning.

Another consideration is logistics. With any food-related businesses, transportation and time are very important factors, due to the perishability of the fresh products. A thorough logistics plan will need to be created that should include transportation availability, transportation speed, and the coordination of these factors.

A plan for complying with food regulations must also be developed. Currently, the Food and Drug Administration (FDA) regulates most food handling through a code that is enforced by local or county health departments. Facilities that freeze or cook food are subject to stricter regulations than those that merely package raw products. Rules for raw packaging operations are focused on the supplier farms. In general, these operations are not required by law to have certifications. However, many customers in the food industry are increasingly requiring that facilities have one or more certifications frequently have a competitive advantage over other facilities. To compete, the Proposed Facility will need to have both Good Handling Practices (GHP), and Hazard Analysis Critical Control Points (HACCP) plan compliance.

Goals and Outcomes Achieved

The initial goal of this project was the determination of/and or feasibility of converting an existing facility owned by the SC Department of Corrections into a processing plant to be used by prison labor in a value-added environment. The goals and outcomes of this project were met through conducting site visits, one on one interviews with specialty crop industry stakeholders and state officials, and finding appropriate research related to the subject. The project manager oversaw all activities related to this project in biweekly meetings, and approved all related activities and meetings established for the project prior to their occurrence. The general results are outlined below:

- The Proposed Facility could operate under a number of different revenue models and legal structures. These include:
    - Packing Operation – Packing operations earn revenue by cooling and packing produce for farms. The Facility could charge for this service based on a flat fee, which would

cover all direct costs of packaging and cooling crops as well as a markup to provide a profit.

- Marketing Operation – Buying and selling specialty crops on consignment or direct purchase. The Facility could engage in the purchase, storage and reselling of the specialty crops.
- Distribution Operation – Distribution operations function like delivery services. Fees for these services may be paid by the farmer, a packing house, processor, or even the ultimate customer.

Any of these models would increase the competitiveness of specialty crops in South Carolina.

Beneficiaries

One of the primary economic opportunities for South Carolina's specialty crop farmers is in the skyrocketing local foods market. Recent studies have shown that one in six Americans will go out of their way to buy local products, and in South Carolina, consumers are willing to pay an average of 27 percent more for produce grown in the state. After holding meetings with farmers, government officials, advocacy groups, and others around the state, we received resounding support for the creation of an in-state processing and distribution facility, especially if the products are branded as South Carolina grown. Increased access to processing will enable farmers to realize greater profits on their crops, sell their products in more marketable forms, and sell products even when they are out of season.

The impetus for this study was the increasing interest in local food throughout South Carolina and the US. People are becoming increasingly interested in buying local. The local food market topped $7 billion in 2012 with no signs of slowing. Demand is becoming so great that it is estimated that farmers will have to double production to meet demand by 2050. The local food market represents an extraordinary opportunity for South Carolina's specialty crop farmers. Each year, these farmers watch South Carolinians spend as much as $940 million on out of state fruits and vegetables but only $160 million on the same crops grown in-state. South Carolina's specialty crop farmers have continually been thwarted in their efforts to bridge the gap of getting more local products to local people by a lack of resources. As more and more food comes in from out of state and foreign imports increase, bridging the gap is crucial for the survival of the state's specialty crop farmers.

The processing facility would have the ability to positively impact the 500 specialty crop producers in the state.

Lessons Learned

Unexpected delays were encountered early on in this Project, including the retirement of former SCDC Director Bill Byars. As a result, the review of the SCDC processing plant did not happen until November, 2013. Upon a thorough review of this building, its contents, the accessibility and other associated issues as explained in this report, we found that the processing plant (which was formally used by the prison industries to blanch produce) contained a wide range of equipment in good working order, and easy transport access. After reviewing the processing plant, the food processing engineer determined the most cost effective and efficient use of the plant is as a raw produce packing facility. Ultimately, however, a determination was made that the space in the processing plant is too small for the Proposed Facility to be financially sustainable in the long term.

While the results concerning the Facility we focused on were not ideal, and enormous opportunity was indeed uncovered. This Project allowed us to examine SCDC's operations and get a clear understanding of the workings of the PI Program. The SCDC's leadership is motivated to attract new businesses into

the PI Program so that they can offset the agency's expenses and keep inmates occupied. SCDC has 27 facilities centrally located in counties all over the state and a low cost inmate workforce of 23,000. We also learned that SCDC's inmates manufactured most of the equipment in the plant at a low cost. When we added up all of these factors, we discovered an opportunity to leverage SCDC's resources to create a raw packing facility at a reduced cost that could serve as a food hub.

The Broad River Support Complex is ideally situated at the intersection of several major highways and could easily house a raw packing food hub. Many of the resources are currently in place. SCDC has existing buildings that are available for use. Equipment from the processing plant can be moved to a new building, and inmates can build some of the other equipment needed at a low cost. More importantly, the Proposed Facility could limit costly investments in automation while also limiting its overall labor costs by utilizing primarily inmate labor. Leveraging the existing infrastructure and resources SCDC is eager to put to work, our food processing engineer estimates that a raw packing food hub could likely be equipped for an investment ranging from $200,000-$300,000. Our recommendation at the conclusion of this study includes the formation of a group to more fully explore the creation of the Proposed Facility in light of our findings. If this model could be successfully tested, it could be a powerful force in making SCDA's goal of creating food hubs, and increasing the sales of specialty crops, across the state a reality much sooner.

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Project Nine: SC Farm to School Agriculture Assistance Project/Marketing Intern

Project Summary

The South Carolina Department of Agriculture encourages and supports marketing of SC specialty crops through a variety of programs. This includes access to the 'Certified SC Grown' logo for identifying products to customers and opening sales outlets through channels that include community farmers markets, roadside stands, CSA operations, SC Farm to School program, restaurants, grocery stores and others.

The purpose of this project was to enable the SCDA Marketing Division to hire an intern for assistance in helping the specialty crop growers in South Carolina increase their sales volumes through marketing efforts, and the SC Farm to School program.

Specifically, this project aimed to support targeted marketing programs for specialty crop producers by: 1) increasing membership of both 'Certified SC Grown' farmers and restaurants who participate in the 'Fresh on the Menu' program, sourcing 'Certified SC Grown' produce as menu items; 2) offering technical support and resources for Certified Roadside Markets and Community Farmers Markets selling 'Certified SC Grown' produce; 3) providing information and technical support for specialty crop producers who want to become GAP certified and who want to participate in the SC Farm to School program; and 4) evaluating and collecting data about strengths and weakness in current marketing programs, as well as providing suggestions for improvements.

Project Approach

Fruit and vegetable production is vital to South Carolina's economy. Challenges remain, however, to ensure the benefits of local agriculture production across the state. To identify and promote farms that grow specialty crops, as well as increasing markets for those crops through stores and schools is a primary objective of the SCDA. This intern was dedicated to increasing the awareness, membership and benefits from participation in SCDA programs to the specialty crop producers in SC.

This project occurred at the same time as the expansion of the South Carolina Farm to School Program. The South Carolina Farm to School Program is a collaborative effort between the South Carolina Department of Agriculture, South Carolina Department of Education, South Carolina Department of Health & Environmental Control and Clemson University. The South Carolina Farm to School program is a systems-level approach to change the school food environment by incorporating locally grown produce in the school cafeteria and increasing agriculture production by creating new markets for SC produce. In order to meet these new markets we need to insure and identify adequate SC specialty crop products through the 'Certified SC Grown' branding program. Project managers worked closely with the intern to insure that all activities were dedicated to solely increasing the competitiveness of specialty crops within the state.

To help increase the number of specialty crop producers that have the required Good Agricultural Practices certification, the intern hired from this funding worked in conjunction with the SC Farm to School staff and the purchasing directors, dieticians, and menu coordinators within each of the school districts. In many cases, there was a lack of knowledge of what produce was grown in South Carolina, and the intern would provide information about local specialty crop producers who were GAP certified and able to sell directly to the schools, and as a result, helping to "connect the dots" between the farm and the school lunch room. The information sharing channels did not only have a blockage in this one area; seeking more fruit and vegetable producers to incorporate into their meal plans, and were not able to locate them through the typical foodservice channels. This occurred five times, in five counties

(Greenville, Spartanburg, Lexington, Richland and Beaufort) over the course of the grant period. In these instances, the intern would obtain the information about the GAP certified growers in each area, and give the information to the person(s) in the school districts making the requests.

The GAP and Food Safety Manual is submitted with this report as Appendix B. This was given as an example to fruit and vegetable producers interested in becoming GAP certified. Additionally, this link was shared to assist in disseminating the forms http://agriculture.sc.gov/divisions/agency-services/grading-inspection/.

Note: The Certified South Carolina and SC Farm to School programs are broken down into categories of 70% specialty crop producers and 30% protein or other. Therefore, the salary for the intern was 70% monies generated by this grant agreement, and 30% from appropriated funds already in the SCDA marketing budget.

The number of members in the Certified South Carolina program has increased each year since its inception in 2007. Within the marketing umbrella of Certified South Carolina, there are four specific subcategories that serve as vehicles to increase awareness and consumption of SC foods; 'Certified SC Grown', 'Certified SC Product', 'Certified SC Seafood' and 'Fresh on the Menu'.

For the purposes of this project, the intern was limited to participating in the 'Certified SC Grown' and the 'Fresh on the Menu' campaign. These two components are the only two facets which interface with specialty crop production in SC. The primary barriers acknowledged to keeping a grower out of the Certified SC Grown was discovering that the farmer is not in compliance with regulatory components, or that the produce being sold by them was not really grown by them, or even in South Carolina! The primary challenges in both of the SC Farm to School program and the Fresh on the Menu program was the general knowledge of the managers/chefs as to what produce is available and when it is available through local distribution outlets.

During the latter months of 2012, and early spring of 2013, the SCDA senior management decided to "re-launch" the Fresh on the Menu program in an effort to revitalize the membership and improve its recognition among the public. The Fresh on the Menu program is the food service/wholesale component of the Certified SC Grown program. The objectives of the program include the increase in sales and consumption of locally produced foods in restaurants across the state. Restaurants vow to source at least 25% of their foods from SC producers, and in return, receive free advertising through the SCDA website, and free promotional materials for the establishment. To promote the Fresh on the Menu program, there are media placed in magazines with heavy circulation in the southeast, and/or publications of local interest. A key component in making the re-launch successful was the creation of a smartphone app for the program. The free app was made available for both android and apple networks, and was designed so that the users may find restaurants in close proximity that are members of the Fresh on the Menu program. The app also included recipes from each chef of each restaurant, to highlight the product or produce used in the kitchen.

The marketing intern was a vital part of the re-launch of this program. From a legal standpoint, each restaurant participating in the app had to sign a waiver. The intern was responsible for collecting the waivers upon signing up all the restaurants for the app.

The Certified Roadside Market program also experienced growth in the number of its members in 2013 and 2014. Responsibilities for this program included receiving/reviewing the market applications,

visiting each applicants' market, confirming that all parameters of the program are being met, photographing the market and listing all approved markets on the website. In total, the intern visited more than forty roadside markets.

Goals and Outcomes Achieved

The following chart shows the indexes of growth gained through the employment of an intern:

Program Name	# Members In 2012	# Members in 2014	Increase	% Increase	Target or Objective
Fresh on the Menu	240	363	123	66%	24
Certified SC Grown	1200	1673	473	71.7%	100
Certified Roadside Markets	98	148	50	66.2%	40
SC Farm to School Participating Schools	52	89	37		
SC Farm to School Participating Growers	46	58	12		
Specialty Crop Producers with GAP Certification	42	41	-1	0	

Additionally, eighteen workshop/training day seminars featured Ansley Turnblad on the agenda to promote the benefits of membership in the Certified SC programs. Together with the assistance from the intern, the Program Manager also upgraded the application for the Certified SC programs.

The Certified Roadside Market program had nine new businesses join. Thirty two established markets were visited by the intern in addition to the new nine (total of forty one markets) to insure compliance of the markets with the standards established by SCDA.

In March 2014, the SC Farm to School Coordinator was hired.

Beneficiaries

The primary beneficiaries of this project are the South Carolina fruit and vegetable farmers who are members of the Certified SC Grown program, and are enlisted in the SC Farm to School program. This number comes to just more than 1170.

Through the marketing partnerships established with the SCDA, these growers may implement a more targeted approach for direct sales by using the program logos, as well as learn of new market opportunities, such as roadside markets, school deliveries, and wholesalers.

Lessons Learned

The goals and objectives for this project were met and exceeded in each program category. With these perpetually growing programs, it has become difficult for the SCDA full time employee that oversees all of the Certified South Carolina programs to secure new information from applicants, update information on websites, and be available to respond to questions and concerns about the program. These daily responsibilities for managing the marketing programs are too overwhelming for one full time person to execute efficiently. Therefore, these amazing results from this project, and the target benchmarks exceeded by the assistance of the intern have enabled the SCDA to petition the South Carolina General

Assembly to approve the line item budget of an increased staff for the Certified South Carolina programs.

The negatives learned about the internship program were more about the marketing program managed by the SCDA, than the specific goals and objectives for this particular project. The primary barriers to keeping a grower out of the Certified SC Grown was discovering that the farmer is not in compliance with regulatory components, or that the produce being sold by them was not really grown by them, or even in South Carolina! The primary challenges in both of the SC Farm to School program and the Fresh on the Menu program was the general knowledge of the managers/chefs as to what produce is available and when it is available through local distribution outlets.

Contact Information

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Project Ten: Mini-Grant Program to Assist Community Based Markets

Project Summary

This project built upon and continued the ability of the SC Association of Farmers Markets (SCAFM) to assist the community based farmers markets with promotional activities relating to specialty crops during the calendar year 2013. The mini-grant program provides much needed resources to the community markets in SC, and thus enables them to increase the sales of fruits and vegetables. The goal of the project was to sell more fruits and vegetables by providing monetary initiatives enabling the markets to put together a promotional program to boost the seasonal sales of 2013. The project allowed the SC Association of Farmers Markets to build on the achievements that were accomplished with funds from the previous Specialty Crop Block Grant Program Agreement #12-25-B-1253, which funded a similar project. The expectations established for this project in 2011 were surpassed, and it was determined to continue the momentum of this success with this project in the following years.

The project was time sensitive and important to conduct for two reasons. First, it continued the successful outcomes of a similar project conducted in 2012, and the project manager and market managers wanted to continue the momentum created during that season. Secondly, the project manager was strongly dedicated to reaching the goals of selling more fruits and vegetables because these community markets are located in rural areas of the state, and most of them are in food deserts. The need to decrease food insecurity and increase the consumption of fresh fruits and vegetables also made this project important to implement at this time.

Project Approach

The majority of community based farmers markets in South Carolina are operated by volunteers, and do not have the resources or access to the resources to conduct promotional campaigns. This project enabled the SCAFM to continue the small grant program, which provides each community market with a mini-grant of up to $1000, with the goal of providing additional funding to markets in order to assist them in gearing promotions and promotional materials towards increasing the sales of locally grown specialty crops.

The project manager developed an application for the community market mini-grant program. This application was made available in February 2013. The application stated the definition of specialty crop, and listed examples of specialty crops grown in South Carolina. The application also clearly stated that the funds provided by the mini-grant program are to be used exclusively for the increase in sales of specialty crops. The project manager described the importance and sensitivity of the language to be used in the promotional materials (i.e., “Come to the Paxville Farmers Market on Saturday to buy fresh SC Grown fruits and vegetables”), and stated that prior to each promotional piece being printed, a draft must be submitted to and approved by the project manager to ensure compliance with the intent of the specialty crop funding. Most market managers used the mini-grant funds towards the purchase of ads in local papers or the printing of signs or flyers for distribution in the areas close to the community markets. When appropriate, the signs or flyers were bilingual.

An example of an approved flyer that was distributed at local churches and nursing homes in the Darlington area:

Darlington Community Farmers Market Grand Opening and Harvest Gathering

Saturday
November 10, 2013
9:00AM- until

♦ Ribbon Cutting

♦ Local Farmers selling fresh fruits & Veggies

♦ Communities supporting local farmers

<u>Families are invited</u>

1737 Jefford Mill Rd
Darlington, SC 29540

Market managed by
Bishop Charley L Johnson
Houston Johnson
Call (843) 230-3062
(843) 393-3520
(843) 713-5543
(843) 616-4875

♦ Sweet Potatoes
♦ Squash
♦ Collards
♦ Mustard Greens
♦ Cabbage & More

Fresh Boiled Peanuts

FREE REFRESHMENTS!!!!!!!

The project manager required for each community market manager that was approved for their market to be funded a mini-grant to attend a workshop in late February 2013 to help them better understand the rules and regulations and the limitations of how the grant funds can be used solely to enhance the competitiveness of specialty crops.

At the end of 2013, only eight markets had received funding through this project opportunity. Also, at the end of 2013, the original manger, Fred Broughton, retired from the position as the Executive Director of the SCAFM. The new executive director, Weatherly Thomas, took over the position as the project manager in January 2014. At the SCAFM Annual Meeting in February 2014, Ms. Thomas announced the remaining funds available ($4000.00) in this program, and offered the applications for the mini-grant program to all those in attendance. The remaining balance was spent in 2014, as four additional community farmers markets participated in the promotional mini-grant program.

Goals and Outcomes Achieved

Twelve mini-grants were administered to community farmers markets through this program. The follow up surveys completed by the market managers indicated that 1) there was an increase in shoppers during the promotional timeframe (+36%), and 2) sales of specialty crops were reported to increase by 18% during the promotional timeframe. The targeted sales increase was 10% for the timeframe of the project. As part of the Memorandum of Understanding between SCDA and the market managers, a requirement necessary for the reimbursement of the grant funds was for the market manager to poll each vendor before and after the promotional materials were distributed or run in the local papers, so that the manager could determine if the promotional efforts were successful.

Beneficiaries

The farmers and vendors at the program participating community markets are the immediate beneficiaries of this project. With and averaged increase in sales of 18%, and a translational increase in hundreds of dollars in revenue, the vendors at each of the program markets was more than satisfied. Although a specific data collection method was not used to determine the impact on those who purchased more fruits and vegetables, it can be said that these customers were the true beneficiaries of the project.

Lessons Learned

Communications with the community market managers was difficult at times, especially if the market manger changed during the season. The program manager(s) identified that promotional monies/funding was good to provide, but that overall, a conclusion was made that successful markets models were driven by motivated (and paid) staff members, and that bigger farmers market promotional programs, such as the Farmers Market Promotional Program (FMPP) and other grant opportunities from sources outside of the Specialty Crop Block Grant Funding is more appropriate for use and distribution to the community farmers markets.

Contact Information

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Additional Information:

On the next page of this report is a copy of the Memorandum of Understanding between SCDA and the community farmers market. This document is a PDF, and is embedded into the report.

Carolina Hotwells

AGREEMENT

BETWEEN

THE SOUTH CAROLINA STATE DEPARTMENT OF AGRICULTURE

AND

THE FARMERS MARKET GRANT RECIPIENT.

DATED AS OF

MARCH 18th, 2013

57-7745-97

Project Eleven: SC Food Safety Training and GAP Certification Program

Project Summary

The project brought together a team of food safety experts from Clemson Extension Service, Clemson University Department of Food Science, SCDA Grading & Inspections Division, and SCDA Consumer Protection Division. One common goal of each of these institutions is to provide guidance, education and outreach activities to specialty crop producers in South Carolina to increase understanding of food safety standards and to implement these practices on the farms and farm facilities.

Heightened consumer awareness and increased Federal Regulations regarding food safety in the production and handling of fresh produce are the driving force for this project. As has been shown with the publicity surrounding recent food borne outbreaks, large and small producers alike are affected by increasing market expectations for product safety.

Large-chain wholesalers, retail chains, school systems and foodservice purveyors are now requiring producers/suppliers to have GAP certification prior to being established as a supplier. Producers, without food safety plans in place and who cannot demonstrate the use of recognized Good Agricultural Practices, are experiencing reduced market opportunities and negative impacts to the economic viability of their farm operations.

The project enabled SCDA to hire a full time Good Agricultural Practices (GAP) Coordinator to assist specialty crop producers (particularly smaller growers with limited financial resources) in on-site training and technical assistance in the form of a food safety manual development for their operation. This process also enabled the GAP Coordinator to assist farmers increase sales through the establishment of business relationships with local schools, food service personnel and food distributors.

Project Approach

This project addressed the increased need for clear and concise communications to the specialty crop producers in South Carolina by establishing 1) a SC Food Safety Team and 2) a point person within SCDA to assist the specialty crop producers with the process of obtaining GAP certification.

The Food Safety Team was brought together to develop/organize training materials for SC fruit and vegetable growers, and conduct educational workshops and outreach efforts to minority and small disadvantaged farmers about food safety practices. The team determined that a focus on training in two areas was critical to the states farmers: 1) comprehensive basic training in on-farm food safety practices and GAPs certification /audit procedures, and 2) how to develop a GAPs Quality Manual (i.e. the farm food safety plan). The Quality Manual training is a critical step because growers have indicated that development of the Quality Manual (farm food safety plan) is their greatest challenge leading towards GAPs certification.

The SC Food Safety Team was comprised of members from the Clemson University Food Safety Department (2 tenured professors), SC Department of Health and Environmental Control (2 members), SCDA Marketing Division (1 member), SCDA Laboratory Services (2 members) and SCDA Grading & Inspection Division (1 member). The team met quarterly to assess the process of how to meet the needs of the smaller specialty crop growers in SC. Team members rotated as speakers/presenters at the four food safety workshops hosted by the SCDA throughout the year.

The SC Food Safety Team has now evolved into the South Carolina Food Safety Council. This Council weaves together more persons from different agencies including SCDA, SC Department of Health and Environmental Control, the FDA, the CDC, and others. The Council carries forward the same intent as the SC Food Safety Team. The Council is chaired by Angie Culler-Matthews, SCDA Feed and Food Safety Manager. A decision making tree was developed by Mrs. Matthews, and is distributed by SCDA Food Safety inspectors (Consumer Safety Division) and the Fruit and Vegetable inspectors and the GAP Coordinator (SCDA Grading and Inspection Division).

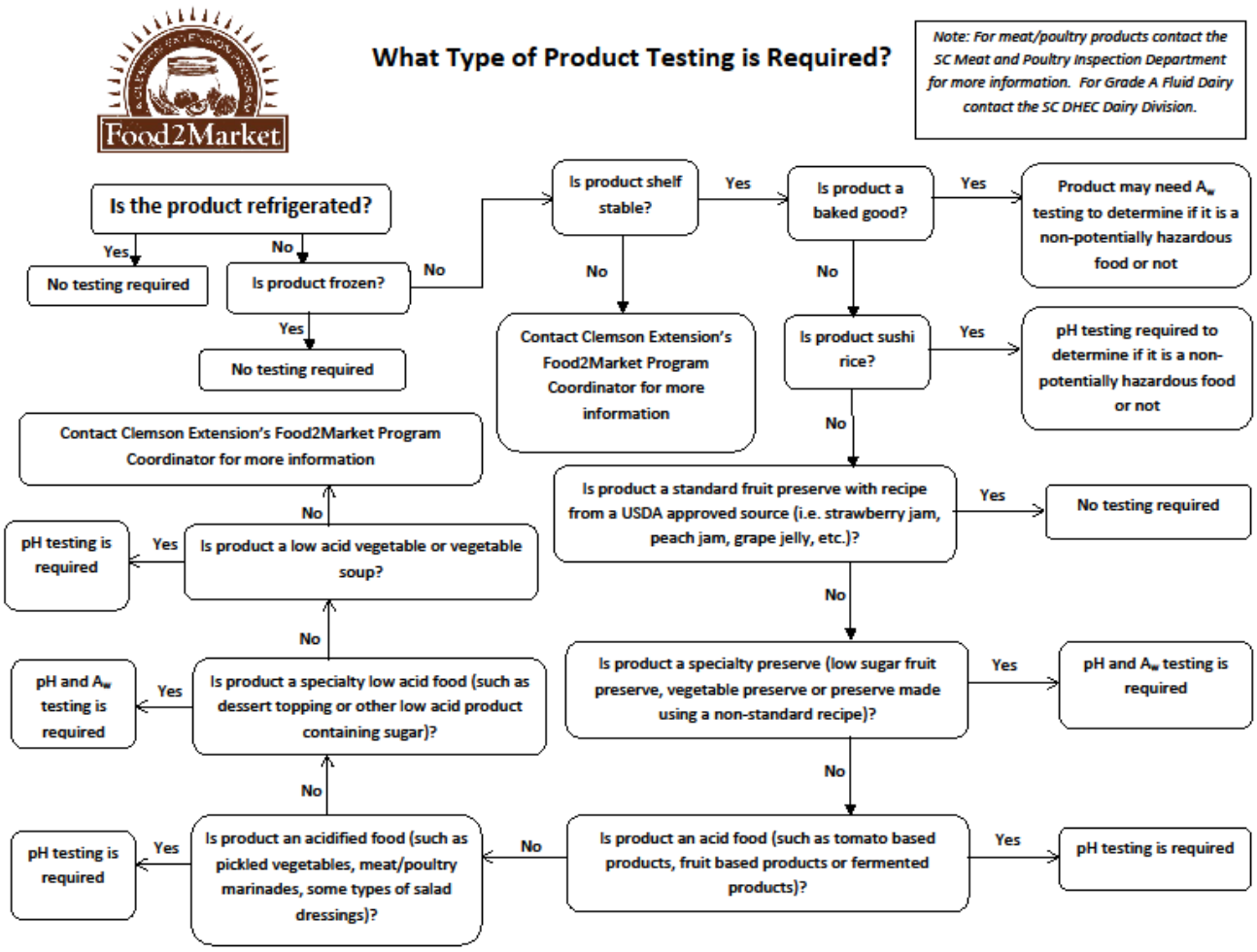
Four day long workshop trainings were held in 2013, during the months of April, June, September and December. A total of fifty five attendees were at the meetings. Each attendee was given a pre and post meeting food safety information surveys. There was a positive change of 5 % increase from the pre-to post survey of farmers who indicated that they would adopt the information that was provided to them. The food safety educational sessions covered topics including field sanitation, water quality for irrigation and post harvest washing and handling. The farmers were also given an overview of the Safe Quality Food (SQF) program. In the session about field sanitation the presenter covered diseases and insects that generally affect Specialty Crops in the Southeast Region of the United States and how a farmer can control them.

As a result of these workshops, fourteen farmers were assisted in developing the Quality Manual for their Good Agricultural Practices (GAP) audit and they received their GAP certification which allowed them to meet the Food Safety requirements for most commercial buyers.

The second goal of this project was to hire a full time Good Agricultural Practices (GAP) Coordinator to work on a daily basis in the SCDA Grading & Inspections Division. The Department was able to transition a temporary employee involved in the SC Farm to School program into this position. As a result of the success of this employee, and the great number of smaller specialty crop producers now GAP certified, the SCDA was able to permanently hire this position as one that is fully funded by appropriated dollars.

Additionally, the “Promotions that Sell” contest, which was funded by this grant, provided an opportunity to recognize those farmers who incorporated best marketing practices and food safety information into displays of their specialty crops at the community based farmers markets in SC. The competition in displaying their fruits and vegetables provided the farmers with a reason to take pride in marketing their crops, and thus increase the sales of their specialty crops. During the year, the SCDA marketing specialists and the ‘Eat Smart, Move More SC’ representatives work collaboratively to participate in the many grower, market managers and outreach efforts sponsored by the SCDA. The presentations at these meetings included discussions of what makes good and bad displays at farmers markets and retail outlets. These examples illustrated both marketing, and food safety concerns, such as proper and improper storage and handling procedures for specialty crops. At each meeting, the “Promotions that Sell” contest was promoted, and applications were handed out. The application was also made available on the SC Association of Farmers Markets website. By October, twelve applications had been received for the contest. One was discarded, as it was not a specialty crop vendor. Out of these remaining eleven, nine were awarded were outstanding displays, and the increase in sales of specialty crops during the summer of 2013.

Also, the following decision making tree was developed and is available on the web:


Food2Market
What Type of Product Testing is Required?
Note: For meat/poultry products contact the SC Meat and Poultry Inspection Department for more information. For Grade A Fluid Dairy contact the SC DHEC Dairy Division.
Is the product refrigerated?
Yes
No testing required
No
Is product frozen?
Yes
No testing required
No
Is product shelf stable?
Yes
Is product a baked good?
Yes
Product may need A_w testing to determine if it is a non-potentially hazardous food or not
No
Is product sushi rice?
Yes
pH testing required to determine if it is a non-potentially hazardous food or not
No
Contact Clemson Extension's Food2Market Program Coordinator for more information
No
Is product a standard fruit preserve with recipe from a USDA approved source (i.e. strawberry jam, peach jam, grape jelly, etc.)?
Yes
No testing required
No
Is product a specialty preserve (low sugar fruit preserve, vegetable preserve or preserve made using a non-standard recipe)?
Yes
pH and A_w testing is required
No
Is product an acid food (such as tomato based products, fruit based products or fermented products)?
Yes
pH testing is required
No
Is product an acidified food (such as pickled vegetables, meat/poultry marinades, some types of salad dressings)?
Yes
pH testing is required
No
Is product a specialty low acid food (such as dessert topping or other low acid product containing sugar)?
Yes
pH and A_w testing is required
No
Is product a low acid vegetable or vegetable soup?
Yes
pH testing is required
No
Contact Clemson Extension's Food2Market Program Coordinator for more information

Goals and Outcomes Achieved

In 2013, 43 specialty crop farms received GAP certification. This was an increase from 25 farms in 2012. The target number of 45 farms was not obtained due to time and personnel constraints. However, the producers that did not receive certification were later certified in 2014.

Beneficiaries

The forty three (43) specialty crop producers that obtained GAP certification for their farms. By receiving this certification, these growers became eligible to widen their sales into more markets, primarily the local school districts.

Also, the nine "Promotions that Sell" awardees benefitted from the project. The presentations at the Annual Market Managers meeting should have encouraged and challenged other specialty crop vendors at the community farmers markets by giving them new merchandising and display ideas. This type of knowledge transfer can be a critical component to success for the vendors.

Lessons Learned

The total cost for GAP audits pose problems, especially for the smaller growers. This is one reason the target number of 45 farms was not reached. Despite having a reimbursement program through SCDA, the specialty crop growers state that they see no real need to be certified. Until the Food Safety Modernization Act is put into place and growers have to obtain certification, many are just not going to voluntarily participate and engage in allowing inspectors on their farms.

Another reason for the lower number this year is that many specialty crop producers have learned from those who sought GAP certification in the past that the overwhelming amount of documenting paperwork required for the audits is time consuming. The record keeping requirements for certification is another preventative barrier for many.

The development of the quality manuals required more time and hands on training that originally projected by the project manager. The original goal of having 75 GAP certified farms might have possibly been reached if each of the farms previously certified had reapplied for and kept their certification active. This did not happen for a number of reasons, primarily cost of the audit and the burden of the documenting paperwork.

In future efforts, SCDA hopes to increase the number of participants in the GAP Certification Training days. These workshops are free to specialty crop growers, and through this type of interchange, the positive attributes of being GAP certified can be explained and explored, with the hopeful result of the efforts being more obtaining certification.

Farmers and other food handlers must understand to make adjustments over the long term is to continuously adopt additional food safety guidelines as one of their risk management tool.

To continue providing Food Safety and Marketing Education Workshops for farmers will help prepare them to make more informed decisions about managing their farming operation in manner that will help to increase their family's income.

I am of the opinion that the educational workshops and on farm field days that are held will likely increase all farmers interest in research activities concerning the development of new varieties of crops and the new techniques that may improve production and handling of specialty crops.

Contact Information

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Additional Information:

The GAP brochure/handout created for distribution among the specialty crop growers:

Food Safety Audit Verification Program for Fresh Produce

The South Carolina Department of Agriculture "Food Safety Audit Verification Program" certifies that fruit and vegetable grower/packers meet new food safety guidelines. This program is an audit based verification service that reviews participants' adherence to the U.S. Food and Drug Administration's "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables", Good Agricultural Practices (GAP) and Good Handling Practices (GHP).

Participation by grower/packers is voluntary. The program is offered through the SCDA Fruit and Vegetable Grading and Inspection Service in cooperation with the USDA-Federal-State Inspection Service.

The Fresh Produce Audit Verification Program is being initiated as a result of retailers and other buyers asking South Carolina grower/packers to demonstrate adherence with "food safety" practices. Grower/packers who participate and pass the audit receive certification that they meet GAP standards.

The audit program is a fee-based service. Participants are charged a fee based on the time required to conduct the audit and travel expenses of the auditor.

Grower/packers who successfully pass the Good Agricultural Practices audit receive a USDA/SCDA certificate and are listed on USDA and SCDA websites.

For more information or to request a food safety audit, contact Jack Dantzler, Director of Grading and Inspections, Lead GAP Auditor, at jack.dantzler@ams.usda.gov.

Commonly Asked Questions about the Program

1. **Where can I obtain a copy of the "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables"?**

   Copies are available by contacting the SC Fruit and Vegetable Grading and Inspection Service at 803-737-4597.

2. **How will my customers know that my company has met the requirements of the program?**

   With the participant's permission, passing audit results are posted on the USDA and SCDA websites and are accessible by you and your customers. In addition, organizations with passing results are acknowledged with an official USDA certificate verifying that the company passed the applicable elements of the audit.

3. **Who performs the audits?**

   Audits are performed by trained Federal-State Inspection Service staff. Auditors are licensed fresh fruit and vegetable inspectors, Audit Verification Program. The USDA, Agricultural Marketing Service, has worked with the states to develop the program and with AMS' involvement and oversight to ensure program integrity, uniformity, and consistency nationwide.

4. **What is a "passing score" on a GAP/GHP audit?**

   A score of eighty percent (80%) per element is passing. However, a higher "passing" percentage may be applied based on the customer's specifications. In addition to the individual elements of the audit, the questions in the "General Questions" section must be passed by the participant. Audit results are valid for 1 year. Harmonized GAP/GHP audits are not scored using a percent based system.

5. **What will I be audited against?**

   Audits are based on questions derived from the FDA guidance document. They are not intended to require certain activities, only to determine if a participant is adhering to generally accepted practices. Questions are separated into the following categories:

   - General (including personnel hygiene and practices)
   - Farm Review
   - Field Harvesting and Field Packing Activities
   - Packing House Facility
   - Storage and Transportation
   - Trace-back

   The FDA guidance document identifies the following areas that participants should demonstrate control of in their operations to minimize microbial hazards in fresh fruits and vegetables:

   - Water
   - Manure and Municipal Bio-Solids
   - Worker Health and Hygiene
   - Sanitary Facilities
   - Packing Facility Sanitation
   - Transportation
   - Trace-back

6. **Is additional information available on the GAP audit checklist and scoresheet?**

   The audit checklist and scoresheet are available at http://www.ams.usda.gov/fv/fpbgapghp.htm.

7. **Is additional information available on GAP or food safety training?**

   The SCDA F & V Inspection and Grading Service has additional information and GAP training for producers. Matthew Wannamaker, SCDA F & V Food Safety Coordinator is available for GAP Preperation and Training.

   Contact Info: mwannamaker@scda.sc.gov
   803-737-4373 (ofc) 803-609-5388 (cell)

The Clemson University Cooperative Extension also has information available on "Good Agricultural Practices" and developing a food safety program.

An example of a manual developed for a GAP audit is attached as Appendix B.

Project Twelve: United Farmers USA assisting Disadvantaged Farmers

Project Summary

The goal of this project was to support the non-profit organization, United Farmers USA, is the education and training of small disadvantaged farmers, beginning farmers and youth about the benefits of specialty crop production. There is a critical need to maintain and strengthen current levels of agricultural knowledge and farm business management skills for this rural demographic. Educating and training this population to produce specialty crops could prove profitable for all involved through the creation of income for this population and rural communities, as well as an impact on improved health. United Farmers USA goal was to educate and train a minimum of 350 small, disadvantaged, or beginning farmers, as well as 100 youth in the next year who could then be able to produce specialty crops in their communities, and sell these fresh fruit and vegetables to their neighbors.

Over the course of this project, the staff and volunteers of United Farmers USA have striven to remember that the job at hand is not to solve the farmers' problems, but to help them discover ways that are effective and practical for them to solve their own problems. The project has enabled the minority vegetable farmers that participated to become involved in a larger network so that they can teach and listen to each other, thus making each other more likely to succeed in their new endeavors.

Project Approach

United Farmers USA (UFUSA) was awarded a specialty crop block grant to provide production information and techniques through outreach, education and training to assist socially disadvantaged farmers in producing specialty crops. UFUSA was to impact the lives of 350 persons in the 5th and 6th Soil and Water Conservation Districts in South Carolina. Farmers from the other districts (1,2,3,4 & 7) were not excluded from receiving the educational or hands on training and 60 would complete the training and receive a certificate.

The beginning of the project started when the volunteer outreach workers went out into the rural communities located in the SC Soil and Water Conservation Districts 5 and 6. The volunteers sought participants through churches, community centers, and the SC State 1890 and Clemson Extension Service Offices. The drive behind this project is the critical need to maintain and strengthen current levels of agricultural business management techniques for Small Disadvantaged Farmers and Beginning Farmers. Educating and training this population to produce Specialty Crops would be cost saving and profitable. Specialty Crops would create crucial income for this population and rural communities.

UFUSA reached 241 socially disadvantaged farmers, beginning farmers and youth, (SDFBFY) over the course the year and made them aware of the training programs on the growing practices of popular specialty crops, as well as the benefits of growing specialty crops. Out of the 241, 70 participants wanted to be further educated on growing specialty crops. 60 of the 70 participants completed the additional specialty crop education workshops, hand on training events, refresher courses offered at conferences, and attend a small group setting or one or one sessions that focused on the production of specialty crops. UFUSA hosted four educational classes, three in-field on hands-on classes, two refresher classes and a farmers market opening.

The participants came to two (2) workshops offered by United Farmers USA (UFUSA). Guest speakers came to the workshop to present materials. These folks came from SC State 1890 Extension, and Clemson Extension. The first day of workshop had classroom instruction on putting together farm business plan, best ways to grow specialty crops, trickle irrigation, hydroponics, and crops selection for

your site. Surveys were given to each person in attendance. 100% said that they learned value during the workshop.

The second day of instruction was more in the field hands-on. Farming veterans invited the program participants to their farms and gave in person training on proper planting techniques, seed spacing, equipment, and answered many questions from the audience. The survey information revealed that this was more important to participants than classroom learning. Especially being able to see different equipment and what/how it used.

Twenty six farmer participants attended either one or more of the following conferences: the SC Fruit and Vegetable Expo, the SE Regional Fruit and Vegetable Conference and/or the NC Farmers Minority Landowners Conference. Of the sixty participants that completed the specialty crop educational training, forty two were farm producers or seasoned farmers, eighteen were either new and beginning farmers or youth between the ages of 16 and 18. Each participant was shown how to collect and read soil samples; how to prepare the land for planting, seeding, watering; budgeting, marketing, etc. Three participating farmers were named 'Farmer of the Year' in the Minority Landowner 2013 Magazine.

Those who attended the various conferences said they gained more insight into being a successful specialty crop producer, developed a network of farmers to refer to, know where and who to go to for assistance and had the opportunity of visiting other farms. One young farmer's plans to build a hoop house to grow the same or different vegetable by rotating the crops each season. Other participants stated they received a better understanding of what specialty crops are and how conducive they are for marketing. Some of the participants realized the importance of attending the conferences, workshops and meetings.

UFUSA's staff produced and distributed 250 training manuals for the educational workshops. Mailed, email, and distributed by hand over 400 flyer/letters to persons and post sign of awareness of the specialty crop meeting workshops and farmers markets. Two members of personnel traveled to various locations in district 5 and 6 to locate, establish and set up the farmers markets for specialty crop producers to market their crops.

One of the powerpoint presentations used at the workshops is submitted with this report as Appendix C.

Two pages of the training manuals are inserted here:

United Farmers USA
"United Today! Tomorrow, We Grow."

EDUCATIONAL
TRAINING MANUAL

United Farmers USA
"United Today! Tomorrow, We Grow."

Specialty Crops

Specialty crops are defined as fruits and vegetables, tree nuts, dried fruits and horticulture and nursery crops including floriculture. "Specialty crops are plants that are intensively grown." These eligible plant must yield increased productivity to provide food, medicinal purposes, and/or aesthetic gratification to be considered specialty crops. Horticultural crops are differentiated from other crops by the level of management employed in their production and by their subsequent use.

These are profitable plants with a strong demand year after year. These specialty crops can grow into a sizable income and bring years of satisfaction to your customers. Specialty crops production represents approximately 50 percent of the total value of U.S. crop production. For 2005, the retail value of the U.S. specialty crop was estimated to have been around $60 billion.

Fruits	Nut	Medicinal Herbs	Other
Almond	Banana	Ginkgo Biloba	Cotton
Date	Cherry	Foxglove	Cantaloupe
Filbert (hazelnut)	Kiwi	Lavender	Field peas
Cashew	Gooseberry	St John's Wort	Watermelon
Macadamia	Raspberry	Pokeweed	Wheat

Specialty crops such as fruits and vegetables contain larger amounts of vitamins and minerals than grain crops. Tree nuts are sustainable crops that do not require seasonal replanting and, therefore, do not contribute to soil depletion and erosion. Specialty crops positively contribute to healthy diets and weight management. Specialty crops represent a major component of a healthy nutritional plan for life and provide medicinal herbs to effectively boost the immune system. With the help of government grants, funding and training farmers can continue to produce plants and expand their specialty crops. Given the right care, specialty crops can cultivate into a sizable income and bring years of sustainability for a farmer while endorsing customer satisfaction.

Goals and Outcomes Achieved

Out of the 215 participants who engaged in the specialty crop educational program, 25% stated they had access to land; 16% owned and 9% leased where they planned on planting specialty crops to sell at local farmers markets, and neighbors. Seventeen percent responded that they would attend future specialty crop workshops and thirteen percent indicated that they want to learn more about growing specialty crops. The increase in participants selling vegetables was 10%.

There were a total of 215 people who attended atleast one of the educational workshops. Seventy were interested in participating in specialty crop trainings and 60 completed the educational trainings on specialty crops. Surveys were given to each person in attendance before the workshops and after the workshops; 100% said that they learned valuable new information about growing specialty crops (especially berries and vegetables) during the workshops.

Another 5% of the participants were able to sell their vegetables during the summer at the farmers markets and at least 4% were able to sell their specialty crops during the fall harvest season. Over the next 3-5 years the impact of these participants should show a 25% - 30% increase in the production of specialty crops in the 5th and 6th soil and water conservation districts in South Carolina. As they continue to meet in small support groups to share with one another they will become a community that works together to create healthy consumers from the produce grown in their own community.

Beneficiaries

The activities listed above enabled United Farmers USA to reach the goal of reaching and educating small, disadvantaged or beginning farmers and youth in the SC Soil and Water Conservation Districts 5 and 6 on the advantages of growing fresh vegetables. More than seventy persons now have the beginning level skills required to successful begin growing and selling fresh vegetables in their community, and sixty of these persons are actively growing specialty crops to sell to the public at farmers markets.

The long term impact from the work of this program is hoped to be substantial. By educating persons in the rural areas of SC on farming skills helps them to become self-sufficient and self-reliant, and will hopefully be the start of folks returning to farming the land to become more healthy, and financially stable.

Lessons Learned

Future project plans should encompass financial success stories, so that new comers can understand the gains they may be able to make in a successful specialty crop growing operation.

Contact Information

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Project Thirteen: A Focus on Ornamental Horticulture

Project Summary

This project focused on providing promotional support for the members of the ornamental horticulture industry in South Carolina that are smaller growers or companies, but who are vital to the state. South Carolina Department of Agriculture supports these entrepreneurs by providing Plant and Flower Festivals twice a year at each of the three State Farmers Market facilities. By providing semiannual events at a low cost to the festival participants, these companies have two opportunities a year to help augment their business returns.

SCDA subsidizes the promotional and marketing efforts for these Plant and Flower Festivals through the Specialty Crop Block Grant Funding. Through targeted marketing efforts in radio, print media and outdoor board venues, this project provided support to this industry by highlighting local growers of landscaping plants, garden plants and herbs to the public consumers.

Project Approach

The Plant and Flower Shows sponsored by the SCDA traditionally provide a large number of SC ornamental producers with the opportunity to gain visibility and make direct product sales to consumers. Recent economic conditions make it vital to do more direct advertising to reach a larger audience of potential customers to attend these shows. Vendors have indicated that effective advertising in the past increased both foot traffic and direct sales and made the shows very successful. The Plant and Flower shows highlight the ornamental horticulture business in SC. Vendors are allowed to sell only these products so all advertising funds for this project will be used to solely enhance specialty crops.

This project served as a continuation of similar projects, which were previously successful, funded through the Specialty Crop Block Grant Program opportunity. Twelve festivals were hosted at the three SCDA Farmers Markets across the state. These markets are in the metropolitan areas of Columbia, Florence and Greenville. Festival dates and specific details pertaining to each were as follows:

South Carolina State Farmers Market (Columbia)

Midlands Spring Plant and Flower Festival	Fall Plant and Flower Show
April 18-21, 2013	September 27-29, 2013
94 vendors	60 vendors
*53,625 attendees	13,480 attendees

Pee Dee Farmers Market (Florence)

Spring Plant and Flower Festival	Fall Plant and Flower Festival
April 11-14, 2013	October 4-6, 2013
70 vendors	49 vendors
**35,248 attendees	***20,361 attendees

Piedmont Farmers Market (Greenville)

Spring Plant and Flower Festival	AutumnFest at the Market
May 1-3, 2013	September 20-21, 2013
34 vendors	18 vendors
8810 attendees	3530 attendees

*up approximately 11% from 2012 – 48,000 attendees

**up approximately 10% from 2012 – 30,258 attendees
***up approximately 20% from 2012 – 16,063 attendees

Intense advertising campaigns are conducted by the SCDA for each of the festivals. Artwork for the posters, outdoor boards and other signage is created by the marketing staff. The SCDA also drafts the copy used for the radio commercials, and print advertisements for local newspapers. Many, if not most of the local television stations also feature special stories about the Plant and Flower Festivals, as they are annual community events.

The SCDA website, www.agriculture.sc.gov, posts information, and staff also posts information on Facebook about each Festival, through its Fan Page for Certified SC Grown.

The following are examples of these ads:

**Outdoor Board placed on highways averaging more than 500,000 cars/day

**Print media appeared in three statewide magazines

**Newspaper ad in "The State" and also the "Free Times"

Goals and Outcomes Achieved

The primary outcome of this project was to increase the revenue of the growers exhibiting at each of the Plant and Flower Festivals. Through the use of advertisement activities and promotional efforts for each event, the intent of the SCDA was to attract more customers to the markets during these Festivals, and thus assist in the increase in sales. Overall, it is calculated that 135,054 persons attended the Festivals during 2013.

The traffic counts taken at each Festival indicated that the number of people 1) remained close to the same as the previous Festivals at the Greenville Market 2) both the Florence and the Columbia markets had more than 3000 additional customers at each event than in previous years.

The vendor survey from the spring shows revealed that an overwhelming majority of the vendors reported sales between $1001-$2000. However, ten (10) vendors had sales in excess of $6000. Overall, in relation to sales experienced in the spring of 2012, 60% of the vendors reported an increase in sales, 10% had a decrease, 20% had sales remain close to the same and the remaining 10% were new vendors with no prior sales history at these shows.

The surveys from the 2013 fall festivals indicated a lower number of customers than the 2012 events held in the same proximity of time. Both customers and exhibitors complained the fall festivals were held too early in the year. It is not uncommon for temperatures in early October to still be quite warm in South Carolina. As the Festivals were conducted during the first two weeks of October, the temperatures were still higher than normal, and the majority of complaints received from the vendors were that the Festivals would have been more successful towards the end of the month.

During the fall festivals, at each market the average reported sales was between $2001-$3000. This was a 7% increase overall from the fall festivals held in 2012. Five exhibitors claimed to have made more than $6000, and ten reported earnings to be less than $500.00.

Beneficiaries

The beneficiaries of the project are the 243 specialty crop exhibitors at these Plant & Flower Festivals. These exhibitors are primarily small businesses that are family owned/operated who lived and propagate ornamental or edible plants in South Carolina, and bring them to sale at the Festivals each year.

Lessons Learned

The most consistent issue with these Plant and Flower Festivals is that more advertising is needed to draw in more members of the public. Vendors especially suggested more advertising on social media outlets. As social media is free, and SCDA already has accounts on Facebook, Twitter, etc., the Department of Public Information began using this medium more in the 2014 advertising efforts. Also, SCDA promoted the Festivals more through radio outlets across the state, by leveraging time for Public Service Announcement for the Festivals in the contracts with these outlets for other campaigns.

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Project Fourteen: Marketing SC Specialty Crops in Regional and Distant Markets

Project Summary

This project was centered on activities related to providing SCDA marketing staff and South Carolina's specialty crop producers with additional tools to promote and facilitate the sale of fresh fruits and vegetables grown in our state. Through traditional industry marketing channels (trade shows and food expos) a broad reach to potential buyers can be made through attendance and by sponsoring events and booth spaces. This project provided a collaborative platform for partnerships between the State Department of Agriculture, commodity groups, and individual producers to attends events and feature to the retail, wholesale and food service representatives fruits, vegetables, and added-value products that originate in South Carolina.

The project serves as an on-going effort between SCDA, the SC Fruit, Vegetable and Specialty Crop Association, the SC Peach Council and the SC Watermelon Association. By working together, these groups build a stronger presence at food shows and industry events to increase demand and facilitate movement of SC Grown specialty crops through retail, wholesale and food service channels. The project encouraged participation at popular food industry events both in and out of South Carolina, thus allowing the commodity groups the ability to receive additional exposure at major retail food events regionally and in key U.S. markets.

Project Approach

The purpose of this project was for the SCDA to provide specialty crop producers with additional tools to promote and facilitate an increased *movement* of specialty crop products through traditional industry marketing channels and to seek additional niche market opportunities for smaller volume specialty crops and organics produced in our state. Participation in events such as the Produce Marketing Association Fresh Summit, the Southeast Produce Council Southern Exposure Expo, the Eastern Produce Council Annual Meeting and Produce Show, offer a broad reach to potential buyers. Booth exhibition costs and participant badges to these well respected shows are often cost prohibitive to fruit and vegetables producers. Therefore, the intent of the project was for the SCDA Marketing Division to use these monies provided by this grant to subsidize specialty crop producers and their commodity groups in a manner to make it affordable for others to exhibit and participate.

Competitive enhancement is a by-product of successful execution at national, regional and distant markets in trade shows and conferences. These opportunities to specialty crop growers and sales agents to participate provides domestic growth in sales of fruits and vegetables, as well as protecting the base of volume of sales already established from erosion by imported crops entering the same market arena. It is critical for our state growers of specialty crops to maintain these relationships and levels of sales volumes to remain competitive in the marketplace. In recent years, growers have been able to capitalize on the locally grown trend, and exposure generated at these shows to regional buyers is invaluable; each retail supplier is seeking to find more sources of locally grown fruits and vegetables. Also, the issues for grower/producers and the SCDA is one of constant and/or increased visibility of new products or value-added products made from SC Grown specialty crops. Many times, these new varieties will provide growth in a sales category, or expand a traditional market, such as the organic category. The SC producers of specialty crops need this exposure so that they can obtain increased sales and volume growth in retail, wholesale and consumer education to provide healthy accessible fruits and vegetables in all points of distribution.

The specific objectives of this project included the following:

1. Providing exposure and interaction with industry decision makers for specialty crop growers
2. Uniting commodity associations with SCDA personnel so that increased results in product category growth would occur
3. Maximizing timely product introductions and technical applications, such as improved food safety measures
4. Identification of new opportunities with educational exchanges between key decision makers from all segments and producer principles
5. Addressing industry challenges that are specific to labor, consumer trends, and commodity centered promotional opportunities
6. Obtain feedback from show attendees
7. Continuation of gathering information to share with specialty crop growers unable to attend
8. Increasing market demand for specialty crop categories through measures of consumer education, merchandising campaigns and establishment of specific periods of product promotion

Events partially funded through this Agreement have included the following:

- Southeast Produce Council, Southern Exposure Expo, Orlando, FL, March 2013
- Eastern Produce Council Annual Meeting, East Orange, NJ, April 2013
- Produce Marketing Association, Fresh Summit, New Orleans, LA, October, 2013
- Eastern Produce Council, New York Produce Shows, New York, NY, December, 2013

Each trade event was managed and attended by the Project Manager, and additional SCDA staff as needed. The key points of interest for each of the events have been outlined separately below for review. Data collection was compiled at the close of each venue.

Southeast Produce Council, Southern Exposure Expo, Orlando, FL, March 2013

During the course of this meeting, two large retail chains in the SE (Publix and Rouse's) established contact with specialty crop producers of peaches, blueberries, watermelon and kale. As a result, these two chains purchased and merchandised these four specialty crops during the 2013 season. The two retail chains are both new customers to the farms.

The SCDA also firmed the commitment to the continuation/stabilization of the market share during a major corporate merger between two major SE chains, BiLo and Winn Dixie. Meetings and discussions that took place at this venue which resulted in field visits from the Produce Buyers and Managers to a week- long field/farm visits in November 2013. During this week, the Project Managers travelled with the guests to eight specialty crop producing farms across SC. Next year will bring new distribution of sweet onions, bell peppers, broccoli, mushroom, hydroponic tomatoes and lettuce, and strawberries within this newly merged chain. The merging of the two companies results in 117 stores in SC, and comprises 17% of all grocery sales in the state.

Eastern Produce Council, Annual Meeting, East Orange, NJ, April 2013

Representation at this meeting included Commissioner Weathers, Assistant Commissioner Eubanks, and the Project Manager, Sonny Dickinson. Four owner/operators of specialty crop farms also attended. The farms represented were WP Rawl, Coosaw Farms, Titan Farms, and Chappell Farms.

Post meeting interviews with the attendees confirmed a positive result and increased sales. WP Rawl now ships their value-added vegetables and bagged greens to King's and Shop Rite stores in the NE.

New distribution trials of SC Grown peaches took place at the major chains – Price Chopper and A&P. Coosaw Farms reported new contracts with Wakefern for blueberry sales.

Produce Marketing Association, Fresh Summit, New Orleans, LA, October 2013
The 2013 Fresh Summit, held in New Orleans, was an enormous success. The SCDA staff members attending were joined by seven specialty crop producers and/or their sales agents. One organic producer, who is large enough to provide consistent sales to the wholesale supply chains, participated. The SCDA offered the opportunity of pavilion space to eleven companies. The five who were not in attendance did so out of monetary concern.

Meetings among the attendants took place with buyers from twelve major customers – ranging from the Military Produce Group to US Foods to Wal-Mart. Four of the meetings were with new establishments.

As a result, the following programs were scheduled to take place in 2014:

- Wal-Mart: New contract for cantaloupes and watermelons
- Bilo/Winn Dixie: Increased distribution of tomatoes and sweet onions
- Rouse's: New contract for blueberries and value added vegetables
- Food Lion: New merchandising plans being designed for all SC Grown produce
- Kroger: Increased distribution of peaches through new Atlanta facility
- Limehouse: New distribution of sweet onions

Eastern Produce Council, New York Produce Shows, New York, NY, December, 2013
SCDA staff members who attended the NY show met with senior buyers and managers from five retail chain stores and one foodservice distributor. Two of the meetings were conducted with chains looking to expand the selection of SC Grown produce in their stores.

Goals and Outcomes Achieved
The performance measure was to establish or expand market share for specialty crop producers in South Carolina. As a result of participating in these events, specialty crops grown in South Carolina are for sale in six additional retail chains across the Eastern seaboard: King's, Price Choppers, Kroger, Limehouse, Rouse's and Publix. The specialty crops affected by the positive growth in sales from these new contracts, or an increased volume contract with existing buyers, as a result of this project include: peaches, watermelons, blueberries, strawberries, kale, sweet onions, bell peppers, broccoli, lettuce, hydroponic tomatoes, cantaloupes and value added vegetable mixes.

At the end of the 2013 season, the producers of these specialty crops indicated an increase in volume movement to be an average between 12-15%. The specific increases overall are difficult to obtain, as extraneous circumstances such as inclement weather, pest problems and labor challenges lead to variable supply at different points in the growing season, thus a range is being used. The target of the program was to have sales increased by 10% overall. The expansion of category sales into six major retail chains is unprecedented.

During the year, quite of number of store closings, chain closings and/or mergers of companies brought about an overwhelming change in key retail contacts and supportive role personnel. The project manager added or changed title to 127 persons in the SCDA retail database. The database holds up to 500 entries at one time; bringing the percentage of SCDA records changed to just more than 26%.

Beneficiaries:
SCDA personnel, owners/operators of specialty crop farms, retailers, wholesalers, distributors, restaurant owners, all benefitted in the following areas:

- Education-what does the customer need to sustain business.
- Food safety improvements
- New products and improved packaging
- New varieties
- Contacts
- Communication
- Increased confidence in growing organizations

When based on the NASS value of the specialty crops in South Carolina ($350 billion), and that sales agents and producers involved in this project reported an average 12% increase in sales, it can be deduced that the project may have increased the cash value of fruits and vegetables grown in SC by more than $40 billion.

Lessons Learned:
Respect for all within the food distribution chain. Growers learned the “bare minimum standards” for conducting business with all partners in the food industry, particularly in food safety certification requirements. Improvement is a way of life in the food industry and it is a continual challenge.

Due to successful show participation we have had additional growers to request participation in the future show schedules. Despite consolidations in the industry, retail companies have a direct objective in sourcing locally grown products and are allowing more purchasing personnel to attend. Request for additional varieties, new fruits and vegetables are increasing due to exchanges that identify needs held during our shows.

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Project Fifteen: Highlighting 'Certified SC Grown' specialty crops throughout the State of South Carolina

Project Summary

This project expanded previous merchandising efforts to increase demand for locally grown specialty crops throughout the state during the harvest season of 2013. Using the basic economic theory that as demand continues to grow, more opportunities become available for producers to expand their production of and increase the sales of the specialty crop which they produce.

Through the use of several different merchandising strategies and direct marketing efforts, customers are able to easily recognize the brand 'Certified SC Grown' in the market place.

Project Approach

Point of Purchase (POP) signage plays a critical component in marketing to consumers. Utilizing a retail merchandising plan to indicate 'Certified SC Grown' fruits and vegetables at display levels in stores reminds consumers to "buy local" as frequently as possible. Additional POP was created to inform consumers of seasonal availability, nutritional values, and to emphasize local production regions in our state. All POP items created by funds from the Specialty Crop Block Grant Program only show the 'Certified SC Grown' logo, which encompasses all specialty crops under the grant and were placed only in the retail produce sections at stores and at local farm markets. The 'Certified SC Product' logo does not meet the criteria for funding under this grant agreement. All signage and delivery of POP for this program is handled separately to ensure that only specialty crops benefit from the grant funding in this merchandising design and delivery.

Stores and market vendors will display locally grown fruits and vegetables and identify them as local under the 'Certified SC Grown' brand. Radio messaging was used to reinforce the 'Certified SC Grown' brand and inform consumers of when it is time to look for local fruits and vegetables. Messages to consumers were also leveraged with messages from local commodity boards who promoted specific fruits and vegetables. Outdoor boards were used to remind consumers daily to buy fresh fruits and vegetables grown in our state, and featured the 'Certified SC Grown' logo. Only photographs of specialty crops were used on the outdoor boards. Specific market promotions and events were held to provide collaborative efforts between producer groups and SCDA to promote commodity specific events and promotions throughout the season to increase demand and local sales volume.

Driving market demand for Certified SC Grown specialty crop produce is one of the ongoing missions of the SC Department of Agriculture. All activities executed are targeted towards this goal.

Distribution of point of purchase materials is a critical component of marketing to consumers. The identification of Certified SC Grown specialty crops in the retail marketplace enables the SCDA to promote the Certified SC Grown brand, and also reminds consumers to "Buy South Carolina fruits and vegetables" directly at the point of purchase. Other creative P.O.P was also designed, made and distributed to inform of seasonal availability, nutritional values, and to emphasize the local production regions. Point of purchase materials was placed in the produce departments of 556 South Carolina retail stores. Each store was outfitted (based on the store size) with a kit that contained 1-2 standing message boards, 3-5 ceiling danglers, 15-20 aisle interrupters, and 15-20 channel strips. The merchandising team was clearly directed by the Project Manager to only apply the CSC Grown messaging in the retail produce section only. SCDA staff visited retail outlets and farm markets throughout the season to ensure that the signage provided for in this project is placed in the appropriate store positions focusing only on

qualifying produce items. Data projections estimate that a sales volume lift between 12-14% occurred during the merchandising campaign and height of the season.

The number of Certified Roadside Markets has increased to a total of 158. Nine of these opened in 2013. SCDA staff visited 32 markets to verify compliance with the standards of the program. Each of these 158 markets received new signage, price cards, and other promotional items to assist in the sales of specialty crops.

During the store visits and store checks made by SCDA marketing personnel and interns, customers were picked at random and asked these questions; is it important to you to buy produce grown in SC, do you know which produce is grown in SC, and do you recognize the 'Certified SC Grown' logo? The responses indicated that most customers preferred local produce because they found it more flavorful (especially peaches, tomatoes and cantaloupes) and perceived the produce to be fresher. The majority of the customers recognized the logo, and were familiar with the produce grown in state.

To date, the SCDA has also utilized funds to create and place outdoor boards advertising the sales of specialty crops at the SC State Farmers Market. Each board has featured a photo of a specialty crop, such as peach, watermelon, tomato, sweet corn, sweet potato, with the logo of the SC State Farmers Market and the slogan "Bountiful Fun" also appears.

Goals and Outcomes Achieved

- Successfully placed POP material in all 550 retail grocery stores
    - placed POP properly by the SC Grown fruit or vegetable
    - answered questions/train produce managers as to product origin (which farm)
    - helped support the stores ad for product with display ideas
    - answered questions when necessary to consumers regarding fruit and vegetable uses, recipes and generally become the ambassador for the category.

The projected goal of an increase in sales by 10% was achieved by our target efforts. In reviewing the sales numbers to access the impact we were able to conclude this positive increase by the following approach/review:

- Review of sales numbers in produce departments compared to the same time period in the previous year confirmed that an average of 10% growth was achieved. In some cases an even higher percentage was achieved when supported by aggressive in-store displays and feature pricing. Because the consumer was able to shop with assurance that our POP material reinforced local product placement with visual pinpoint signage the dots were connected in order to finalize the purchase decision.
- The time frame in which discussions were had with retail managers was July/August to discuss the effect of POP placement completed during the May/June time frame. We were able to take advantage of a greater number of fruits/vegetables in season. Additional sales numbers were validated at corporate/regional levels to compare with store level sales results. There were many cases where an even higher than 10% growth was experienced.
- Due to the proprietary nature of actual sales volume numbers, the retail partners will not allow us to report the specific volume increases. However, the following grocery store chains agreed that the promotional efforts helped increase their sales in SC grown fruits and vegetables:
    - Wal-Mart
    - Piggly Wiggly

- IGA
- Food Lion
- Bi-Lo
- Food City
- Publix

Beneficiaries

- Select SCDA personnel gained more experience in proper merchandising opportunities, as well as teamworking skills by interchanging with persons from the outside company
- Consumer needs are filled with fresh local produce that is more nutritious and healthy
- Farmer obtains repeat business = produce growth = greater economic impact in SC
- Healthier offering for consumer = lower healthcare output
- Based on the 2013 study, for every $1 of state investment in the 'Certified SC Grown' program, $10 is coming back in revenues. Using this figure as a basis to calculate the revenue generated by this project, approximately $1,500,000.00 is the potential economic impact.

Lessons Learned

Successful completion of the project requires:

- Proper POP placement. Signage must be as close as possible to product
- Effective oral and electronic communications between all parties
- Communication with produce managers by the outside merchandising team is confirmed during SCDA audits
- Ad support from the retailer. This is confirmed with ad reviews by SCDA personnel on a monthly basis
- Coverage must be completed in the May to June time frame
- Interactions with consumers at the store level to thank them for support of SC specialty crop growers

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