



Program Contacts:

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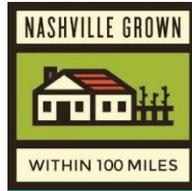
USDA/AMS Agreement Number 12-25-B-1697

Final Report

December 8, 2016

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Project Title: Nashville Grown Food Hub, Wholesale Specialty Crop Distribution for Small Farmers

Project Summary:

Nashville Grown is a food hub that offers production planning, marketing and distribution services for locally grown produce, enabling small farms access to wholesale markets. In late 2011 and early 2012, Sarah Johnson and Alan Powell began conversations with 12 small farmers and restaurants about expanding Alan's current aggregation business and creating a centralized website and ordering system. Nashville Grown was formed and registered as a 501c3. Planning meetings were held in May 2012 and the food hub launched in mid-September 2012. It quickly became clear that Nashville Grown needed to scale quickly to serve the small farmers it represented. NG evaluated the equipment and resources that would have the most impact on small farmers.

Project Approach:

The SCBG allowed Nashville Grown to scale its operations in two ways. The design and printed materials reached more farmers and restaurants. The produce handling equipment increased the efficiency and safety of handling the crops with a 3-compartment sink, shelving, produce tables, scales and bins. NG was able to move into Citizen Kitchens with the produce handling equipment, use the walk-in and install the 3-compartment sink. The largest impact, however, was the lease of the refrigerated van, which greatly increased the aggregation and distribution capacity of the hub.

Work Plan

Our work plan involves a local food marketing material package to hand out to restaurants and institutions. The SCBG allowed us to develop our logo for the presentations and to print the decals for the storefront windows.

The produce bins and open top containers, and scales that we purchased allowed us to streamline the production and sorting process and the shelves enabled us to transport produce more efficiently in the van. The bins also decreased the cardboard waste generated by Nashville Grown.

Goals:

Nashville Grown's goals for the SCBG were to increase the volume and ease of specialty crop distribution to local restaurants and to help small farmers develop crops that were in demand in restaurants by production planning.

Our measurable goals and outcomes were:

- To provide production planning, marketing and distribution services to 30 local farms in need of assistance selling wholesale specialty crops.
- Provide \$180K in revenue from wholesale specialty crop sales to farmers.
- At least 10 new restaurants, stores and institutions regularly buying wholesale local specialty crops.
- Double public awareness of local specialty crops and farmers.

Some of our new restaurants were:

Bastion, ACME Feed and Seed, MEEL, Wolfe Gourmet Cakes, Rolf & Daughters, Husk, Butcher & Bee, Le Sel, Treehouse, Wild Cow, Graze, Bergamot Café, and Miel.

In March of 2016, we hosted our first fundraiser, that had over 200 attendees and 15 restaurants participating, and used our printed materials as examples of Nashville Grown's work and impact.

While Nashville Grown is the aggregator, we highlight the individual farms in marketing materials and in the ordering system, and nearly 3/4 of our restaurants then list the individual farms on their menus.

With an average customer count of just 10 new customers a day between the 60 regular buyers, that means that the small farms and specialty crops were introduced to 187,000. These numbers were compiled in an informal survey of 20 of our restaurants. Nashville Grown's Facebook page has gone from 10 followers in 2014 to 1202 in 2016

Outcomes Achieved:

From September 2012 to April 2013, an off-season for Tennessee farmers, the program sold 11,000 pounds of specialty crops from 17 different small farms located within 100 miles of Nashville. As a result, farmers received \$25,856.24 in revenue.

From September 2015 to August of 2016, Nashville Grown distributed over 46,000 pounds of produce and brought \$130,000 income to local small farmers.

The payments to farmers per year January-December were:

2012 \$16,139.18, **2013** \$66,253.92, **2014** \$87,861.85, **2015** \$116,793.14, with **2016** on track for \$130,000.

Beneficiaries:

In 2014 Nashville Grown added 18 new farms as vendors and 24 restaurants as customers. As of October, 2016 there are 123 registered farmers, over 100 of which are specialty crop farmers. Over 50 of those sell actively on the site. These are small farmer such as Bells Bend Farms, Bountiful Blessings, Bloomsbury and Greener Roots Farms.

The specialty crops are sold to 128 registered buyers, mostly restaurants, over 60 of which are active buyers.

Lessons Learned:

At the outset of the 2013 SCBG, Nashville Grown was a new 501c3 with Sarah Johnson and the Executive Director and Alan Powell as the Operations Manager. Other board members were Laura Wilson of the Nashville Farmers' Market and Megan Morton of Community Food Advocates. Sarah Johnson left in the fall of 2014 for graduate school, and was unavailable for questions about the business and grants. As the Executive Director, she held many keys to the business. The remaining board members gathered all of the necessary resources, but were delayed in spending the grant. In hindsight, NG would have asked for less grant money for produce bins and more for van lease or walk-in lease. Our accounting and record keeping systems are now monitored by the entire Board of Directors in shared drives.

We are so grateful for the opportunity and resources that the SCBG afforded Nashville Grown, and for the Tennessee Department of Agriculture's help, advice and work in administrating this grant.

Contact Person:

Laura Wilson, Board Member

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Project Title: Youth Urban Farm Training Program

Project Summary:

Our Youth Urban Farm Training Program commenced after we successfully developed our first garden and had become a Whole Foods Market vendor. Also, during this period of time, we opened a food pantry and provided a portion of our harvested crops to our food pantry clients. Initially, when we began accepting at-risk youth from Juvenile Court, we offered home repair training. It was when we began teaching gardening to these youngsters and making fresh fruits and vegetables available to our food pantry clients, that we recognized the response level of the community and youth we serve was very high.

Project Approach:

The Work Plan Activities & Tasks included crop bed preparation, where we loosened the soil and direct seeded these crop beds. Simultaneously, we created compost from weeds, & grass extracted from the crop beds and adding layers of leaves, sticks and dirt. We identified certain insects that we found as either beneficial or pests and proceeded to incorporate companion plants that would create an adverse environment for the pests and be a habitat for the beneficial insects. The youngsters learned to differentiate crops from weeds by leaf patterns as they would cultivate around the crop beds. The crops planted were familiar to most trainees in as much as they had eaten these crops at home yet had never planted them. A few parents of our trainees would hang around, typically outside our fences, observe our activities and every so often ask questions. Plus, during crop harvesting some parents cited their amazement that their child was eating raw fruits and vegetables.

We commenced a beekeeping operation under this grant and have grown our beehive colonies from two to five as of this writing and have constructed our own hive bodies and supers in preparation to perform hive splits, whereby increasing our bee colonies. This year we anticipate have eight beehive colonies and therefore the capacity to extract more honey to meet the growing demand for our local honey in both our food pantry and farmers market.

The fruit trees we planted in close proximity to our bee hives are blooming and began producing fruit last year. We pruned the fruit trees this past November and the current blossoms seem to be much thicker than ever before. This body of knowledge is a direct result of our membership with The Fruit and Vegetable Growers Association and our attendance at the Tennessee Horticultural Expo.

Goals:

We planted clover and vetch in-between the fruit trees, thus providing additional nourishment that is common for healthy bees. One of the youth that we trained in beekeeping inquired about purchasing bees to start beekeeping and we referred him to the Memphis Area Beekeepers Association and the person who sold us bees.

When we began teaching food canning to our at-risk youth, we had no idea that activity would result in our becoming a manufacturing company. Our first food canned was pickling cucumbers. We made

them available to friends and family who demanded we make more. We met their request and made salsa also.

Outcomes Achieved:

We fell short of our 25 gallons of honey production by about 5 gallons. We had discussions with other beekeepers who are members of the Memphis Area Beekeepers Association and the general consensus was the cold winter & heavy spring rains slowed bee activities and therefore diminished honey production. Our trainees initially were both afraid of and fascinated by our beehives. They learned how to identify eggs in the brood, the queen, drones, and understand the necessity of keeping the hive bodies clean to help deter infestation by ants, beetles, mites & wasps.

In our food canning operation, we obtained Food Processor Certification and continued to instruct trainees in food canning. We have gone beyond the four youth training objective and have developed a following of patrons who purchase our chow chow regularly.

With reference to increased consumption of specialty crops by SNAP benefit recipients, the surveys that we collected from our food pantry clients show increases in honey consumption as well as fruits & vegetables. Yet, due to the transient nature of too many of our food pantry clients, a consistent tabulation of food consumption patterns has not been ascertained. Also, while we did not produce urban farming entrepreneurs from the ranks of our trainees, a few of them volunteered to create a garden for a local church in the community and have continued to help that garden.

We have one young lady who, after working with us, recently changed her college major to agriculture and another young lady who is a high school junior, who is currently enrolled in the Future Farmers of America program & has maintained an excellent academic record that plans to make agriculture her college major. Finally, we also have a young lady in 10th grade who is currently working with us in our Youth Urban Farm Training Program she also has an excellent academic record and is interested in going into agriculture as a major when she goes to college. She started working with us after participation with her school, in a neighborhood cleanup project, on Martin Luther King Day that we headed up.

In year two, we were approached by a parent of one youth who was in our first canning class. The parent bragged on how her child was able to pickle cucumbers given to her by a neighbor. After hearing this testimonial, we desired to enhance our knowledge on food canning and we did, successfully completing the Food and Drug Administration required Better Process Control School and now we have a certified supervisor on site when processing food. Also, our facility has been permitted by the TDA Division of Consumer and Industry Services as a manufacturing facility.

Currently, we have both at-risk youth and neighboring adults who have trained in growing specialty crops that are working a garden for a church located directly one & one-half blocks down the street from our facility; this is their second year. Also, youngsters come to our farmers market and get ready-made salads from our gardens. Sometimes they purchase the salads and at other times, we give salads to them. A few of their parents we know as clients to our food pantry. Plus, one person, who is an

adult, has begun gardening as a result of our interactions. We provide a portion of seeds that we harvest and lend insights on best practices for growing specialty crops.

Lessons Learned:

We are grateful to have had the opportunity to teach the practice of growing specialty crops to the youth. Some of the youth have discussed making application with the USDA for scholarships to attend historically black universities and, in any event, we believe that a permanent impression has been made on them about the benefits of eating fresh fruits and vegetables and the importance of setting goals, making sacrifices and remaining focused, mixed with determination to achieve their goals.

Thank you very much!

Contact Person:

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Project Title: Local Sourcing Foodservice Industry Program

Project Summary:

The Tennessee Department of Agriculture's Market Development staff has completed Phase I of the Tennessee Local Sourcing Foodservice Industry Program funded by SCBGP 2013. The first of a three phase marketing and outreach initiative created to foster relationships between Tennessee's **food service** operations and agricultural producers has an overall goal to initiate an ongoing promotional campaign tailored for the foodservice industry using or wanting to use locally sourced specialty crops. Aimed to use the existing Pick Tennessee Products (PTP) brand on restaurant menus to provide consumers a connection to their farming community. The PTP marketing campaign has helped consumers identify and choose Tennessee produced agricultural products since 1986 and has earned the reputation for its high quality standards.

SCBG 12-25-B-1697 funded the establishment and meetings of an Alliance Advisory Committee to represent chefs, restaurant entrepreneurs', farmers, transportation and distributors, food hubs, and tourism agencies. This alliance of statewide stakeholders designed and created criteria/standards and developed the overall infrastructure to carry the ongoing promotional campaign to Phase II which provided the outreach and launch the program into the foodservice and farming settings.

Project Approach:

Activity 1: Establish Advisory Board - Gathered recommendation and provided invitation to serve on Advisory Board. Invitation Letter - (Attachment A), List of Board Members - (Attachment B)

Activity 2: Meeting 1 of the Advisory Committee Agenda (Attachment C)

Meeting Recap – Recommendations:

Take Away Ideas

- Create criteria for using the logo in your restaurant.
- Use Pick TN Products logo
- Need a database of chefs using local and a database of food hubs distributing the local product
- Do restaurant training workshops for chefs on how to use local produce- planning your menu, etc.
- Train farmers on how to sell to restaurants.
- Education component, need a common language between farmers and chefs.
- GAP certification knowledge and resources provided to farmers.
- Provide awareness of what Tennessee has to offer - Produce varieties that can be grown in the state.
- Educate chefs on what farmers do and what it takes to get the product from field to restaurant.
- Train farmers to think like chefs.
- Educating consumers on what the Pick TN Products program is.
- Educate the consumer on unique TN qualities and how local will equal a lower carbon footprint.

Barriers for Selling to Restaurants, the Farmers' Perspective:

- Chefs don't have agriculture or seasonality knowledge
- Need to identify chefs who have Ag background
- Educate farmers on weights, varieties to grow
- Educate chefs on weights from the farmers' perspective

- Distribution is an issue: getting the product from the farm to the restaurant
- Work with the Dept. of Health for chefs to legally freeze/process/can food while it is in season.
- Bridge the gap between chefs/farmers regarding the “Language.” Ex: how much is a peck?

Barriers to Selling to Restaurants, the Chefs’ Perspective:

- Having to call several farmers to order product
- Farmers deliver on various days and sometimes at the busiest times
- Problems with distribution
- The way the produce comes packed is sometimes a waste
- Quality can be an issue
- Availability and consistency is an issue
- Distribution is a challenge

Positives to Selling to Restaurants:

- Farm to Table promotions
- Farm name on the menu
- Marketing for your farm
- Building relationships with Chefs
- Changing the way people view their food
- Educating farmers, chefs and all people
- Economy- increasing farm income, local economy
- Strengthening the local community
- Consumers want the “farm to table” experience
- Unique quality of products, such as figs, mushrooms and heirloom varieties
- Flavor is better
- Keeping the family farm intact by supporting them

Activity 3: Meeting 2 of the Advisory Committee Agenda (Attachment D)

- Recommendations - Surveys must be completed to be in program.
- Survey Ideas for Farmers
- Are you willing to attend certified restaurant training?
- Can you attend a regional event connecting farmers and chefs?
- Are you selling to restaurants? If so, how do restaurants procure your product? Deliver? How often?
- How do you process and package your product?
- Are you GAP certified? If not, are you willing to become Gap certified?
- Have you tried to market to a restaurant and not been successful?
- Would you like assistance marketing to restaurants?
- What obstacles have you faced in trying to market to restaurants?
- What do you currently grow?

Possible Survey Questions for Restaurants:

- Send in peak season if possible
- What type of establishment are you? Caterer, fine dining, etc.?
- What is the gross income of your establishment? (put choices in)
- What is your definition of local?
- What percentage are you willing to pay more for local? What about organic?
- What do restaurants want from this program?
- What are the benefits of this program? Obstacles?
- Do you have knowledgeable staff regarding seasonality and farming?
- What percentage of your budget can be dedicated to buying local?
- Is there one person who makes the buying decisions?
- What local products are you currently using? Of those products, what percentage is produce?
- Are you willing to attend certified restaurant training?

Education/Training for Farmers and Restaurants

- Have an all day workshop
- Time of day/week needs to be convenient for farmers and chefs- Mondays in January
- Have a mock sales pitch between farmer and chef
- Have vendors set up for networking: wines, samples, etc.
- Class on distribution and how product is packed
- Availability/Consistency of products
- Class on common language between chefs and farmers
- Class on seasonality and expectations for chefs
- Pictures of what chefs want- maybe make a flipchart for farmers to take home

Activity 4: Meeting 3 of the Advisory Committee Agenda (Attachment E)

Recommendations

Criteria

- Submit application and complete survey.
- Must purchase locally from a TN farm. If they have never purchased from a local farmer, they must show a progression towards purchasing locally from a farmer.
- Attend an education/training for farmers and restaurants. Two training sessions will be offered in each region, annually. Each restaurant must attend one session somewhere in the state.

Program Outreach:

- Attend and present or display at least 4 farm and food industry events across the state.

Education/Training Events

- Provide the chefs perspective to the farmers and the farmers perspective to the chefs.
- Provide panel discussions and networking activities at the training. Have chefs and farmers at the same time.

- Two separate tracks for certification and re-certification.
- Actually have farmers and chefs to speak.

Developing Database for Program

- Start a statewide restaurant database for doing survey and outreach.
- Contact for Database of Restaurants: Dept. of Health, Sysco, TN Hospitality and Tourism Association.
- Database for farmers: Pick TN database, Farmers Markets, Farmer Associations' databases.
- Send out survey in January, after holiday season for best results.

Incentives and Traceability

- Promotional Materials Recommendation: Stickers for doors of farmer's trucks, dry eraser boards for staff at restaurants – cheat sheets and scripts for staff to promote to customers, check presenters with Pick TN logo on cover. Door slicks for Restaurant window identifying them as program participants.
- Traceability: Have annual recertification requiring purchasing and selling updates to remain a part of the program. First year's requirement will be less stringent and more about getting interest in participating in program. Year two may make changes such as require a certain percentage of local crops to be used. Possibly charge a fee to remain a part of program. Make certain food hubs and distributors provide farmer details.

Activity 5: Develop Infrastructure from Advisory Committee Recommendations

Recommendations provided by Advisory Committee enabled our team of staff to plan for Phase II and apply for SCBG 2014-15 funding for the outreach and training of the program for restaurants and farmers during 2015. A timeline was developed for staff to lead up to the outreach events in early spring and summer of 2015. These measures will assure that materials are produced and event plans are in place as we unveil the application online for program participation. The database and survey development allowed the program to be unveiled in January or early February 2015 then enabled both interested farmers and restaurant to become members of the program and register for training and network events.

Timelines (Attachment F and G)

Activity 6: Develop Survey, Website and Promotional Materials for Workshops Events Outlined in Phase II

Promotional materials (Attachment H and I) have been produced and event plans are in place as we unveiled the application online for program participation, setup webpage and set dates for workshops and networking events planned for phase II. The database has been developed and survey is available on Survey Monkey (Attachment J-K). Post Cards about the program were mail out on 08/15/2015 to Restaurants and Farmers.

Website: (<https://www.tn.gov/agriculture/topic/restaurant>)

Workshops and Networking Events Schedule

Knoxville – Sept 28, 2015

Memphis – October 12, 2015

Nashville – November 2, 2015

Chattanooga – November 12, 2015

Goals:

The overall goal of this project is to increase the Tennessee specialty crop industry's visibility among the local food service industry. This was to be achieved by developing a marketing campaign promoting locally grown specialty crops through local chefs and dining establishment across the state through Phase II and III. Outcomes measured at the end of Phase III will increase in visibility of Tennessee specialty crops in the food service industry.

- Baseline data was collected in Phase I of this project. We expect chef and hospitality representatives will increase their awareness of Tennessee grown produce by 10 percent and that at least 100 chefs and hospitality representatives will indicate that they will participate in a program to market locally grown Tennessee fruits and vegetables using the Pick Tennessee Products umbrella. Phase III conclusion will provide Outcome data.
- Establishing an Advisory Board to develop program criteria and operation plan was the main goal for Phase I.

Outcomes Achieved:

- Established an Alliance Advisory Committee to represent Chefs, Restaurant Entrepreneurs', Farmers, Transportation and Distributors, Food Hubs, Farmers Markets, and Processing and Packaging Companies.
- Developed Standards and Criteria for the Promotional Campaign. Outline expectations for participating Restaurant/Food Service Businesses.
- Developed, design and print promotional materials and webpage.
- Introduced Program to the Food Service Industry – present at Chefs Association meetings and Annual Tennessee Hospitality Association Conference. Purchase and Print campaign materials.
- Designed media plan to promote program to consumer.
- Developed network forums to connect farming community with food service entrepreneurs' and logistical stockholders. Examples: electronic/social media, educational, consumer events, roundtable discussions, etc.
- Recruited farmers through opportunities and incentives.
- Educational - Example: TN Horticulture Expo/TN Fruit and Vegetable Association Meeting – Intro to Selling to the Food Service Industry, Statewide Training for farmers on developing a Business Plan targeting the food service industry, growing produce varieties desirable to the food service industry, etc.
- Provided GAP certification materials to farmers selling to the food service industry. Cost share and incentives for business upgrades and GAP certifications.
- Improved the logistical obstacles associated with sourcing local.

Beneficiaries:

- Farmers
- Food Service Industry
- Consumer

Lessons Learned:

Immediately into the planning and appointing of the Advisory Committee, it was determined that the total of 9 meetings would not be needed to complete the task that the group was being charge with in Phase I of the Tennessee Local Sourcing Foodservice Industry Program. Once marketing staff was determined for the program, recommendations for Advisory Committee appointees were submitted. Changes to the timeline were required delaying the meetings to begin in late summer. This was due to staff completing other program tasks and a busy winter and spring season with conferences and promoting farmers busiest growing period. This in no way compromised the outcome of the program. In fact, it allowed the criteria and infrastructure development to move smoothly into the phase II without a time laps.

Contact Person:

Linda Shelton | Marketing Specialist
Market Development Division
Tennessee Department of Agriculture
615-837-5345
Linda.Shelton@tn.gov

Additional information:

Future Project Plans: The Tennessee Department of Agriculture (TDA) has received funding from the SCBG 2014 to continue in to Phase II of our Tennessee Local Sourcing Foodservice Industry Program designed to foster relationships between Tennessee's *food service* operations and agricultural producers of specialty crops. Phase II (SCBG 2014-15) embarks on the outreach to the industry owners/staff and specialty crop producers to begin the execution of the campaign using the standards and criteria established during the previous phase. Through trade shows, training, and networking events, TDA's marketing staff provided industry professionals and local producers with the tools and materials needed to introduce the campaign in restaurant venues and encourage Tennessee farmers to grow different produce varieties and upgrade their operations to meet the demands of the market. During this phase, TDA reached out for additional funding sources and stakeholders to expand the program to meet the needs of Tennessee farmers and restaurants. With the infrastructure is in place, a third stage (Phase III) has been to focus on promoting the initiative to the public through advertising and media campaigns. Presently we continue to focus on developing both Phase II and Phase III to grow the program to success.

Attachment A



STATE OF TENNESSEE DEPARTMENT OF AGRICULTURE
MARKET DEVELOPMENT DIVISION
Ellington Agricultural Center, P.O. Box 40627, Nashville, TN 37204
615.837.5163 / FAX 615.837.5194

Dear (Requested Advisory Member):

You have been recommended for membership on a **Tennessee Department of Agriculture (TDA) Advisory Board** to assist in creating the **Tennessee Local Sourcing Foodservice Industry Program**. Your contribution and expertise in creating this statewide program designed to foster relationships between Tennessee's food service operations and agricultural producers will be important.

The first meeting is August 13, 2015 in the Holeman Building Conference Room at Ellington Agriculture Center in Nashville. You will be charged with setting criteria/standards for this ongoing promotional campaign tailored for the foodservice industry using locally sourced crops. Made possible using funds from the USDA Specialty Crop Block Grant program, this three phase marketing and outreach initiative will use the existing Pick Tennessee Products (PTP) brand to provide consumers a connection to their farming community.

In phase I of this program, the advisory board will be tasked with making recommendations for the program development. Beginning in January 2015, phase II will embark on the outreach to the industry owners/staff and specialty crop producers to begin the execution of the campaign using the standards and criteria established. Through trade shows, training, and networking events, TDA plans to provide industry professionals and local producers with the tools and materials needed to introduce the campaign in restaurant venues and encourage Tennessee farmers to grow different produce varieties and upgrade their operations to meet the demands of the market. Once the infrastructure is in place, phase III is planned for the following year to focus on promoting the initiative to the public through advertising and media campaigns.

I hope you will be able to participate in bringing to life a program that has the sustainability to last for years. Travel reimbursement is available to all advisory appointees. A total of 3-4 meetings will be required of the committee. Please RSVP to Linda.Shelton@tn.gov by August 6th. Lunch will be provided.

Sincerely,

Linda Shelton
Marketing Specialist

Pamela Bartholomew
Marketing Specialist

Attachment B

Pick TN Products Farm to Restaurant

#	Appointees	Profession	City	Email	Phone #
	Tana Comer	Farmer -Eaton's Creek	Joelton	ecorganicsfarm@gmail.com	
	Steve Guttery	TN Farmers Market Association	Dyersburg	sguttery@dyerchamber.com	731-285-3433
	Randy Rayburn	Restaurant Owner - Sunset Grill	Nashville	randy@sunsetgrill.com	
	Sylvia Ganier	Green Door Gourmet	Nashville	syanha@aol.com	
	Linda Shelton	TDA -Value Added Marketing	Nashville	linda.shelton@tn.gov	615-837-5345
	Heather Orne	TDA - Public Affairs	Nashville	heather.orne@tn.gov	615-837-5206
	Jim Gnoth	Sysco Knoxville	Knoxville	gnoth.james@knox.sysco.com	865-545-5522
	Eric Woodlridge	Farmer - Bells Bend Farms	Nashville	eric@bellsbendfarms.com	615-424-0642
	Bruce Scarberry	Lazy Dog Farms	Bethel Springs	farmer@lazydogfarms.com	731-434-4072
	Amy Tavalin	TDA -Farmers Market Marketing	Nashville	amy.tavalin@tn.gov	615-837-5163
	Pamela Bartholomew	TDA -Agritourism Marketing	Nashville	pam-ela.bartholomew@tn.gov	
	Melissa Corbin	Corbin In The Dell	Nashville	melissa@corbininthedell.com	615-830-3770
	Susan Moses	212 Market Street	Chattanooga	admin@212market.com	423-265-1212
	Greg Adkins	Tennessee Hospitality & Tourism Asso.	Nashville	greg@tnhta.net	615- 385-9970 x17
	Mike	Tomato Head	Knoxville	ing@thetomatohead.com	
	Dave Jones	TN Department of Tourism	Knoxville	dave.jones@tn.gov	865-335-9142
	Rick Wright	Chef - Sewanee	Sewanee	rrwright@sewanee.edu	
	Grover G. Whittington, Jr.	Sysco Nashville	Nashville	ton.grover@orr.sysco.com	615-350-2234
	Debbie Ball	TDA - Marketing Director	Nashville	debbie.ball@tn.gov	615-837-5384
	Sara Chabot	Blackberry Farms	Walland	sara@blackberryfarms.com	
	Michelle Harris	Peabody	Memphis	michelleharris@peabodymemphis.com	
	Wanda Thompson	The Blue Porch	Woodbury	theblueporch@gmail.com	
	Felicia Wilett	Felicia Suzanne	Memphis	felicia@feliciasuzanne.com	
	Tyler Sneed	Red River Farms	Springfield	tylersneed@gmail.com	615-804-9225
	Whitney Lee Thompson and Ian	Whitney Lee's	Springfield	whitneyleethompson@gmail.com	
	Marty Marbry	TN Department of Tourism	Memphis	marty.marbry@tn.gov	



Meeting Agenda

Tennessee Department of Agriculture (TDA) Advisory Board Meeting
Tennessee Local Sourcing Foodservice Industry Program

Thursday, August 14, 2014 10:30 A.M. Central Time
Holeman Building Conference Room- Ellington Agriculture Center
440 Hogan Rd, Nashville, TN 37211

- 10:30 – 10:45 A.M. Introductions and Outline of Advisory Board Task
- 10:45 – 11:30 A.M. Review and Discussion of the USDA Specialty Crop Block Grant 3 Yr. Plan
- 11:30 – 12:00 P.M. Farmers' Prospective – Embracing the Food Service Industry
as a Niche' Market - Growing, Distribution, and Obstacles
- 12:00 – 12:30 P.M. Lunch
- 12:30 – 1:00 P.M. Farmers' Prospective Continued – Embracing the Food Service Industry
as a Niche' Market - Growing, Distribution, and Obstacles
- 1:00 – 2:00 P.M. Food Service Industry's Prospective – Meeting the Needs of Consumers
- 2:00 – 2:15 P.M. Future Meeting Schedule
Planning Next Meeting Discussion - Setting the Criteria and Standards
for the "Pick TN Products" Restaurant Membership



Meeting Agenda

Tennessee Department of Agriculture (TDA) Advisory Board Meeting
Tennessee Local Sourcing Foodservice Industry Program

Wednesday, August 27, 2014 10:30 A.M. Central Time
Holeman Building Conference Room- Ellington Agriculture Center
440 Hogan Rd, Nashville, TN 37211

- 10:30 – 10:45 A.M. Introductions and Recap of Advisory Board Task and Previous Meeting
- 10:45 – 11:30 A.M. Ideas for Developing Database and Farmer and Chef Survey (Survey Monkey)
- 11:30 – 12:00 P.M. Setting the Criteria and Standards for the "Pick TN Products"
Restaurant Membership
- 12:00 – 12:30 P.M. Lunch
- 12:30 – 1:30 P.M. Review of Other State Program Criteria
- 1:30 – 2:00 P.M. Planning Education Training for Farmers and Restaurants (Bridging the Gaps)
- 2:00 – 2:15 P.M. Future Meeting Schedule - Planning Next Meeting Discussion
- 2:15 – 2:30 P.M. Travel Reimbursement



Meeting Agenda

Tennessee Department of Agriculture (TDA) Advisory Board Meeting
Tennessee Local Sourcing Foodservice Industry Program

Thursday, November 12, 2014 10:30 A.M. Central Time
Holeman Building Conference Room- Ellington Agriculture Center
440 Hogan Rd, Nashville, TN 37211

- 10:45 – 11:00 A.M. Introductions and Outline of Advisory Board Task
- 11:00 – 11:30 A.M. Survey Monkey Review and Database for Chefs/ Restaurant Operation
- 11:30 – 12:00 P.M. Survey Monkey Review and Database for Farmers
- 12:00 – 12:30 P.M. Lunch
- 12:30 – 1:00 P.M. Planning the Training for Chefs/ Restaurant Operation
- 1:00 – 2:00 P.M. Planning the Training for Farmers
- 2:00 – 2:15 P.M. Timeline and Planning of Networking Events

Pick TN Products- Farm & Restaurant Certification Program

Timeline

12/1/14-Have Restaurant List for surveys and promotion-Linda

12/1/14-Plan Workshops and develop educational materials-PAL

12/1/14-Plan stakeholder's meeting-PAL

12/1/14-Discuss program application and process-PAL

12/10/14- SCBG Report- Linda

12/10/14-Send email to stakeholders about Jan 8th meeting-Linda

1/5/15-Have Tradeshow info together-Pamela

1/5/15-Send out Survey-Linda

1/5/15-Develop Marketing Materials for program participants-PAL

1/8/15-Meeting with stakeholders-PAL

2/1/15-Have program page, info, and application on PickTnProducts.org-Amy

Pick TN Products- Farm & Restaurant Certification Program

Materials List

- Photo shoots with Chef/Farmers- Jan 1
- Panels for display-Feb 1
- Rack card with farmer/chef info-Feb 1
- 2 table tops-1 farmer/1 chef with QR code to PTP FRCP page on PTP website-Feb 1
- Have the Pick TN Products- Farm & Restaurant Certification Program page on PTP website-Feb 1
- Have application on website and TN.gov-Feb 1
- Chef/Farmer Video- March 1
- Marketing Materials for program participants- March 1



TN Department of Agriculture
Market Development Division
PO Box 40627
Nashville, TN 37204

Chefs: Are you committed to using local ingredients whenever possible? Or are you interested in finding local produce, but don't know where to look?

Farmers: Do you currently sell to the foodservice industry, but wish you could show your products to more chefs and restaurants? Or are you interested in diversifying your farm to sell and deliver to restaurants, but don't know how to begin?

The Pick Tennessee Farm and Restaurant Alliance is a new **FREE** service designed to connect and promote successful relationships between Tennessee farmers, chefs, and restaurants who value local, high quality ingredients and farm-direct produce.

Learn More and Register to Participate Today!

Visit us at
www.tn.gov/agriculture/topic/restaurant
or email to FTFrestaurant@tn.gov



Attachment J

1. What region of the state are you located?
2. How many acres do you farm?
3. What are you currently growing?
4. Are you currently selling to restaurants?
5. If so, how do restaurants procure your product?
6. Do you deliver more than one day a week?

▲
▼

West TN

Middle TN

East TN

Vegetables

Fruits

Herbs

Edible flowers

Other

Other (please specify)

Yes

No

Pick up from farm

Delivery

Food Hub

Distributor

I am not currently selling to restaurants

Yes

No

7. How do you process and package your product?
8. Have you tried to market to a restaurant and been unsuccessful?
9. Would you like assistance marketing to restaurants?
10. Are you GAP certified?
11. If not, are you willing to become GAP certified?
12. Are you willing to attend regional certified restaurant training?
13. Would you attend a regional event connecting farmers and chefs?
14. What obstacles have you faced in trying to market to restaurants?

▲
▼

Field packed

Unit packed

Washed, bundled or wrapped, weighed

Yes

No

Yes

No

Yes

No

Yes

No

I am GAP certified

Yes

No

Attachment K

1. Which one of the following best describes your establishment?
2. What region of the state are you located?
3. Rural or Urban?
4. What is your food budget?
5. What is your definition of local?

Caterer

Casual Dining

Fine Dining

Food Truck / FF / Delivery / Sandwich

Other (please specify)

West TN

Middle TN

East TN

Rural

Urban

\$0 \$

4,999

\$5,000 \$

19,000

\$20,000 \$

39,999

\$40,000 \$

59,999

\$60,000 or more

50 100

miles

Within your region of Tennessee

Anywhere in Tennessee

TN and bordering State (within 100 miles)

6. What local products are you currently using?
7. What percentage of your food budget are you willing to spend for local?
8. Is Organic also important to your product choices?
9. Who makes the buying decisions of local for your establishment?
10. Do you have someone on staff that is knowledgeable about produce seasonality and farming?

11. What would you like to gain from a TN Department of Ag (Pick TN Products) local?

sourcing program?

Produce

Meats

Dairy

Other

0%

1-5%

6-10%

11-20%

20% +

Yes

No

Not Sure

Chef

Manager

Owner

Yes

No

Logo use on Menu

Training

Find farmers and products

Be a part of the statewide campaign

12. Are you willing to attend local certified restaurant training in your region?

13. What are the benefits of having a local sourcing program? Obstacles?

Yes

No

Project Title: Controlling the Elements: Education and Applications for Specialty Crop Growers

Project Summary and Approach:

With center pivot irrigation systems popping up across West Tennessee, today's farmers are acutely aware of the benefits of "controlling" at least one of Mother Nature's elements. However, much less is known about specialty crop production in a controlled environment. In an effort to obtain more knowledge about growing specialty crops in a controlled environment, a high tunnel with irrigation system was constructed at Hidden Hill Farm, a Community Supported Agriculture (CSA) farm, in Dresden, Tennessee. The project was a cooperative effort between the farm owners, faculty, and students at the University of Tennessee at Martin. The goal of the project was to educate local small producers, the public, and university students on alternative methods for growing specialty crops. In order to achieve the goals of the project, public farm tours were conducted as well as participation and education at local farmers' markets. University students from UT Martin also became involved in the project through design and construction of the irrigation system for the high tunnel. In total, over 160 students, small producers and the general public toured the facility.

Originally the project was set to begin in November 2013 with order, delivery, and construction of the high tunnel. However, due to delays in weather and getting contracts completed, construction of the high tunnel was not completed until March 2014. The first crop was planted in April 2014 and the irrigation system was completed in June 2014 after some minor design modifications. The owner of Hidden Hill Farms was responsible for ordering and overseeing the construction of the high tunnel. Although there were delays in the construction, the project was under budget for the purchase of the high tunnel and subsequent specialty equipment for working inside the greenhouse. The project timeline had to be slightly adjusted so that producer workshops and tours could be held when crops were actually in production inside the greenhouse. The project still concluded in a timely manner and on budget.

Project Goals and Outcomes:

The goal of the project was to educate local small producers, the public, and university students on alternative methods for growing specialty crops. This was planned to be accomplished in two ways: 1) increase knowledge and understanding of alternate growing methods to increase numbers of producers using these methods and 2) increase knowledge and understanding of alternate growing methods for the general public and students. Over the course of this project, over 160 people have been on tours of the high tunnel from its construction to current use. This included approximately 4 farm tours and educational seminars from the farm owners as well as university faculty. There were also farm tours for gifted high schools students participating in the Tennessee Governor's School for the Agricultural Sciences in the summer of 2014, 2015 and 2016. The seminars taught people about high tunnel use for specialty crops and organic farming methods. Other educational opportunities have arisen at the various local farmers' markets that the farm owners attend weekly.

Through the farm tours and educational seminars approximately 70 local small producers and members of the general public were presented with information on construction of the high tunnel and its potential for growing specialty crops. Of these attendees, all indicated they gained a better understanding of the use of high tunnels. However, more than 50% said they would not invest in constructing a high tunnel. The most common reason was cost versus return on investment. With the very small temperature increase in the winter months, they did not think it would benefit them enough to justify the monetary investment.

The tours for the university and high school students had approximately 90 attendees over the life of the grant. More than 90% indicated they gained a better understanding of alternative growing methods such as those in the high tunnel. The others who indicated they did not gain a better understanding had previous experience with greenhouses through their high school Future Farmers of America chapters. The area of greatest increase in knowledge was different irrigation methods available.

Beneficiaries:

There are many beneficiaries to this project. The community of Weakley County and surrounding counties have benefitted from increased exposure to the use of a high tunnel for growing specialty crops. Also members of the community who participate in the CSA program have benefitted from consuming produce that would not have normally been available. They also have been able to receive produce earlier and later in the year than normal. High school students have benefitted from the education on, not only the use of high tunnels, but also organic farming methods, specialty equipment for use in the high tunnel, and irrigation methods. University students at UT Martin have benefitted in the same way as high school students but, in addition, they have been able to participate in the design and construction of various projects related to the high tunnel. These same students have also had access to a working laboratory for growing various plants.

Lessons Learned:

Throughout this project, many lessons have been learned on the positive and negative side.

- A greater appreciation for collaboration between the university and the community has been gained. The cooperation between the university and the farm owners has been exceptional and will continue long after the end of this project.
- Unfortunately, it was also learned that the temperature range in this area is hard to overcome in the winter, even inside the high tunnel. We did not observe any temperatures more than 10°F warmer inside the high tunnel compared to outside in the winter months of December through February. Although growing periods were able to be extended, it was still very difficult to grow any produce during those winter months.
- Inside the high tunnel, a biodegradable ground cover was used to reduce the weed population. This proved very effective at weed control and also much simpler when it came time to replant compared to plastic-based ground covers that have to be removed each year.

- Student design and construction of the irrigation system has worked well for use in the high tunnel.

Appendix:



Mr. Richard Gallagher of Hidden Hill Farm talking to high school students from the Tennessee Governors School for the Agricultural Sciences (TGSAS).



The high tunnel after 2 years of use.



Mr. John Cole of UT Martin digging a trench to bury the pipe for the irrigation system.

Contact Person:

Sandy Mehlhorn, Associate Professor

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Project Title: Promoting the Fruit and Vegetable Industry in Tennessee

Project Summary:

In Tennessee, the fruit and vegetable industry accounts for over \$100 million in annual sales and is comprised of nearly 2500 farms. The vegetable and fruit growers across Tennessee recognize the need for central point of communication through the Tennessee Fruit and Vegetable Association. With the growth of direct marketing, local food sourcing and food safety, TFVA is poised to be a voice for growers across the state. The TFVA plans to provide members with a central point of communication for marketing and information. Create marketing materials, events and to formulate a strategic plan to increase fruit and vegetable grower knowledge of marketing method.

Project Approach:

The project coordinator worked to promote the Tennessee Fruit and Vegetable Industry with increased presence in social media, including Facebook, YouTube, Pinterest and Instagram. The TFVA posted consistently and responded to quickly to comments and messages. The TFVA coordinator increased membership outreach through farmers market visits, email, word of mouth. Having a project coordinator on staff allowed membership outreach to increase throughout the grant period. The coordinator used farm visits, farmers' market visits, email, phone and texting to communicate with members and potential members.

Goals:

TFVA goals for 2016 were to have Board appointments ready for voting at February 2016 TFVA Annual Meeting. Add a classified ad section on tfva.org website and add member profiles onto website. Include guest bloggers content to website. Visit more members and create videos to add to social media platforms.

Outcomes Achieved:

The Tennessee Fruit and Vegetable Association voted in a full board of 6 in February 2016. In cooperation with UT Extension and the Center for Profitable Agriculture TFVA membership were offered several workshops including grant writing and marketing strategies. TFVA communicated regularly with members via newsletters and emails. Videos from farm visits uploaded to social media sites. Membership increased to over 111 members by February 2016. Guest bloggers and classified ad section on website are under construction. The 2016 goals to have a board in place by February 2016 were reached and officially voted in on February 2016. The classified ad section and guest blogger sections of our website are under construction, the membership profiles are online at tfva.org. Farm visits are continuing and one of the highest viewed content on our TFVA Facebook account.

We anticipated that at least 60 percent of the fruit and vegetable growers that receive the educational materials for marketing their products will make improvements to their marketing efforts that will increase their sales by 10 percent" We were unable to measure this outcome because of a personnel change and long term vacancy within the organization. Data was not available.

Lessons Learned:

The Tennessee Fruit and Vegetable Association's membership has quadrupled with a part-time executive director on staff. TFVA could grow and offer more programs and opportunities if TFVA could fund a full-time staff. The newsletters and email were received well and will continue. The farm visits were very popular and the videos made during the visits were some of TFVA's most popular posts on social media.

Contact Person:

Reggie Marshall

President

reginald_mrshll@yahoo.com

Project Title: Chokeberry and Stevia: Two Potential Specialty Crops for Tennessee

Project Summary:

Tennessee producers are faced with many challenges from year to year, involving weather changes, varying pest populations, and fluctuations in market demand. In addition, environmentalists, nutritionists, and consumers desire healthy, nutritious products that are free of pesticide residues. Producers are often seeking potential cropping alternatives to fill gaps within their commodity income streams, and to help minimize economic risks. Stevia and chokeberry are two specialty crops that have potential for Tennessee producers. Products derived from each crop are marketed for human health benefits. Anecdotal reports suggested that pest and pathogen problems on these two crops were minimal, but prior to this project, there was no scientific documentation to support the idea that environmental conditions and minimal pest and pathogen pressure in eastern Tennessee would create ideal growing conditions for these crops. This study was undertaken to determine whether these crops are suitable candidates for consideration as alternative income sources for Tennessee producers. We found that both crops could be grown successfully in eastern Tennessee, provided certain considerations are taken into account. Chokeberry plants should be established from bare rooted plants, rather than seed. They will need mulching to protect from low temperatures in winter, or during drought conditions. During the growing season, chokeberries will need protection from Japanese beetles; however, disease problems will likely be minimal. Stevia should be grown from certified seed. During transplant production, overwatering and high humidity in greenhouses should be avoided to prevent plant edema. Stevia is not a perennial in eastern Tennessee. Early plantings should result in two to three harvests during the growing season. The main diseases that are likely to be encountered are leaf spots caused by *Alternaria alternata*, and leaf and stem blights caused by *Botrytis cinerea* and *Fusarium sporotrichioides*. Insect pests are likely to be minor, and flowering stevia may provide food to pollinators in late summer to mid-fall or first frost.

Chokeberries

Chokeberries, *Aronia melanocarpa* (black) and *A. arbutifolia* (red) are shrubs native to the north- and southeastern regions of the U.S. Although these shrubs can be found in wet, wooded areas and swamps, they actually grow best in well-drained soils. Chokeberries grow in many soil types, ranging from sand to heavy clay and from mildly acidic to alkaline pH soils. Black chokeberry has been naturalized in Europe and Asia, where it is used for wine and juice production (Knudson 2009). The name 'chokeberry' refers to the astringent taste of the fruits, which are inedible when raw, but can be processed to make jam, juice, soft spreads, syrup, teas, tinctures, and wine. Chokeberries are high in Vitamin C and antioxidant pigment compounds, such as anthocyanins. Antioxidants have been studied for prevention of cancer and coronary heart disease. Black chokeberries are also cultivated as an ornamental plant species and used as a wildlife food source (Knudson 2009). Chokeberries are reported to be resistant to drought, insects, pollution, and disease. However, there are 19 and 14 reports of pathogens from red and black chokeberry, respectively (Farr and Rossman 2016).

Stevia

Stevia, a member of the sunflower family (Asteraceae), is native to Paraguay, but has been grown under a wide range of conditions. In subtropical climates it is grown as a perennial (2-5 years) with multiple

harvests, while in colder regions it is grown as an annual with a single harvest (Midmore and Rank 2002). The species *Stevia rebaudiana*, commonly known as sweet leaf, or stevia, is grown for the sweet taste of its leaves. In 2008, stevia-derived glycosides (rebaudioside A and stevioside) were approved by the U.S. Food and Drug Administration as a sweetener food additive. Stevia-derived extracts have up to 300 times the sweetness of sugar and zero calories (Anton et al. 2010). When added to food, the glycosides have a negligible effect on blood glucose, making them an attractive natural sweetener to people on carbohydrate-controlled diets (hypo- or hyperglycemia) (Anton et al. 2010). With increased demand for naturally derived, low-carbohydrate food sweeteners, stevia is potentially a lucrative crop for Tennesseans who choose to produce it and provide it to the market for processing as a sugar substitute. Over the years, the number of countries in which stevia-based sweeteners are approved as food additives has increased significantly. Japan is a large consumer where stevia has replaced chemical sweeteners such as aspartame, which were banned there in the 1970's (Midmore and Rank 2002). In 2011, stevia-derived sweeteners were approved for use in the European Union (Stones 2011).

Information on diseases and pests of stevia are limited, only 12 plant pathogens have been reported worldwide (Farr and Rossman 2016). In general, field-grown stevia is not known to have serious disease and insect problems; however, under greenhouse conditions aphids, thrips, and whiteflies can be problematic (Schnelle 2010). Septoria leaf spot has been reported on overly mature stevia plants (Schnelle 2010). Root and stem rots (*Rhizoctonia solani*, *Sclerotinia sclerotiorum*, *Sclerotium rolfsii*, and *Verticillium dahliae*) have been noted, as well as diseases caused by *Alternaria*, *Botrytis*, *Fusarium*, *Oidium*, and *Uromyces* (Midmore 2002, Farr and Rossman 2016).

Project Approach:

Chokeberries

Two species of chokeberry, *Aronia melanocarpa* (black) and *A. arbutifolia* (red), were commercially available when this study was initiated. Seed was purchased, and placed in cold storage for 55 days to aid in the vernalization process. However, the rate of germination was very low and bare rooted plants were purchased for the project. In the spring of 2014, the field was fertilized with 40 lbs./acre of 10-10-10 fertilizer prior to planting, and 180 plants were established in a replicated randomized complete block design (5 rows with 3 replicate plots of each plant type, and six plants per replicate plot) at the Plant Sciences Unit, East Tennessee Research and Education Center, Knoxville, TN. Plant development was observed during 2014-2016 to determine presence of arthropod pests or diseases throughout the seasons, to monitor plant growth and ability to survive normally-occurring winter temperatures and drought.

In spring 2015, 5% of red chokeberry plants had died due to winter temperatures, while only 1% of black chokeberries were lost. Dormancy was broken on the red plants earlier than the black ones, followed by more low temperatures, which likely contributed to greater losses of red plants. During the summer and fall of 2015, additional plants (8% red and 1% black) were lost due to drought conditions.

Berry production and plant height were assessed in June and September of 2015. In September, the average height of red chokeberry plants was 80.7 cm, while the black-type plants were shorter, 67.4 cm. Red plants grew an average of 5.4 cm during the 3-month period, while black chokeberries were shorter (-6.3 cm). The “loss of height” by black plants was due to significant insect damage and twig senescence. Black chokeberries also had a greater number of sprouts/canes and more berry drop than red chokeberries. Fruiting (number of berry clusters) was significantly greater for red chokeberry, but berry size (diameter) was greater with black-type plants.

During the spring and summer of 2015, damage caused by Japanese beetle (*Popillia japonica*) was extensive for the chokeberries and caused loss of foliage and fruit damage (Fig. 1 Left and Middle). Carbaryl (Sevin) was applied for control. Aphids were observed also (Fig. 1 Right). The foliar fungal pathogen, *Alternaria alternata*, was the primary leaf spot pathogen found on chokeberry. Species of the fungal pathogens *Pestalotia*, *Cylindrosporium*, and *Xylaria* were isolated from leaf spots also. Overall, the level of disease observed was very low, which suggested that environmental conditions (light, temperature, moisture, humidity) were unfavorable for disease development, or that the pathogens observed were secondary pathogens (needed a wound to initiate disease) and damage would be limited under environments that are more favorable for disease.



Fig. 1. (Left) Damage from Japanese beetle on fruiting chokeberry. (Middle) Japanese beetle present on leaf. (Right) Aphids on chokeberry leaf.

Darrell Hensley conducted monthly Pesticide Safety Education Training sessions and discussed the potential of chokeberries as an ornamental and food crop for Tennessee. A budget was also developed for chokeberry production (Table 1).

Table 1. Budget for chokeberry

Item	Activity/Application	Unit	Quantity	Price/unit	\$U.S.	Cost
Land	Break up soil	acre	1	\$78	\$78.00	78.00

Preparation						
	Cultivate	acre	2	\$58	\$116.00	116.00
	Labor	hour	5	\$15	\$75.00	75.00
	Burndown - weed control	gal	2	\$58	\$116.00	116.00
	Pre-emergent weed control	gal	1	\$110	\$110.00	110.00
	Ammonium sulfate	lb.	26	\$0.33	\$8.58	8.58
Planting	Plants*	acre	600 - 900	\$552 - \$1,620	Varies	**
	Auger	acre	1	\$100	\$100.00	100.00
	Labor	hour	12	\$11	\$132.00	132.00
Fertility	Lime***	ton	1	\$25	\$25.00	If needed
	13-13-13	lbs.	300	\$0.34	\$102.00	102.00
	Spreader	each	2	\$20	\$40.00	40.00
	Labor	hour	0.5	\$15	\$7.50	7.50
Irrigation	Materials	various	3800	\$250	\$250.00	****
	Labor	hour	6	\$15	\$90.00	90.00
	Power (KW)	KWhour	36	\$0.10	\$3.60	3.60
Mowing	Mower	each	4	\$25	\$100.00	100.00
	Labor	hour	4	\$12	\$48.00	48.00
Pest Control	Sprayer	each	0.5	\$100.00	\$50.00	50.00
	Insecticide	gal	0.5	\$60.40	\$30.20	30.20
	Herbicide	gal	0.25	\$58	\$14.50	14.50
	Labor	hour	2	\$11.00	\$22.00	22.00
	Mulch	ton	1	\$40	\$40.00	40.00
	Labor /mulch	hour	6	\$15	\$90.00	90.00
TOTAL OPERATING COST				\$3,018.38		
Fixed Costs	Tractor, other equipment	acre	1	\$770	\$770.00	770.00
	Overhead	acre	0.18	\$2952.38	\$460.43	460.43
	Drip Irrigation	acre	1	\$250.00	\$250.00	250.00
TOTAL FIXED COST				1,480.43		
GRAND TOTAL				\$4,498.81		

*Plants cost ranges from \$0.92 each black to \$1.80 each for red. Plant population ranges from 600 to 900 plants per acre.

**Lime may be needed if acidic soil and conditions are below pH of 6.1.

***Irrigation materials are listed within fixed cost, but may not be needed.

Stevia

Organically produced *Stevia* seed were purchased from an international commercial source. However, the seeds received were light-colored, poorly filled and of low quality (Fig. 2 Left). Seed that have been

pollinated are typically black. Seed were planted in the greenhouse, and germination was very low. Subsequently, 125 *Stevia* plants (transplant stage) were purchased from an Ohio nursery. Forty-six percent of these plants arrived with stem lesions and foliar leaf spots (Fig. 2 Middle). Certified stevia seed was purchased from a third source. The seed were properly filled and very dark in color. This seed was planted in the greenhouse (Fig 2. Right), and transplanted to the field (late July 2014) at the Organic Crops Unit of the East Tennessee Research and Education Center, Knoxville, TN.



Fig. 2. (Left) Low quality stevia seed. (Middle) Diseased transplants with stem lesions and foliar leaf spots. (Right) Healthy transplants produced from certified seed.

In 2014, there was one harvest of *Stevia* (October 28, 2014). Delays related to poor quality organic seed, and diseases of purchased transplants were overcome with use of certified seed. An earlier planting in 2014 would have enabled two harvests (first harvest in July), rather than only one at the end of the growing season. Whole plants were harvested six inches above the soil line. Plant roots and lower stem were left in the soil to evaluate whether *stevia* would be an annual or a perennial crop in eastern Tennessee. The fresh weight of 100 whole plants was 13.3 kg. The fresh weight of leaves was 3.2 kg and leaf dry weight was 0.81 kg per 100 plants.

In spring of 2015, there were no surviving *stevia* from the 2014 crop, making it highly unlikely that *stevia* could be established as a perennial plant in eastern Tennessee. For the 2015 crop, *stevia* was seeded in the greenhouse in mid-February to produce transplants for the field. During greenhouse production of transplants, we found that *stevia* prefers a slightly dry environment and are sensitive to high humidity and heat conditions in the greenhouse. *Stevia* leaves can become water congested and develop an edema condition. Symptoms of edema included bumps and blisters, leaf curling and distortion. When humidity conditions in the greenhouse were no longer favorable for edema (Fig. 2), the new leaves produced had a normal appearance (Fig. 3). *Stevia* plants were transplanted to the field on June 30 2015. The average plant height was 53.5 cm. The first *Stevia* harvest for 2015 was on July 22. The average weight of 100 plants was 47 g per plant. For harvest, plants were cut to 38 cm above the soil line. Plants were harvested again on October 13. For the second harvest, the average weight of 100 plants was 337.8 g per plant. At the second harvest, plants were cut to 15 cm above the soil line.



Fig. 3. (Left) Stevia leaves with edema symptoms. (Middle) After water conditions and humidity were corrected, new top growth showed no signs of edema. (Right) Native bee pollinators visit stevia flowers.

Stevia appears to be relatively pest-free; however, spittlebugs, armyworms, and sawflies were observed on leaves. With larval sawflies, a diet of stevia appeared to be fatal. Potential pollinators, such as native bees and butterflies were observed. Several potential pathogens were isolated from diseased leaves and stems of field plants. However, the majority of these fungi did not cause disease on stevia when inoculated under controlled conditions. Three species were proven to pathogens of stevia, including *Alternaria alternata*, *Botrytis cinerea*, and *Fusarium sporotrichioides*.



Fig. 4. (Left) Symptoms of leaf spot caused by *Fusarium sporotrichioides*. (Middle) Foliar blight caused by *Botrytis cinerea*. (Right) Leaf spot caused by *Alternaria alternata*.

Goals:

Stevia and chokeberry have not been grown in mass production systems within the State. As with other crops, insect pests and plant disease are common limiting factors in providing economic returns for producers, and plant survival and growth are negatively impacted by drought and low winter temperatures. The goals of this project were to develop small-scale production systems for these two crops to determine the feasibility of these two cropping systems as potential crops in the region. After, working with the crops during the project period it was concluded that both crops could serve as economically feasible production systems if a market was available.

Outcomes Achieved:

Chokeberries

- 1) Upon receipt of bare root plants, black shrubs had more suckers and red shrubs appeared to be younger with smaller stem diameters. During the growing period, the farm crew used mechanical trimmers and accidentally cut several plants that had multiple suckers. Plant height was measured throughout the growing seasons and number of sprouts was recorded. The percent of blooms for the entire plot was recorded on 4/7/16. Red chokeberries had 95% blooms and black had 4% blooms. Berry clusters were measured on the shrubs on 5/16/16. Both small (≤ 1 inches in diameter clusters) and large (≤ 2 inch diameter clusters) clusters were measured. Red shrubs had an average of 14.1 small clusters per plant and an avg. of 0.3 large clusters per plant. Black shrubs had an average of 5.3 small clusters per plant and 0.5 large clusters per plant. The black shrubs had larger berries with an average berry diameter of 6.6 cm, whereas the red shrubs had an average berry diameter of 5.0 cm (Fig. 5).
- 2) Even though red chokeberry plants were smaller in height upon initial receipt (obtained from two different vendors), they exceeded the height of the majority of black plants by the end of the project. Final heights of the red shrubs averaged 97.2 cm and the black shrubs averaged 91.8 cm.
- 3) The performance (berry production) of each shrub type was noticeably different. The berry size of black shrubs was larger (approximately 6.6 mm diameter) whereas berries of red shrubs averaged (5.0 mm diameter). Black shrubs had more suckers than red shrubs. From 2015 to the 2016 growing season, red shrubs had an average height increase of 65.6 cm and black shrubs increased by 65.1 cm. The final measured height of plants in 2016 was 97.2 cm for red shrubs and 91.8 cm for black shrubs.

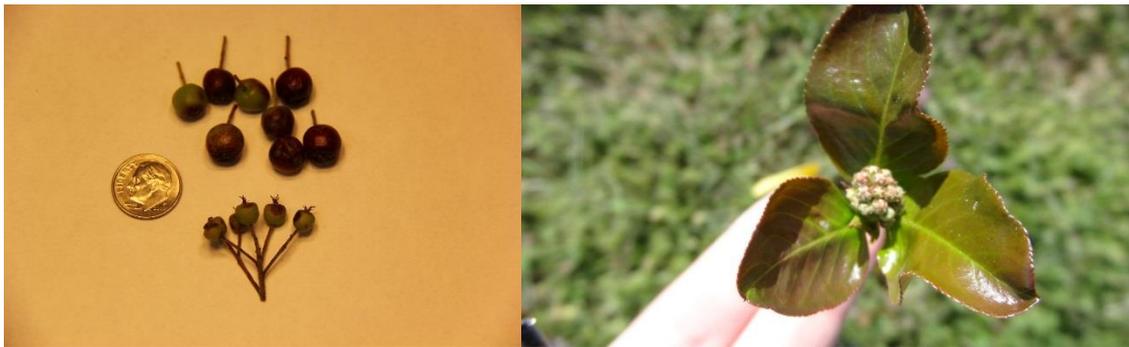


Fig. 5 (Left) Berries from black chokeberries were larger than from red-type plants. (Right) Red chokeberry prior to bloom.

- 4) Japanese beetles severely defoliated the chokeberry plants each year. Only a few plants were observed with infestations of aphids, and these had symptoms of leaf distortion, therefore restricting potential nutrient flow to other portions of the plant. Ladybugs were present in the field on several plants throughout the season, suggesting that they were serving as predators and were feeding on aphids or other potential pests. Labeled insecticides for these pests are available (Table 2).

Table 2. Insecticides that are currently labeled for *Aronia* production

Common name	Trade name	PESTS		
		Aphids	Japanese beetle	Stinkbugs
Thiamethoxam	Actara (25WDG) 3-4 oz./acre	X	X	X
Acetamiprid	Assail (30SG) 2.5-5.3 oz. / acre	X	X	X
Carbaryl	Sevin (4L) 2 qt / acre	X		
Insecticidal soap	Insecticidal soap	X	X	
Neem	Trilogy	X		

There are other potential arthropod pests that may cause problems in chokeberry production, including mites, thrips, spotted wing drosophila, and African fig fly. Insecticides that are suggested for those pests, but are not currently labeled for chokeberries include spinosad (Entrust 80W), which may provide control of the spotted wing drosophila (*Drosophila suzukii*); however, product efficacy has not been evaluated on this crop. Spinosad may also control thrips. Horticultural oils should provide control of mites and aphids in the early portion of the season. Products containing pyrethrins (various formulations available) should provide control of aphids, Japanese beetles, stinkbugs, spotted wing drosophila and the African fig fly, but pyrethrins are not currently labeled for chokeberry (*Aronia*).

- 5) Diseases on chokeberry included foliar leaf spots caused by two *Alternaria* species and one species of *Xylaria*. All isolates appeared to be extremely weak pathogens, only causing minor leaf spots on field plants. In lab tests with detached leaves, leaf spots only appeared where leaves had been physically damaged by mechanical means when inoculated with the organisms. Direct inoculations to non-damaged leaves did not result in leaf spots, suggesting that insect damaged leaf tissue and provided an entry wound for weak pathogens to infect the plant.
- 6) Costs of establishing chokeberry would be similar to blueberry production. Initial costs would be dependent on the producer's choice of inputs. The addition of mulch and/or irrigation may make a difference in berry yield, as well as survival of plants during extremely droughty conditions. During the summer and early fall of 2016, the site suffered from lack of rainfall. As of October 2016, several plants had died from severe drought conditions.
- 7) During Pesticide Safety Education Program training sessions conducted in 2015 and 2016, attendees (~1,400) were informed about the potential benefits of chokeberry production. The plants could be used as a low maintenance shrub that could provide two benefits in an urban setting; use as an ornamental or as a potential berry crop. Red shrub leaves turn brilliant red to orange in fall and have

bright red fruit. Leaves of black shrubs are red and berries would have been harvested or dried in late fall. The full potential of leaf coloration in the fall was not observed due to heavy defoliation by Japanese beetles.

- 8) A presentation on production of chokeberry was given by Darrell Hensley at the Organic Crops Field Tour on April 28, 2016. Approximately 80 people attended the presentation.

Stevia

- 1) Transplants were produced after certified seeds were obtained.
- 2) Early planting will increase the number of harvests in summer and fall. Two harvests were achieved in mid-summer and mid-fall during the second year of this project, but a third harvest may have been possible if transplants had been planted immediately after the last frost (mid-April).
- 3) Based on two field seasons, we established that stevia would not likely be a perennial plant in eastern Tennessee.
- 4) Insect pest problems were minor and insecticides were not needed. Pollinators were attracted to the white flowers of stevia, which bloomed in late summer and fall.
- 5) Several potential fungal pathogens were isolated from stevia leaves in the field. However, only three of these fungi caused significant disease in controlled greenhouse studies, namely *Alternaria alternata*, *Botrytis cinerea*, and *Fusarium sporotrichioides*. This project is the first report of *Botrytis* gray mold of stevia in the U.S. This fungus has been reported on stevia in Italy. We also identified *Fusarium sporotrichioides* causing stem rot and leaf blight on stevia. This fungal pathogen has never been reported on stevia. *Alternaria alternata* was also isolated from leaf spots on stevia. Although *A. alternata* has not been reported on stevia in the U.S., it has been reported in India. All three pathogens can cause disease in many other host plants and have the potential to cause significant disease in stevia.
- 6) First reports on three fungal pathogens are being prepared for publication in *Plant Disease*.
- 7) A presentation on "Fungal diseases of *Stevia rebaudiana* grown in eastern Tennessee," authors: T. Collins, M. Dee, H. Korotkin, D. Hensley, and B. Ownley, was given at the annual meeting of the American Phytopathological Society, held Jul 29 – Aug 3, in Tampa, Florida. The meeting was attended by more than 1400 people.
- 8) A presentation on production of stevia was given by Bonnie Ownley at the Organic Crops Field Tour on April 28, 2016. Approximately 80 people attended the presentation.

Beneficiaries:

Beneficiaries of this project include the public (traditional and organic farmers and ornamental producers, horticulturalists, urban communities, home gardeners) university and industry researchers, and Extension personnel.

Lessons Learned:

Chokeberries

It is difficult to grow chokeberry from seed; bare root stock would be preferred.

Initially, we tried establishing chokeberries from seed, but quickly found that establishing plants from seed was difficult. To obtain maximum germination of chokeberry seed, the seed must be subjected to moisture, followed by cool temperatures for 40+ days to achieve high germination rates. Growing plants from seed would have taken an additional year or longer to have plants large enough for field transplanting. Since chokeberry plants are multi-stemmed shrubs, cutting root suckers/runners from the base of existing plants appears to be the easiest method to establish new field plantings. Most producers obtain bare root or potted plants from a supplier to begin a chokeberry production system.

There are growth production differences between black and red chokeberry plants

To determine the difference between the two species of chokeberry we examined the lower leaf surface. Red type plants have leaf hairs, while black chokeberry plants lack leaf hairs. If no leaves were present, the red shrubs could be identified due to the brown coloration of the stem where black chokeberry plants had a gray coloration. Flowers of both species are white in color and appear in late April to May. We noted that red shrubs produced flowers earlier than black shrubs. Previous reports indicated that *Aronia* may range in height from 3 to 10 ft. As of October 2016, the tallest plant was about 4 feet tall, and it was a red species. The majority of red plants were taller than black plants. Fruit of red shrubs was smaller (~ 0.2 in. diameter) than black and fruit was maintained until October. Fruit from the black shrubs was closer to the size of fruit from a typical blueberry plant (~0.26 in) and were not retained on the plant as long as the red types. Typically, fruit of black chokeberry was dried by late September. A typical suggested harvest time would be from July to August for black chokeberry and from September to October for red chokeberry.

Drought-stressed chokeberry plants have fewer berry clusters and smaller fruits.

The chokeberry is a fairly resilient plant and can withstand droughty conditions; however, adequate moisture is needed to produce an abundance of berry clusters and fully formed berries. In 2016, the irrigation system was not distributing water to the plants. In mid-October, droughty conditions occurred and several established plants died. There was no rainfall for over 22 days prior to 10/20/16. The precipitation data for the month of September 2016 was down 2.41 inches from normal with the greatest monthly receipt of 0.95 inches in a 24-hour period on 9/18, and only 0.43 in. were received on 9/26/16. The month of August was also at a negative receipt of rainfall (-1.82 in.); however, the area received 1.42 inches over four days in the month. These were two extremely hot and dry months for the year, thereby reducing berry size and causing plant death.

Insect pests include Japanese beetles and aphids; disease pressure is low.

At the planting site, arthropod pests included the Japanese beetle and occasional populations of aphids. The aphids were kept to a minimum due to the presence of natural predators (ladybugs, which were observed). Japanese beetles have the potential to defoliate the entire plant, however there are several insecticides labeled for control of this pest and plants should be treated at the first onset of this pest. Foliar leaf diseases were limited and work conducted in the lab indicated that the fungi isolated were weak, secondary pathogens. Due to low numbers of arthropod species and absence of disease pressure, it is likely that chokeberries would be an excellent candidate as an alternative income source if grown for berry production or selected as an ornamental plant. The red shrub would provide the greatest visual appeal due to the bright red berries and greater leaf coloration. In areas where vertebrate pest populations are high, deer or rabbits may pose a browsing threat. In late winter and early spring, deer commonly browse on newly established plants, which may result in plant losses. Rabbits may browse on an occasional plant or two, cutting plants just above the soil line. There was no recognizable damage caused by birds to the fruit at the planting site.

Costs of production are similar for blueberries and chokeberries.

Inputs and costs for chokeberries would be similar to blueberry production, however in situations where mulch and a deep loamy soil exists, irrigation may not be as critical for berry development and plant survival as it is in blueberry production. Our plants did not have mulch applied at the base nor was the soil type and pH desirable for a typical blueberry production system.

Stevia

Purchase certified seed for stevia production.

Production of stevia transplants is likely the most difficult part of establishing the crop. Certified seed will ensure that seed are viable.

High humidity and overwatering can cause edema in greenhouse-produced transplants.

High humidity conditions can cause puckering and deformation of stevia leaves, eventually leading to necrosis. If these conditions are corrected, new growth will be free of symptoms.

Planting transplants early after the frost-free date in spring will ensure multiple harvests until frost in fall. In this study, a maximum of two harvests were achieved, however, if plants were moved to the field earlier, it is likely that three harvests would be possible. The first harvest was smaller and caused plants to produce multiple stems, which resulted in the second harvest being significantly larger.

Stevia is not a perennial plant in eastern Tennessee. Over two project winters, with no mulching of soil, stevia did not survive.

Pressure from insect pests was very low on Stevia and insecticides were not needed. Insect pressure was very low, and some pests, such as larval sawflies, did not survive after feeding on stevia. Native bees and pollinators visited white stevia flowers during the fall when there were few flowering plants.

There were few diseases found on stevia, but three did occur, caused by Alternaria alternata, Botrytis cinerea, and Fusarium sporotrichioides. The greatest damage to field plants was caused by F. sporotrichioides, which had never been reported before on stevia.

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Project Title: Promoting Specialty Crops in Northeast Tennessee Food Deserts

Summary:

Rural Resources and our community partners: Greene Co. Health Council, local school systems, food-insecure teens and families, farmers, doctors, hospitals, pastors and leaders from all sections of our local food system exist in a rural food desert. While the natural resources exist to produce specialty crops, and specialty crops are slowly taking root in some former tobacco patches, much cultivation is needed to promote the growing and consumption of specialty crops. Because many residents of our food desert no longer grow, eat and prepare specialty crops on a regular basis, this proposal targets farmers and residents with intensive promotion and programming over the next two years. Our goal is: to increase the growing and preparation know-how of specialty crops so that our community recognizes the importance of 5 servings of fruits and vegetables daily and acts on that. We will reach out to at least 10,000 households (nearly 39% of the households in our county) through effective community-wide promotion and education around specialty crops.

Farmers and community members will benefit from an online food hub and a specialty crops campaign that will include schools, hospitals, and food-insecure teens and families. Targeted groups will learn to grow, taste, purchase, and prepare specialty crops.

Approach:

The purpose of this project is twofold. First, we seek to promote specialty crops so the residents of our food desert will choose to eat specialty crops; and secondly, we must provide access to specialty crops so the choice can be realized. Therefore the project has two strategies: to promote specialty crops and to provide access to specialty crops.

Goals:

1. Fifty families living in the heart of our food desert who have the least access to specialty crops will gain the opportunity to grow in containers and enjoy samples of their favorite specialty crops.
2. Sixty food-insecure teens working in groups of 10 and their families will have access to specialty crops while involving each teen in a minimum of 30 hours of lessons/year with additional events for some groups of teens.
3. A community wide promotional campaign with printed and online web-based materials will be implemented. Two local hospitals will work closely with us to distribute posters and brochures to 60 doctors, and staff; 10,250 students' families will receive information on eating 5 servings of fruits and vegetables daily through school newsletters and other materials.
4. Students—approximately 240—at target schools will be involved in “harvest of the month” tasting and cooking activities.
5. A food-hub will be created to aggregate and distribute specialty crops for a minimum of 30 specialty crop growers using an online ordering service and accept food stamps for community members who have those to spend.

Outcomes:

Goal 1: Fifty families living in the heart of our food desert who have the least access to specialty crops will gain the opportunity to grow in containers and enjoy samples of their favorite specialty crops.

Outcome: In this project period, 65 Container gardens were distributed to 57 food insecure families. In the two previous years 230 containers were distributed to 140 families for a total of 295 containers distributed to 197 families. In addition, 5 tastings events with specialty crops were held during this project period reaching 910 individuals. Over the course of the entire project, 43 tastings were held reaching 3,397 individuals. These tastings were to introduce individuals and families to specialty crops as a way to encourage them to eat them and grow them.

Before this project families did not have the materials or inspiration to garden. Some families have a 2 foot by 4 foot piece of ground under their air conditioner with nothing planted and some families do not even have access to that much ground. One small common raised bed existed. As a result of this project, which gave residents the opportunity to taste fresh vegetables as well as containers, growing materials, plants, seeds, and instruction, inspiration took hold. Some families lined the sidewalk in front of their units with containers—from us and scrounged containers. Another family planted corn in their 2x4 space by their air conditioner. Another family grew melons under their air conditioner and scrounged an old pallet to create a fence/trellis to keep the melons contained in their 2x4 area. Many families grew vegetable plants in the containers given. When driving into this neighborhood in the summer there is a visible change in appearance with all of the green plants and food growing. Before there was just a combination of dirt, grass, sidewalks, and brick walls with the one small common raised bed in a central location.

Goal 2: Sixty food-insecure teens working in groups of 10 and their families will have access to specialty crops while involving each teen in a minimum of 30 hours of lessons/year with additional events for some groups of teens.

Outcome: In this project period, 54 Teens participated in an intensive farm and food training project at Rural Resources farm involving 2 meetings each month where they grew, prepared and developed businesses related to specialty crops. In previous project years 42 teens and then 44 teens participated. Because teens participate for multiple years, approximately 75 individual teens participated in the project. In all the teens accrued 992 hours of training by the middle of the summer when the grant period ended, an average of 18.4 hours per teen. Added to previous year's totals, teens collectively spent 4,522.5 hours in training. In addition, teens participated in special activities to promote specialty crops such as demos at local farmers markets.

In the summer of 2016 evaluation, five major outcomes emerged from focus group conversations and the surveys:

- Increased skills and knowledge related to content areas
- Increased leadership, communication, and life skills
- Increased food security and healthier eating habits
- Increased career aspiration and opportunities
- Benefits extend to the community during and after graduating from the program

In the focus group meeting, current and past participants and families spoke of improved food security and healthier habits thanks to the hands-on experiences that demonstrate the farm to table process.

The program has also built a garden in every teen's household, which has been especially impactful to encourage continued application of their skills and engage the whole family.

Most of the teens report having more confidence in their eating decisions, preparing meals at home with fresh produce, and influencing their families' food habits.

As confirmation that the program is achieving its goal to improve food security, teens unquestionably recognized the benefit of growing their own food to supplement their food purchases. One respondent remarked, "Before the program my family never really wanted to farm or have gardens. So in our first year about farming, they taught us how to take care of soil and now we have a really nice garden at home. We're able to cook really, really nice meals with stuff that we grew." Teens are also learning that they can supplement their family's food budget with produce grown in their garden whether it is in season or not. "If money's really tight or something happens where you can't pay that much to get enough food, if you preserve [what you grow] you can use it for a certain amount of time – that's been very useful for us."

Goal 3: A community wide promotional campaign with printed and online web-based materials will be implemented. Two local hospitals will work closely with us to distribute posters and brochures to 60 doctors, and staff; 10,250 students' families will receive information on eating 5 servings of fruits and vegetables daily through school newsletters and other materials.

Outcome: Specialty Crop promotion continued to happen through our 5210 Campaign with posters, brochures, websites, newsletter messages, and stickers. This campaign is on-going. Building on last year, the 5210 campaign continued in doctors' offices and with school teachers. 25 posters and 450 brochures were handed out to Drs. Offices as well as lots of stickers. Additionally, 5210 information and veggie samples were passed out at our annual parenting fair to approximately 400 children as well as to 65 Boys and Girls Club participants. In June a large event was held at which 350 folks came including many folks from public housing. The event included a salad eating contest. The only drinks available were water flavored with fruit and with cucumbers (as well as plain water). Additionally there were 11 tastings of specialty crops held in public housing with 80 kids. Promotion over the entire project included the distribution of 133 posters, 4,463 brochures and outreach to 64,672 adults and children.

The above numbers show that we more than met our original goals. With promotional campaigns feedback is not as readily available but we know that the message has repeatedly been promoted in the community with a consistent message of health across agencies and venues including schools, hospitals, and community events. This is a unique joint effort of cooperation and in that way has changed how community institutions work together to have an impact.

Goal 4: Students—approximately 240—at target schools will be involved in "harvest of the month" tasting and cooking activities.

Outcome: Specialty Crops have been promoted at four schools with science and or math lessons or afterschool activities that involved cooking carts and other programming that we made available to the schools. At Tusculum View Elementary School, 60 third grade students learned about plant parts from Farmer Melissa and sampled edible examples of each. Doak Elementary School uses their cooking cart with 85 students 2 to 4 times each month. Highland Elementary regularly uses their cooking cart with 30 students in its afterschool program alongside the garden the students are growing and Glenwood Elementary uses their cart with 75 students 2-3 times/month.

In addition to activities in schools, we have also held a vegetable tasting as a part of every field trip—six schools and a Girl Scout Troop—to the Rural Resources farm. In the past year, 150 students have attended.

Over the three program years, 1228 students have been reached with Harvest of the Month Activities, 190 on a reoccurring basis. This on-going intensive education is happening as a part of integration into the curriculum by teachers for a sustaining impact where there was no similar opportunity previously.

Goal 5: A food-hub will be created to aggregate and distribute specialty crops for a minimum of 30 specialty crop growers using an online ordering service and accept food stamps for community members who have those to spend.

Outcome: We dis-continued the food hub in the summer of 2016. Instead, we incubated a Community Supported Agriculture project which grew a wide variety of specialty crops. Additionally, we held a variety of events—dinners and farmers market demos—at which we promoted specialty crops produced by specific farms/farmers. 10 Farms/Farmers/Farm Families were promoted in this reporting period.

Over the entire project period, 49 farms were impacted and promoted through this project. While our original goal did not come to fruition, unforeseen results included a self-sustaining Community Supported Agriculture project that impacts a huge number of customers and restaurants in the region. The change that resulted was the startup of a new, independent business with 2 full time employees that infuses high quality, fresh produce into our community with additional farms receiving ongoing promotion through events and demonstrations.

Beneficiaries:

Greene Co Community
Doctors & Patients
Schools, School Teachers, Students
Parents & Children
Boys & Girls Club participants
Event participants
Food-insecure teens and their families
Public housing residents and other food insecure families
Farmers & Customers

Lessons:

Our work with our partners to educate our community and promote specialty crops has been wildly successful. These numbers from the shortest project period in many cases surpass our original goals. Our one miss with this project was starting a successful online food hub but the transition from food hub to beginning a CSA to now incubating a CSA has been a better fit for our capacity and for our community given external situations that we would not have forecasted when we wrote the original grant.

Although the funding has come to an end, in the future, we look forward to reaching out to more students and community members as we continue to promote specialty crops through the 5210 campaign. We are also implementing a new model for promoting specialty crops through our new children's farmers' market project that we will be taking on the road to every school in our county.

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Project Title: Are You Ready to Start a CSA? A Six-Part Workshop Series for Growers Considering Community Supported Agriculture

Project Summary:

Community Supported Agriculture (CSA), where customers buy a share from a farm before the season starts, is rapidly gaining in popularity with growers and consumers alike. In 2010, there were approximately 3,600 CSAs in the U.S., up from 60 in 1990 (1). Growers receive money for seeds and supplies at the beginning of the season and shareholders receive a box of fresh, local produce (10-15 commodities/week) each week throughout the season. Since growers get paid before a seed is planted, CSAs are increasingly popular avenues for growers to diversify their market and receive income over a longer period of the year. However, managing a CSA requires a high degree of skill, with managing crop production to ensure a variety of produce each week for 20-25 weeks, setting up the business structure, building a customer base and marketing the operation, evaluating profitability, and judicious expansion of the operation. The purpose of this project is to develop a 6-part workshop series, webinars and factsheets for growers considering CSA in Tennessee through collaboration with the University of Tennessee, the Tennessee Fruit and Vegetable Growers Association (TFVA) and the Tennessee Organic Growers Association (TOGA).

Approach:

Develop a 6-part workshop series, webinars and factsheets for growers considering CSA in Tennessee through collaboration with the University of Tennessee, the Tennessee Fruit and Vegetable Association (TFVA) and the Tennessee Organic Growers Association (TOGA).

These six, 2-hour workshops were coordinated by an Extension Assistant and taught by experienced growers and UT personnel and provided growers with training in planning, structuring, marketing, managing, analyzing profitability and expanding a CSA. The workshops, the speakers, the locations and the dates conducted are listed below under 'Outcomes Achieved.'

Along with each speaker, workshops were held on-farm and the host grower spoke about their operation. Each workshop was videoed by a videographer on the UT Knoxville Campus and made available as a DVD for purchase for those who could not attend the workshop in person.

This series was offered as a fee-based program, however, TOGA and TFVA members were allowed to attend free of charge. We anticipated a minimal amount of revenue to be earned from the workshops. The purpose of charging a workshop fee was actually to encourage membership in our specialty crop organizations (TFVA and TOGA), whose members were not charged to attend, which was successful in boosting membership to these organizations.

Goals:

The **GOAL** of this project was to provide potential fruit and vegetable CSA operators with the information necessary to make knowledgeable decisions about starting and operating a CSA. Knowledge gain was measured by conducting pre- and post-surveys during the workshops and conducting follow up surveys with the fruit and vegetable farmers at least 3 months after the completion of the workshop series (**PERFORMANCE MEASURE**). We expected to educate at least 100 fruit and vegetable growers and 30 Extension professionals in the on-farm workshops. The pre-workshop survey was used as a **BENCHMARK**. Our **TARGET** was to increase participant knowledge of the skills required for CSA management by 65%. As farming, and especially CSA, is hard work and inherently risky. We expected

that after attending this workshop series, several participants would decide a CSA might not be for them. We consider this result a success as well, in preventing the waste of resources and negative impacts associated with a failed operation. Participant reasons for pursuing CSA or not will be evaluated through post-workshop surveys and follow up calls.

Outcomes Achieved:

In the first year of the project, six 2-hour workshops were developed to provide growers with training in planning, structuring, marketing, managing, analyzing profitability and expanding a CSA.

In the second year these workshops were delivered to 35 participants. These workshops included:

- 1) Choosing Your Crops and Varieties, and Scheduling Their Planting in the Greenhouse and the Field, led by Annette Wszelaki and Jeff Martin, Plant Sciences, and Adam Colvin, Colvin Family Farm, Spring City, TN, January 26, 2015
This workshop included information on crop and variety selection, as well as crop scheduling in the field and greenhouse.
- 2) Options for CSA Legal Structure and Analyzing CSA Profitability, led by Chris Clark and Margarita Valandra, Agricultural and Resource Economics, Becky Jacobs, College of Law, and Ray and Bart Gilmer, Falcon Ridge Farm, Tone, TN, February 9, 2015
This workshop helped participants think through the legal structure of their business, as well as helped them analyze the profitability of their CSA.
- 3) Managing Growth of Your CSA, Labor Management, Apprenticeship Programs and Quality of Life, led by Jeff Martin, Plant Sciences, and Tana Comer, Eaton's Creek Organics, Joelton, TN, March 16, 2015
This workshop covered labor issues, the pros and cons of apprenticeship programs, and expanding your CSA gradually, while maintaining your quality of life.
- 4) Adding Fruit Crops to Your CSA, led by David Lockwood, Plant Sciences, and Shannon Meadows, Mountain Meadows Farm, Heiskell, TN, April 13, 2015
this workshop introduced participants to considerations for small and tree fruit production.
- 5) Choosing Equipment for a Small, Diversified Farm, led by Bob Due, Terraced Gardens Farm, New Tazewell, TN, May 11, 2015
This workshop covered choosing equipment for a small, diversified operation.
- 6) Marketing Your CSA and Keeping Your Customers Happy, led by Megan Bruch, Center for Profitable Agriculture, and Ron and Chris Arnold, Herb and Plow Farm, Grimsey, TN, June 15, 2015
This workshop helped participants develop a marketing plan and provided tips for marketing their CSA image.

Participants were asked to rate their knowledge of the topic before and after the workshops, the usefulness of materials and the quality of instruction from 1 (very low) to 10 (very high). Pre- and post-workshop surveys showed an average knowledge gain of 66%, ranging from 15 to 135%. The usefulness of materials provided averaged a '9' and the quality of instruction averaged a '9.1'. While the knowledge gain was right in-line with our target of 65%, the overall number of participants was much lower than expected. However, in the follow-up survey with participants, 50% of respondents said they had started a CSA since attending the workshops. The remaining 50% of respondents said they were already running a CSA when they attended the workshops. Additionally, all of those who started a CSA since the

workshop reported that the workshops helped them in planning and implementing their CSA. Moreover, during the course of the workshop series, it was evident that participants, as well as growers interfaced in other venues, were interested in more in-depth information on incorporating fruit into their new or existing CSA program. To that end, Dr. David Lockwood spoke on this topic twenty-five times in 2016 at workshops, field days and on-farm visits with travel funds available through this project (funds that remained after workshop series that had been budgeted for agent travel to the workshops), reaching an additional 795 growers and Extension professionals.

A series of *Are you ready to start a CSA?* Factsheets were produced from this grant, including:

Marketing your CSA and making your customers happy, UT Extension SP787-A
<https://extension.tennessee.edu/publications/Documents/SP787-A.pdf>

Adding fruit crops to your CSA, UT Extension SP787-B
<https://extension.tennessee.edu/publications/Documents/SP787-B.pdf>

The choice of legal structure for Community Supported Agriculture (CSA) operations in Tennessee, UT Extension SP787-C <https://extension.tennessee.edu/publications/Documents/SP787-C.pdf>

Three more publications in this series are in progress, and materials from the Small Fruit Consortium ([Southeast Regional Organic Blueberry Pest Management Guide](#), [Southeast Regional Cane berry Production Guide](#), [Southeast Regional Bunch Grape Integrated Management Guide](#)) were printed to supplement requested information on fruit production.

Beneficiaries:

The beneficiaries of the program were the grower and agent participants who attended the workshop series and other field days, workshops and visits where incorporating fruit into CSAs was discussed, as well as shareholders and future shareholders of the CSAs that resulted or improved as a result of the workshop series.

Lessons Learned:

While we expected to train 100 growers, we learned that more and more growers are extending their season and have very little 'off-season' to attend workshops. Though our attendee numbers were lower than expected for the workshop series, we did have a great interest in one particular topic (adding fruit to your CSA) and were able to utilize funds to expand coverage of this topic all across the state, instead of in just one location. This allowed us to far exceed the number of participants originally targeted in the workshops by eight-fold. We also learned that while distance learning is becoming the standard, face-to-face workshops are still the preferred method of interaction for growers, and growers find much value in being able to see firsthand what other growers are doing on their farms through farm tours. Lastly, while potential CSA growers were our target, we found that potential CSA growers as well as experienced CSA growers benefited from the workshop series through extremely positive evaluation comments like:

"Great! Thanks for putting this together!"

"This workshop was so educational and very encouraging."

"Excellent combination- Dr. Lockwood's presentation follow by actual farm experience from Shannon Meadows! Thank you!"

"This topic should be offered every year- very useful for beginners of small farms. Wished we had this knowledge when we first started- wasted time and money on stuff that didn't work!"

“This was by far the most valuable UT workshop ever!”

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Reference:

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Project Title: Providing Education and Marketing Opportunities for the Tennessee Nursery, Landscape and Garden Center Industry

Project Summary:

The project was created to help the nursery growers in Tennessee market their products to a national/international audience at a local venue and to provide education for the grower, landscaper and garden center industry in Tennessee.

Project Approach:

TNLA secured the Music City Center to allow vendors to showcase their products and also provide meeting space for education. TNLA secured two business management and seven industry professionals to speak for the TNGIE educational program. There were con-current sessions allowing attendees to select which session would be more beneficial to their business. The owner of the business might choose to attend the business management session and the employee might attend the sessions that directly related to plants, pests, or insects.

The speaker selection was chosen to draw an audience of both business owners and employees. The business tract focused on selling and leading leaders. The technical tract focused on weed control, plant diseases, insects, growing media and alternative plants for the landscape. The speakers chosen for the business tract were selected for expertise of on business management. The technical tract was designed with local experts that would be more suited to our geographical area. They were all experts in their field and most worked for the state as an extension agent or professor of horticulture. The speaker's notoriety and content were a great draw for both landscapers and nurserymen.

TNLA paid the expenses for the postage and printing of the January 2014 registration mailer and the speakers' fees including meals, parking, hotel rooms, cab fares, airfare and mileage.

TNLA mailed the grant reimbursement checks to 59 grower exhibitors of the January 2014 Tennessee Green Industry Expo.

In August of 2014, TNLA used the balance of the registration mailer printing fee to print the October 2014 TNGIE registration mailer. In August, TNLA also secured a contract with Anchor Tours to provide a bus to transport exhibitors and attendees from the Omni Hotel and the Hyatt Place Hotel to and from the Music City Center. TNLA received many positive comments about the bus transportation making it easier for those attending the TNGIE to get to and from the expo.

For the October 2014 Tennessee Green Industry Expo, TNLA used grant money to secure two leading industry business management speakers. Kevin Kehoe had a three hour presentation on sales and Jeff Harkness had a three hour session on pricing. There were also seven other industry professionals who provided industry specific information for growers and landscapers.

TNLA again secured a bus for the September 2015 TNGIE to transport attendees and exhibitors from the hotel to the Music City Center. Having the bus made it possible for those attending and exhibiting to participate in the event. Many in our industry have hip, knee, back and feet problems making it very difficult to walk 3-5 blocks. The bus was utilized by these individuals.

TNLA utilized the grant to secure a speaker from Ewing Irrigation for a workshop for the landscape, garden center

Goals:

Increase sales of nursery stock and provide education to the landscape and garden center industry.

Outcomes Achieved:

Questionnaires received from the 59 Tennessee growers participating in the 2014 Tennessee Green Industry Expo showed that they received an average of 14 new leads and an average of 5 placed orders with an average 8% increase in sales. January 2014 the attendees were mostly landscape contractors, landscape maintenance and retailer/independent (garden centers). This was the attendees we were hoping to attract. October 2014 TNGIE saw the wholesale growers increase with the retailer/independent and landscape contractor still being strong. Providing a marketplace and education for the industry were the ultimate goals and we were very pleased with the results.

Beneficiaries:

There were many beneficiaries of the grant. Nursery growers, landscape and garden center owners and employees, not only in Tennessee but in 25 other states. Tennessee businesses providing printing, mailing, food, gas, equipment, hotels, bus transportation, cabs, freight companies, parking vendors, show decorator, lease of the Music City Center, providing jobs for many associated with the show.

Lessons Learned:

Providing a marketplace and education for the green industry was supported by vendors and attendees. We would like to have seen a greater number of attendees. However, the vendors were very pleased with those attending saying they were buyers. Everyone seemed very positive.

Contact Person:

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Any Additional Information:

TNLA is very appreciative of the grant money provided to help the industry. Without grant monies, TNLA would not be able to provide these opportunities.

Project Title: Cultivating Specialty Crop Knowledge

Need for a Grant:

Tennessee teachers and schools in pre-kindergarten through 12th grade are clamoring for sources of funding to help start new educational gardens. The project was designed to support teachers and schools in their efforts to use school gardens to help improve students' test scores and eating habits. It is proven that students who are exposed to school gardens have better science test scores and are more likely to try specialty crops such as fruits and vegetables with which they're unfamiliar than students who aren't. Tennessee Agriculture in the Classroom planned to utilize USDA AMS Specialty Crop Block Grant funds to support schools in their teaching and gardening efforts through training and supplying teachers with core curriculum related to specialty crops.

Approach Taken for the Project:

This project addressed a need in schools to fund materials for educational gardens used to grow specialty crops such as fruits, vegetables and herbs and gave many students their first taste of these crops. A \$500 garden grant gave teachers and schools help in developing these classroom gardens. The \$500 grant was starter money to help teachers purchase supplies such as soil, tools and containers for classroom gardens.

AITC met with Tennessee Department of Education Deputy Commissioner, Dr. Kathleen Airhart for assistance on obtaining curricula that correlated to Common Core State Standards (CCSS.) Staff members of TDE were assigned to assist AITC with materials that correlated with CCSS. While this caused a slight delay in implementing the project the extra time allowed us to procure materials that correlated to CCSS and will be able to be used in the classroom for years to come. Three hundred and sixty-seven educators were trained during June of 2015 in the use of these materials.

Teachers and schools awarded a grant received free copies of "*Gardening Through The Curriculum*". This and other resources were given to help teachers identify and plant agricultural products approved by the Specialty Crop Grant program. Lessons using the gardens to help teachers teach reading, math, nutrition, science and social studies are included in this book and resources. Tennessee Agriculture in the Classroom offered workshops to all schools receiving school garden grant through the Specialty Crop Block Grant Program. Tennessee Agriculture In the Classroom made sure teachers only utilized funds to grow crops approved of by the Specialty Crop Grant program by including a disclaimer on the grant application, attaching a list of them with the grant check that is mailed to teachers and school administrators and asking teachers and school administrators to identify the crops they grew in their gardens. The objective of the Outdoor Classroom School Garden Grant Program was to offer a source of funding to teachers and schools that wanted to start educational gardens.

Achievement of Goals:

Our first goal was to reach 5,000 teachers and students in prekindergarten through 12th grade with funding and materials for school garden projects. We were able to fund seventy-six gardens, train 2,600

teachers representing 52,000 students each year. Direct participation in the gardens included at least 7,600 students per year.

Goal 2 involved increasing students' knowledge of Tennessee agriculture and nutrition. Based on teacher reports this was accomplished through incorporation of the curricula into the classroom and garden activities. Students were better able to identify specialty crops after being involved in the project. Not all grade levels/lessons had pre-/post tests to measure student gains in knowledge. The teachers that reported these gains saw an increase of 85%, on average in lower grades. Teachers of middle school students reported a lower gain (45%) due in part to their higher level of knowledge prior to the project. Jennifer Bates wrote, "They are more aware of their food and how their food arrives on their plate. My students have an increased awareness of various crops; carrots, radishes, tomatoes, wheat, apples, pumpkins, and corn. I measured the increase in awareness through: observations, field trips, small group discussion, Venn Diagrams, story maps, common assessments, KWL charts, new learning anchor charts, and schema charts. Pre- and post-tests were provided in many of the lessons, and were used to measure gains.

Goal 3 was to increase students' intake of specialty crops by ten percent. Teachers reported that students are aware of eating more specialty crops than before involvement with the project. Student journaling provided evidence of increased consumption of specialty crops as shown in this quote from Kathi Bridges: "we have seen positive results in students who garden are more likely to acquire an appreciation for varieties of vegetables and herbs they grow more than students who do not. Teachers measured their students' intake of specialty crops in several ways. The method that demonstrated the greatest gain among students was "tastings." Students were asked to select foods that they currently eat prior to the project. After the project the students participated in tastings of these garden products. Foods that were grown during the project showed an increase of 25% in student's selections, as compared with their responses prior to the project.

These learners now take their new interest and knowledge home to their families, which in turn help to inspire our community to move towards the value of bringing agriculture in to our school's learning environment. Also it is important to note, that as our gardeners harvest produce which they grew, then they look forward to preparing this produce into dishes such as lemon grass tea, basil pesto, baked sweet potato fries, corn/tomato salsa, etc. After the preparation of different recipes, students record their observations into their personal journals which are later shared with parents." This shows an increase in consumption and an increase in knowledge about specialty crops, also. Teachers reported that students demonstrated their increase in specialty crop intake through journaling. Forty percent of students (on average) said that they planned to consume more specialty crops after the project. Jane Boling wrote "as for the measurability of the program, I think the enthusiasm of the students in planting and harvesting says it all. The realization that food is "grown" not just grabbed from a shelf in a store or ordered out of a drive-through window is the most important concept we are trying to impress upon our students.

Beverly Richardson, of Riverside Elementary wrote, "With the salad, we actually got some of the students to try it, of course we had to have lots of ranch dressing. We even put some spinach in there

also, some liked it some wouldn't even try it, you know how that goes. Then we made spinach dip and served it with crackers, that was a big hit. We taught them about eating vegetables to keep them healthy and make them grow. One year we grew peanuts, they loved digging those underground crops, they were amazed that not everything comes from the grocery store, they can grow it their selves at school and at their home. Some of our students had not ever seen some of the vegetables before, and surprisingly they tried it and liked it, well.....some of them. We were not 100%.” Other participating teachers expressed similar results, with 80% of participating students adding at least one specialty crop to the list of things they would eat.

Our fourth goal was to increase teachers’ ability and willingness to use AITC lessons. Teachers reported that they used the lessons that were grade-level appropriate and would continue to use those lessons with future classes. Having lessons that are correlated to state standards makes this possible. The state is still working out the exact language used in our standards. We will continue to update the lessons to match the language used by the Department of Education.

Progress Made to Achieve the Long-Term Outcome of the Program:

The long-term outcome of Agriculture in the Classroom garden grant program funded by **SCBG Project 12-25-B-1697** is to have teachers that educate students about the source of their food, including specialty crops. We were able to fund seventy-six gardens, that each involved at least four teachers, one hundred students and their surrounding communities. Training these teachers in the use of AITC materials allows us to create an ongoing relationship with the schools that ensures long-term use of the lessons/materials. The garden grant application process requires the teachers to reach out to the UT Extension service, local farmers and partnering organizations. Cooperating with these organizations and services helps to promote sustainability.

We are currently accepting applications from schools for developing more gardens. We continue to work with the Tennessee Department of Education to align our lessons with the CCSS, now known as the Tennessee State Standards. The student teachers from Middle Tennessee State and Belmont Universities are assisting with the correlations. We budgeted a total of \$20,000 for curricula that is correlated to Tennessee State Standards. Until these are available we are using materials that are correlated to national standards. Our second round of workshops was conducted in June. We trained 367 teachers in the use of the materials and made them aware of the grant.

As the gardens continue to progress, we will fund their renewal grant requests using Foundation funds.

Beneficiaries:

The beneficiaries of this project are numerous. The obvious beneficiaries of the grant funds are the schools, including teachers, students, partners and communities. In addition to the schools is the AITC program. Having a group of teachers that use AITC materials and lessons assists us in reaching more teachers. Most teachers look to their peers for information, then to professional development, and finally to additional formal education. Because of this, having more teachers that are aware of our materials allows us to reach additional teachers each year. Finally, the specialty crop farmers are indirect beneficiaries of this project. Students develop their taste for food early. By funding specialty

crop gardens in schools, students try foods that they may never get the chance to a home. We have had reports of students eating everything from radishes to turnip greens that are grown in “their” garden. I doubt that they would just randomly select these food items off of a school lunch line (if they were there in the first place). After trying the foods from their gardens, many have included specialty crops in their list of favorites. Lifelong consumers of specialty crops is not our direct goal, but it is a possibility!

Lessons Learned:

Agriculture education and agricultural literacy are lacking in most schools. We are constantly amazed at the lack of understanding demonstrated by students (and teachers) about the source of their food. We are encouraged by the willingness of teachers to incorporate gardens into their curriculum. The garden is a great vehicle to teach many aspects of modern agriculture.

Education is constantly changing. Having been involved in education for nearly thirty years as an educator, and twenty as a student, I have seen the winds of change blow. Working with the Department of Education as they work on the next greatest thing, using staff younger than most of the teachers in the classroom is challenging. The constant in education is change. We continue to work with the Department of Education as they are directed by the legislature to adopt “new” state standards. We were fortunate to be able to acquire materials that are correlated to national standards, and therefore acceptable for use by Tennessee teachers. We will continue to update our material to keep them acceptable. With so much emphasis placed on high stakes testing, it is vitally important to have appropriate AITC materials and lessons correlated to the current objectives.

Additional Information:

We are currently working with Belmont University and Middle Tennessee State University’s teacher preparation staff to provide the most up-to-date lessons possible.

The project was a great success, reaching its goals of educating students about specialty crops. We are continuing the project and accepting applications for the next growing season.

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Project Title: Advancing Commercial Viniferous Grape Production through Variety Diversification in Tennessee

Project Summary and Project Approach:

Since post prohibition and the emergence of modern viticulture, grapes produced in the Eastern United States were primarily Native American vines or hybrids. This project was intended to study the potential for growing high quality viniferous fruit in West Tennessee. With a growing number of wineries and an increasingly discriminate wine consumer, the need for high quality and traditional European varieties is essential to advancing the wine industry in Tennessee.

In the spring of 2014 I planted and trellised 550 Semillion and 550 Shiraz grape vines on the Sanderson Family Farm in Northwest Tennessee. After a careful search, this appears to be the first large scale planting of high quality viniferous varieties of Semillion and Shiraz in Tennessee. This was a multi-year project as plant survival, fruit yield, and fruit quality are the primary means for determining the success of the project.

The spring of 2014 brought above average precipitation and below average temperatures. These planting conditions were ideal for the viniferous vines. After the initial planting we had a 98-percent plant survival rate. However, the hot, dry, brutal summer did cause stress on the young vineyard.

The initial 2015-spring growth showed approximately 5-percent winter vine loss. The second year priority is vine training. Because proper vine training, weed control, and insect control are crucial to the success of a vineyard, all vines were pruned and trained to a vertical-shoot position (VSP). This trellising style directs the vegetation upward and away from the fruit, thus exposing the fruit to air movement and sun exposure. During the 2015-summer I began to notice a swollen, tumor style growth at the base of a number of both varieties of vines. After consulting with fellow growers and research, I discovered many plants were infected with a virus called, "crown gall". Crown gall is a fatal disease and always results in the death and removal of the plant. Most infected plants were removed from the vineyard.

A vineyard will produce fruit on the third year. However, due to two consecutive hot, dry summers, somewhat limited plant growth and the removal of almost 10-percent of the vineyard, I expected a small fruit yield. However, plant size and canopy growth showed vast improvements this season. The fruit set was normal.

Considering the delicate nature of the viniferous vines I decided to install drip irrigation this year. A drip irrigation line was installed at the base of the trellis and emitters may drip a half gallon of water per hour on each plant. Canopy management, disease and insect control are all priorities in a mature vineyard.

Goals:

The goal of this project is to grow high quality wine grapes in Tennessee. While many regions of Tennessee grow quality hybrids and American variety wine grapes, very few high quality viniferous

grapes are grown in Tennessee. The goal of this project is to find the most acclimated viniferous grape for the Tennessee growing conditions.

Outcomes Achieved:

It is difficult to access the final conclusion of this project in three years. Furthermore, I feel the true outcome will not be measured for two to three more years. I harvested almost 1-ton of Semillon and 1.5 tons of Shiraz this year. Due to a small canopy and late season fruit disease, the fruit was not the high quality I expected.

Beneficiaries:

Until I see what the results of the 2017 and 2018 harvest I would be hesitant to recommend either of these varieties for wide scale planting. I do see more promise in the Shiraz as this variety is more vegetative and more resistant to humidity and the extreme elements of the Tennessee growing climate.

Lessons Learned:

The most important lesson learned from this project thus far is the viniferous vines require different care from the hybrids. While I have small planting of two other viniferous vines in my vineyard, a large scale Tennessee viniferous vineyard requires more attention and a refined spraying and water schedule.

I recently visited a wine growing region in Washington State called Walla-Walla. This area is known for high quality viniferous grapes. Walla-Walla is on the east side of the Blue Mountains and unlike Tennessee, has a dessert like very low humidity climate. Due to the cool nights and the warm days, the low humidity and light summer breezes coming off the Blue Mountains, Walla-Walla is the perfect region for high quality wine grapes. I visited a community college school of viticulture and I talked to professors and was escorted to the school vineyard. The visit caused me to realize the importance of choosing a vine that is totally acclimated and proven to grow in the area it is planted. This project was necessary to determine if Tennessee can grow Shiraz and Semillon. While our growing conditions may not be ideal for these two varieties, it may be acceptable. This project will be successful if 4-5 tons of quality fruit can be produced per acre. We anticipate the harvest of 2017 will produce enough fruit to produce the first vintage. However, this wine will need to be aged in oak barrels for two years to tell if a palatable wine can be made. We have hope this product will be ready for tasting in fall 2019.

CONTACT PERSON:

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Project Title: Developing On-farm Food Safety Educational Resources for Tennessee Farmers and Extension Professionals

Project Summary:

Food safety is one of the most pressing issues facing produce farmers of all sizes as they are confronted with increased food safety requirements from buyers and informed consumers. While most land grant institutions have developed numerous training curricula and supporting material to help teach growers the tenants of Good Agricultural Practices (GAPs), there are still gaps with respect to materials that can be used on farm to emphasize tenants of GAPs. This project helped alleviate that void by developing a series of five posters that could be used on farm to emphasize important aspects of GAPs.

Project Approach:

Our approach was to develop food safety educational posters that could be used on farm to help train small to medium produce growers that are at all stages of GAP implementation in their operation.

We also sought to continue training growers and extension educators about GAPs to further facilitate adherence to these practices in operations across the state.

Our team developed a series of five posters that will serve as on-farm visual aids to reinforce GAP principles in the packinghouse and out in the field. These posters focus on:

- 1) Traceability and Transport;
- 2) Worker Health and Hygiene;
- 3) Packing Shed;
- 4) Irrigation Water;
- 5) Animal Exclusion.

These resources were reviewed by growers who were solicited for feedback during the Pick Tennessee Conference and the Southeastern Fruit and Vegetable Growers Meeting. Based on this information, the designs were altered and finalized. Each poster was printed in 18x24" and laminated so that they will be able to endure exposure to weather.

To compliment these efforts, PIs Wszelaki and Critzer continued our efforts in training on GAPs to growers and extension agents throughout the state. This included introductory as well as advanced training, based on attendee knowledge-base and needs. These efforts were extremely timely as finalization of the *Produce Safety Rule*, 21 CFR Part 112, has brought food safety to the forefront of all growers as they see if they must comply with the rule as well as what standards must be met to be compliant.

Goals:

The **GOAL** of this project is to have an increased number of specialty crop growers implementing GAPs on their farms. Currently no small to medium growers have passed a GAP audit, and while some have received some GAP training very limited numbers are implementing these practices (**BENCHMARK**). Our **TARGET** is to have a 75% GAP adoption rate amongst trainees that will be utilizing the on-farm aids and

will be supported by trained extension professionals. Our **PERFORMANCE MEASURES** will be based on number of trainees and distribution of on-farm aids (posters).

Outcomes Achieved:

- A series of five posters were developed, printed, laminated and distributed to more than 1,400 growers in Tennessee (PDFs included below)
- Artwork was shared with extension specialists in six additional states (Florida, Georgia, North Carolina, Virginia, Ohio, and Minnesota) who work with growers of all sizes so that these resources can also be used in their states.
- 627 Tennessee growers were educated on tenants of Good Agricultural Practices during the project's duration in 16 workshops and meetings.
- 126 growers in the Southeast were educated on tenants of Good Agricultural Practices during the project's duration.
- 100% of the Tennessee growers that participated in a training and voluntarily participated in a post-training survey indicated that they had learned something new during the training and that they would be able to apply something they learned to better adherence to GAPs in their operation.
- 64 Tennessee Extension Agents participated in in-services where the posters were introduced as new education tools and where the basics of GAPs as well as the new Produce Safety Rule were covered in 2015 and 2016.

Beneficiaries:

In Tennessee, the fruit and vegetable industry accounts for nearly \$75 million in annual sales and is comprised of over 1,800 farms. In order for this industry to remain viable, we must continue to provide our growers with the most up to date information on science-based practices, and food safety is an important part of this equation for growers of all sizes. Through our efforts, small and medium growers with limited resources or farmers that have recently entered the fruit and vegetable market will be able to conduct a risk assessment of their farm; the produce they grow; and their current production, harvest and distribution practices. They will then be able to alter their current practices to best align with GAPs and will be situated to continue forward with a GAP audit or at minimum reduce the risk that their product will be implicated in a foodborne outbreak.

Lessons Learned:

Through our efforts in poster development, we learned that it is important to have a graphic artist that is willing to work closely with subject matter experts to take concepts into a draft that can be reviewed and continue through numerous iterations until a final product is arrived at. This was one of the initial hurdles and took working with more than one graphic artist until we found the person who was right for the task.

We also learned that many growers were very interested in the posters and expressed that they were filling a void in the tools that had been previously developed for them. We believe that this is why so many extension specialists from outside of the state have asked for the artwork so that they may print and distribute to growers that they work with.

Contact Person:

Faith Critzer

Assistant Professor and Food Safety Extension Specialist

University of Tennessee

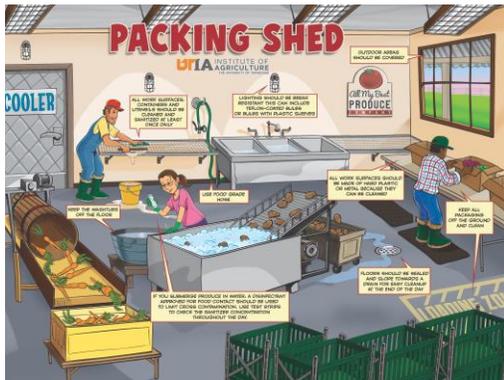
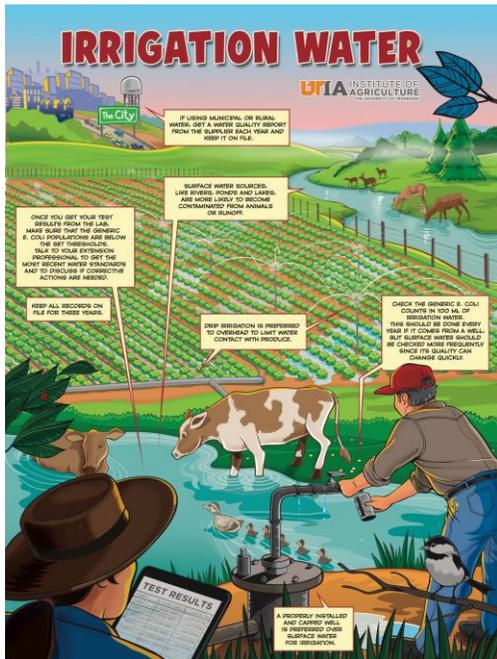
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Additional Information:

Final PDFs of all posters are included below.



Project Title: Food Safety Outreach Series

Project Summary:

The ever-increasing demand for food safety is a very real concern for producers of fruits and vegetables in Tennessee. As a result, more and more are being asked to receive GAP certification from the supermarkets, wholesalers, brokers and distributors they routinely do business with. Through this cost share program, qualified fruit and vegetable growers could receive up to a maximum of \$1500 in assistance.

Project Approach:

The cost to receive GAP certification is a necessary, but sometimes untimely expense to the producer. So for those who received the certification on their field or packing house audits within the grant time frame, cost share assistance was offered. We marketed the project through website listings, all Extension agent in-service trainings, producer meetings, and direct email contacts. In all of the promotional events, we stressed that even though the GAP audit is voluntary, most buyers are now requiring the certification before they will agree to any type of sales contract. We emphasized that GAP certification is a means for these specialty crop producers to remain competitive in the marketplace and that the cost share program was a method of help for each.

Goals:

The main goal of this project was to educate specialty fruit and vegetable crop producers on the third party audit system and its importance. These producers needed to understand that the GAP system was the best way to demonstrate to potential buyers that they implement and follow strict food safety practices throughout their operations, both on the farm and in the packing houses (where applicable). In addition, it was underlined that the ongoing economic impact risk of not having GAP certification was quickly offset by the time and expense of going through the audit process.

Outcomes Achieved:

Because reimbursement for the cost share required personal contact, we were able to conduct one-on-one interviews with each applicant, giving us a 100 percent response rate. We used this to survey their understanding of the importance of the GAP program, food safety issues, and the external marketing potential of the entire experience.

In discussing the audit process with each of the cost share applicants, 100 percent learned valuable food safety information that resulted in agricultural practice changes on their businesses. Many of these were small, but all were useful and significant to the overall operation of the farm. All of the producers stated that the cost share assistance we offered played a large role in taking the initial steps to get the process started. Also, we encouraged growers to utilize the GAP certification as a marketing tool to all of their customers, especially if they had contact directly with consumers.

Beneficiaries:

The fruit and vegetable producers in the state who were just getting started in going through the GAP process were the direct beneficiaries of the project. It ended up being an incentive program for those

who were considering the audit certification process to go ahead and get started while the funds were available.

Lessons Learned:

After this grant was written and approved, several of the larger buyers of Tennessee fruits and vegetables were offering up to 100 percent cost reimbursement for the certification. The percentage offered was based on several contingencies, including length of the contract relationship, amount of produce sold, type of produce sold, etc. This seriously undermined the success of the project. However, we were able to target those producers who were just getting into larger production to utilize the funds properly. It ended up being a marketing avenue for us that could have been overlooked or missed completely otherwise.

Contact Person:

Tammy Algood

Marketing Specialist

Tennessee Department of Agriculture

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Project Title: Pick Tennessee Conference Executive Director

Project Summary:

The Pick TN Conference has the mission to support local producers and enhance their access to suppliers, education and training, provide networking opportunities and increase the competitiveness of specialty crops throughout the state. The conference is vital to the survival of the member organizations: TN Fruit and Vegetable Association, TN Farm Wine Growers Association, TN Agritourism Association, TN Organic Growers Association and TN Flower Growers Association. An Executive Director was hired to be a central contact and easily allow each organization to work together to enable success for all involved.

Project Approach:

The Executive Director started work in March 2016. Meetings were held each month from March-August with the member associations to begin planning the 2017 conference. The director met with the hotel to secure the venue for 2017 and also secured a venue in 2018. The Director is the central contact for the associations and has worked on the conference program including speakers, classes and tradeshow exhibitors. In addition to the daily administrative tasks, the Director has applied for 501c3 status for tax exemption.

Project Goals:

The goal of hiring an Executive Director is to complete administrative work, apply for 501c3 status, negotiate and coordinate hotel contracts, develop promotional materials, coordinate with the association's speakers and classes for the conference program and conduct meetings for the associations.

Outcomes Achieved:

We did an end of the conference survey for all participants online and in person (paper) at the end of the conference. The four areas/topics we asked were: Production of fruits, vegetables or plants/flowers, Production of Value-added products or experiences, Marketing Concepts or techniques and Risk Management (food safety, regulations, etc).

After the conference, on average, participants indicated at least some knowledge of all topics with a mean of 3 or higher and a positive change in the mean rating (AFTER-BEFORE). The number of respondents experiencing at least one knowledge step were calculated. Respondents were asked to rate their level of agreement/disagreement with four statements related on a scale of Strongly Disagree(1), Somewhat Disagree (2), Somewhat Agree (3) or Strongly Agree (4). For each statement, responses ranged from Strongly Disagree to Strongly Agree, however, more than 90 percent responded with a Somewhat or Strongly Agree. Mean ratings for all statements were between Somewhat Agree (3) and Strongly Agree (4). On average, respondents indicated they will change at least one practice based on what they learned at the conference and gained knowledge or skills to improve revenue from the operation. More than 90% of respondents agreed they would recommend this conference to others and planned to attend the conference in 2017.

The Pick TN conference is going to be held in February of 2017. Monthly meetings with associations have been successful and administrative work has been completed in a timely manner. We are expecting a successful conference with an anticipated attendee number of 500.

Beneficiaries:

The specialty crop beneficiaries are divided into two groups: associations who are participating in the Pick TN Conference and producers of qualified specialty crop commodities who attend the Pick TN Conference. There were 438 attendees of the 2016 conference and there will be at least 500 attendee beneficiaries of the 2017 conference.

Lessons Learned:

It has been important to maintain communication with the PTC board made up of members of each association. Although we had planned to have monthly in person meetings, it became apparent that this was a burden for those who have to travel across the state. Therefore, we had conference calls, but we always had a monthly meeting, whether it was in person or via conference call. It became apparent in early stages of planning and securing a hotel that an Executive Director was needed to travel to the hotel and meet with the personnel.

Contact Person:

Frank Trew

Chairman of Pick TN Conference Board

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Project Title: Marketing of Vineyards/Wineries

Project Summary:

TFWA would create an updated printed and on-line brochure that would serve as a sales driver for increasing demand for locally grown wine grapes throughout the state via the promotion of local wineries.

Project Approach:

Update and refine the listing of all wineries and farm wineries in TFWA for use in tourist development, festivals and special events, and wine trail promotion. A total of 145,000 brochures were printed. The previous brochure supplies had been totally depleted.

Goals:

1. Enhance the partnership opportunities through the Department of Tourism via distribution at all Welcome Centers in the state. The summer and fall months are huge travel times for the tourism industry and the goal was to have the brochures in the warehouse for dispersing to these centers to hit that increased customer visit window.
2. Increase customer visits to local wineries and farm wineries. The easiest way to increase demand to producers for local fruit is to increase demand for the product made from that fruit. And while most vineyards do not really want their farms to be inundated with tourist traffic, wineries do!

Outcomes Achieved:

1. Within the first month of stocking the Tourism warehouse, nearly 10,000 were distributed to customers. Lee Curtis with the Department of Tourism reports that the winery brochure is the single most popular brochure they carry.
2. Every winery and farm winery has been given a supply of brochures to distribute.
3. Every festival has been supplied with brochures to give to attendees.
4. Every media outlet has been sent brochures, along with a letter encouraging them to consider doing a story on a local winery/farm winery.
5. Concerning the goal of achieving an increase in visitation/sales the project also seems to have succeeded. Below are visitation figures provided to use from a sampling of Tennessee wineries in 2016. The average increase concerning all listed was approx. 15.65% over 2015 visitation numbers. All numbers were volunteered by the wineries.

2016 Visitation

Amber Falls = 30K (24K – 2015)
Arrington = 300K (260K - 2015)
Beachaven = 105K (95.5K – 2015)
Beans Creek = 11K (Did not have)
Century Farm = 4K (Did not have)
DelMonaco = 26K (22K – 2015)
Grinder's Switch = 8K (6K - 2015)
Grinder's Switch (Marathon) = 36K (Did not have)
Keg Springs = 12K (10.25K – 2015)
Stonehaus = 110K (90K – 2015)
Tsali Notch = 19K (Did not have)

Beneficiaries:

There are numerous beneficiaries of this project. The first has been the producers of wine grapes throughout the state who continue to have increased demand for a premium crop. The second has been the local wineries who remain dedicated to the relationships with their growers and utilization of Tennessee grown grapes. Many of these are long-term, decades old agreements that allow wineries to promote the local aspect of wines made from the crop. Even the growers who are relatively new at wine grape production are benefitting from the experience of seasoned producers as well as the specific needs of wineries in their marketing area. The wineries use local producers as a teaching point in their facility tours, explaining how the utilization of local fruit produces a superior product and how their wines are tied to the land and its history. The beneficiary that impacts all of the above are the customers who frequent TN wineries in search of unique local products. Whether these are tourists who are traveling through or to the state, or those who call TN home, it enhances rural economies where it matters most – income to rural farms.

Lessons Learned:

Do not underestimate the value of a brochure that contains a map. TFWA considered perhaps only having an on-line version, but the customer demand through the Tourism Welcome Centers makes the decision to print a wise avenue for increasing business.

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