



**Annual Performance Report
Specialty Crop Block Grant Program
Kansas Department of Agriculture
USDA AMS Agreement Number: 14-SCBGP-KS-0020**

Program Contact

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Project Title:

Improving Shelf Life Quality & Safety of Locally Grown Vegetables in Kansas

Project Summary:

The production and consumption of fresh fruits and vegetables in the U.S. is changing. Over the last decade, local production for direct-market sales has become one of the fastest-growing segments of U.S. agriculture, with fresh produce being among the first categories. However, small-acreage producers associated with U.S. production frequently include first-generation growers who are resource-limited, particularly with regard to knowledge and infrastructure of post-harvest handling procedures. Data from the 2014 Great Plains Growers Conference, a regional growers' conference held near Kansas City, indicates that 70% of vegetable growers farm 1-10 acres and 38% have been growing for less than 5 years. Additionally, a regional survey of local food growers and buyers confirmed knowledge gaps surrounding efficient postharvest and food safety procedures for small acreage farmers. The survey revealed that access to proper storage facilities, especially cold storage, is one of the most frequently-encountered challenges for producers to increase local food production and implement GAPs. Furthermore, one of the most significant barriers for buyers to purchase local produce is identifying food safety certified suppliers. In 2015, we found through follow-up surveys that only 32% of producers have access to quick cooling facilities, and 6% have access to refrigerated trucks. Based on these results, it is clear that one of the main hindrances for local growers in Kansas to increase production and participate in wholesale activity is the gap in knowledge and experience associated with sorting, washing, packaging and storing of fresh produce.

We are proposing an integrated system of postharvest and safety strategies in order to improve the efficiency of distribution and storage of fresh, locally grown vegetables in Kansas. Additionally, modified atmosphere packaging (MAP) for crops that require a low storage temperature, as well as produce washing protocols that utilize ozonated water will be developed and validated in our laboratories by evaluating produce shelf life, quality and safety. The overall objective of this project is to improve the efficiency of storage and distribution of specialty crops in Kansas and develop educational resources to educate specialty crop producers on food safety practices.

Project Approach:

In order to evaluate the use of passive MAP in combination with or without washing procedure using ozonated water as an alternative for refrigeration, we used 4 different vegetable crops that are commonly grown in Kansas. The four crops were spinach, broccoli, asparagus, and beets and every crop was tested on representative portions of the plant in order to evaluate the effect of the treatment at different parts of the plant.

Three crops were fully researched and analyzed in the first year of the grant (spinach, broccoli, and asparagus). One crop, beets, was analyzed during this annual performance period for review. Detroit dark red beets with leaves were harvested and obtained from local farm Gibbs Road Farm in Kansas City for the purpose of the project

Produce was purchased at the day of harvest, in 3 (three) different times for each crop, and brought to the lab for sorting. Produce was separated into 3 (three) groups for washing treatments: control (not washed), cold water (approximately 4°C), and cold water plus ozonated water (1 to 1.5ppm for 1 minute). After washing, washed groups were dried under a fan. These groups were then separated into 2 (two) subgroups, one stored in open produce bags (OPB) and the second in passive MAP bags. This provided a total of six (6) experimental groups labeled the following:

- 1) CC (unwashed stored in OPB)
- 2) CM (unwashed stored in MAP bag)
- 3) WC (washed in cold water stored in OPB)
- 4) WM (washed in cold water stored in MAP bags)
- 5) OC (washed in ozonated water and stored in OPB)
- 6) OM (washed in ozonated water and stored in MAP bags).

Sorting and treatments were performed by Dr. Chiebao. All groups were stored in environmental chambers with controlled temperature (13°C) and relative humidity (85%). CM, WM and OM were analyzed daily for internal carbon dioxide (CO₂) and oxygen (O₂) concentration. Subjective and objective quality was evaluated on the day of harvest and every 3 days during storage. Numerical rating scales for overall quality and off odors was utilized to evaluate the groups. Additionally, two beets with the leaves were individually rated for subjective analysis of visual quality, decay, color, texture, and wilting. Analytical measurements of color and texture of the root and the leaves were also made. Microbiological analyses were conducted to enumerate psychotroph, total aerobic microorganism, generic *Escherichia coli*, coliform, yeast and mold population. The company providing the MAP bags (PeakFresh USA) expressed some concerns about the results obtained, since the bags were not formulated for storing vegetables at non-optimum temperatures. As a result of this, we had issues obtaining the bags for the beet crop.

Data of the beet trial was analyzed and co-PI, Rivard, and Dr. Chiebao had meetings to discuss the results and have an outline for publications. The results of the trial were presented to Clean Core Technologies and TetraClean Systems that donated the ozonated water equipment. After the discussion, it was proposed that new tests and protocols with the ozonated water be determined to meet the necessities of small, local farmers.

As discussed in the report from the first two years, a mobile producer cooler was constructed at the Olathe Horticulture Research and Extension Center. The trailer continues to be utilized for educational and extension events, and an educational “wrap” was designed for the trailer to promote the grant and the cooler.

Goals and Outcomes Achieved:

The first objective of this project was to demonstrate to commercial fruit and vegetable growers that cooling infrastructure including refrigerated transportation could be achieved at the farm without a significant capital expense (<\$10,000). This objective was achieved by building a prototype mobile cooler, completed as described in the first two annual performance reports. The total cost of the mobile cooling unit (not including labor to assemble) was approximately

\$5,500 – an amount that is not only affordable for the target audience, but that also meets the needs of local farmers. K-State Research and Extension has also been involved in assisting others who wish to build similar units in size and scope. As stated, a “wrap” was also designed and applied to showcase the professional finished product. While the unit was utilized in multiple educational and outreach events during both the first and second performance periods, showcase of the unit, including the importance of proper postharvest handling methods and proper storage temperatures, continued throughout the last fiscal year of the grant. The unit was featured at the Great Plains Growers Conference in St. Joseph, Missouri in January 2016 and 2017, as well as at multiple commercial grower’s events planned and promoted through the Department of Horticulture.



Kansas State University Mobile Cooling Unit

The second objective was to develop the use of modified atmosphere packaging to prolong the shelf life of four selected crops (broccoli, spinach, asparagus and beets) during storage at non-optimum temperatures. Spinach, broccoli, asparagus and beets were successfully stored in passive MAP bags in comparison with control that was stored in common opened produce bags. Observation was noted that the crops stored in MAP bags obtained an extended shelf life of between 4 and 9 days. The crops stored in modified atmosphere packaging also obtained superior subjective results. As stated in “Project Approach,” PeakFresh USA expressed concerns about the results obtained from the MAP group, causing continued discussion and issue in obtaining MAP bags for the beet group. **From a survey done at the Great Plains**

Growers Conference in January 2015 with regards to MAP, the responses received from forty-one growers were:

- 48% Unaware of what MAP is
- 13% Unaware of MAP practices that can be applied to their farm(s)
- 3% Using MAP at their farm(s)
- 26% willing to utilize MAP, but not sure how
- 10% Not interested in MAP.

Since beginning this project, findings were presented that highlighted the use of MAP at two growers' conferences. Also, demonstration of MAP use was provided during the Vegetable field day at the K-State Olathe Horticulture Research and Extension Center in 2015, as well as at the public open house at K-State Olathe Horticulture Research and Extension Center in 2016. While we did not complete a survey at the end of the project, because of these education and outreach events we estimate that an increase of awareness of 20% related to MAP was achieved.

The third objective of the research trail was to develop and validate produce washing protocols to reduce associated microbes by the utilization of ozonated water. For this objective, samples were divided into three groups – an unwashed control group, a group washed in cold water, and a group washed in cold ozonated water. This objective was also studied in combination with modified atmosphere packaging (MAP) bags to determine the beneficial results of the combination of the two treatments. However, washing with ozonated water in the conditions studied (1-1.5ppm with 1 minute of exposure) didn't have any effect on the shelf life of the produce studied, nor was any affect seen in the quality of the produce. The same result was seen in relation to microbial population. After discussion of the results with Clean Core Technologies and TetraClean Systems it was proposed that new tests and protocols should be established for further study.

Finally, and importantly, the last objective of this project was to disseminate the results of the project to stakeholders through scientific publication, conference presentation, and extension development. Dr. Chiebao was accepted and traveled to Cartagena, Spain, from June 21-24, 2016, to orally present partial results of the project (spinach, asparagus, and broccoli) as part of the VIII International Postharvest Symposium. An abstract of the project was also accepted for poster presentation at IAFP (July 31 – August 3, 2016) in St. Louis, Missouri, entitled, "Evaluating the Efficacy of Ozone and Modified Atmosphere Packaging at Extended the Lag Phase of Native Microflora on Vegetables Stored at Non-Optimum Temperatures." Due to the acceptance to the International Postharvest Symposium, an article was submitted to the journal *Acta Horticulturae*. A poster was also presented with the results for spinach and broccoli at the Urban Food Systems Symposium held at Kansas State University – Olathe, from June 22-25, 2016. In the final year of the project, an article was drafted and submitted to the peer-reviewed journal *HortTechnology* comprised of spinach, asparagus, and broccoli results. Furthermore, the mobile cooler unit was demonstrated to several workshops and field days across the state and region, including the K-State Olathe Open House (April 7, 2017), American Royal CALF days (Children's Agriculture Learning Fest) on June 15, 2017, and K-State OHREC Field Day (July 29, 2017).

Beneficiaries:

The direct beneficiaries of this project are the local growers that at the moment do not have facilities with controlled temperature for storage of their crops. Secondary beneficiaries include the local population, research and extension personnel, and the food safety industry. **This project provided knowledge and introduced important postharvest handling techniques to approximately 400 Kansas growers, by estimation to be about a third of total growers in the state. These growers will potentially benefit from the implementation of the introduced handling techniques. Additionally, the results were also disseminated to more than 400 people during open house field days.**

Lessons Learned:

As stated previously, optimum conditions and temperatures for prolonging the shelf life of fruits and vegetables are well known. However, temperature control and refrigerated storage of horticultural products are not always feasible. Therefore, having alternative solutions for storage and safe handling are necessary for local growers in Kansas to increase production and participate in wholesale activity. Many lessons were learned from this project including the logistics of building and maintain a mobile cooling unit, sourcing and procuring local produce, and continual discussion with industry partners in order to provide protocols and products that are beneficial for the target audience.

While ozonated water did not have an effect on the extension of shelf life (under the conditions studied), we did determine that MAP bags could be a viable alternative for small, local growers without the infrastructure for optimal cold storage. It is important to note, though, that the use of MAP bags in non-optimum temperatures do not equate to equivalent cold storage solutions, but this trial provided analytical evidence to justify their utilization in the scenario studied.

Furthermore, it was learned that continuing conversations need to be had with manufacturers and providers of ozonated water equipment and modified atmosphere packaging bags. Other conditions of the study could most certainly be continued in order to determine more optimal concentrations of ozone, time of exposure, and correct utilization of modified atmosphere packaging bags. Certain adaptations could be made to MAP bags to increase the positive results of other variables.

Funds Expended to Date:

\$77,333.62

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Project Title:

Development of an Instrument to Document Fruit & Vegetable Growers in Kansas

Project Summary:

In the Great Plains as well as the entire United States, a shift is occurring in the way that food is produced, distributed, prepared, and valued by the public. In particular, specialty crops have been dramatically affected in that consumer-demand for locally-grown produce is at an all-time high. This has afforded the engagement of new growers and development of small local businesses surrounding food production. This project was developed in response to a significant need identified by stakeholders including growers, educators, extension personnel, Kansas Department of Agriculture, and grower/community associations. The long-term goal of our team is to determine the economic impact of fruit and vegetable producers in Kansas in order to catalyze economic development of the industry. This is a large undertaking that should be approached in two phases. The goal of this project (Phase I) is to develop and test a survey instrument that assesses the economic impact of specialty crop growers utilizing interviews, a preliminary survey, and post-survey focus groups. An economic assessment of the impact of fruit and vegetable growers will be extremely valuable for securing larger, competitive grant funds; evaluating current and future extension/education programs; and forging productive relationships with industry including: seed companies, fertilizer, pesticide, and other supply manufacturers, and others. The methods proposed here will result in an effective survey instrument that maximizes accuracy and high response from participants. Once the instrument has been developed, it will be made publicly-available in order to facilitate Phase II.

Project Approach:

Objective 1: To develop a survey instrument capable of documenting direct and indirect economic impact of specialty crop growers in the state and abroad.

As stated in the performance report for the prior period, a Graduate Research Assistant (Molly Fusselman) under direction of the Co-PIs (Rivard and Taylor) developed the survey instrument. Qualtrics was utilized in order to complete a web-based survey, and the survey was also formatted for completion on paper. In conjunction with Objective 2 (validation of the survey), growers were interviewed and assessed in order to shape the ultimate goal – the design of a survey to determine economic impact of the specialty crop farmers that are participating while maintaining a high response rate. After completion of the interviews and focus groups, the questions were slightly altered to their current form. The survey instrument was provided to the Kansas Department of Agriculture (KDA) for review in January 2016. Minor modifications in verbiage and definitions were made and the active Qualtrics link and formal paper version was provided to KDA in February 2016. Questions included in the final version included:

Direct Economic Impacts

Where is your farm located?

For any of the past three years, have you grown any of the following crops? (List of crops provided)

Estimate your average three years of gross sales of specialty crops

Total number of acreage in production

Organizational structure

How many employees or unpaid volunteers do you have?

Indirect Economic Impacts

Estimate the percentage of investment and inputs purchased from Kansas or bordering states

Of your total new household income, what percentage came from specialty crops?

Does your operation provide you a living wage?

What have been your biggest barriers to expansion?

Where and/or how did you sell your produce in the past three years?

Objective 2: To validate the survey instrument with growers through a series of focus groups with the goals of maximizing the accuracy and response rate of the survey

Focus groups were coordinated and conducted in 2015 to obtain valuable feedback on the survey. Incentives were provided to the specialty crop farmers who participated in the groups for time, travel, and food. 7 growers participated in the focus group, as recommended by Krueger (1998) because the sampling pool is fairly homogenous. **We carried out two focus groups in order to test the survey questions. We did not survey the initial 100 growers. In the initial proposal, we thought this would be a multi-grant project (described as Phase I and II). Because KDA wanted to do the big survey right away (Phase II), it didn't make sense to do the first survey of 100 growers.**

Objective 3: To construct a database of fruit and vegetable producers across the state that spans grower organizations, specialty crop commodities, and the various regional and statewide networks that currently exist.

We have 497 growers in our current statewide database. This project does not provide greater availability of specialty crops directly. However, data generated from the results of the survey are used to further economic development projects in Kansas surrounding specialty crops. We did not track the numbers of growers that we reached, so we are unable to specify whether or not we reached 99% of specialty crop growers in the state. However, we utilized the methods outlined in the proposal in order to maximize our reach and the response rate (>270 participants) indicates that we were very successful at distributing the survey.

Goals and Outcomes Achieved:

Through the combined activities of the team, both short-term and long-term outcomes will be provided by this project. Specific short-term deliverables included:

- Development and validation of survey instrument that can be effectively used to accurately determine the economic impact of specialty crop producers in the state
- Insight into the approach that growers take when encountering surveys from university institutions. Our focus group session was very useful at identifying strategies to work with specialty crop farmers.
- Publishing of online survey instrument to be disseminated and marketed by the Kansas Department of Agriculture

In addition to short-term outcomes, long-term outcomes will include:

- Valid data to support further economic development of specialty crop production and sales within the region. This includes partnerships with academia, industry, and government in order to better serve producers with educational outreach, information, and funding assistance.
- Insight into common struggles and hurdles to operating in Kansas, as well as issues for expansion
- Greater understanding of the dichotomy of crops grown in the state and the conditions in which they are marketed.
- [Model industry trends for survey purposes. We did not track the number of growers utilizing the database, because the intent was not directed at economic development.](#)

[The database currently houses 497 growers. The intent of the database was to determine the correct pool from which to survey growers, and not necessarily that of a tool for growers to utilize directly. From this and other projects, we have found that producers are hesitant to provide information if they know that it will be used for a public purpose \(i.e. other than research or to better the industry\). Therefore, the database does not in itself lead to increased sales or increased economic development. However, answers provided from the survey instrument will help guide future industry growth and shape policy in order for businesses to thrive and sustain increased economic development.](#)

Beneficiaries:

This project benefits **more than 500** diverse stakeholders, all of which are involved in the production and consumption of specialty crops. While primary beneficiaries are obviously the specialty crop growers in the state, academia, industry, and government can also greatly benefit from the valid data provided by the survey. This knowledge and baseline data will be extremely helpful as the specialty crop industry in Kansas grows, expands, and develops. Ultimately, specialty crop consumers will benefit from this information because it can lead to better marketing, production, and overall knowledge. The general public benefits from a local food

production system that relies on networks of small businesses that support local economies and the communities where they live.

Lessons Learned:

As stated in our prior report, one of the primary lessons we learned is that timelines are highly dependent upon the stakeholders. [Tracking the database to capture economic development would be a novel idea, but we found that obtaining data and information consistently from producers is laborious.](#) Getting feedback on the survey and scheduling our focus group session were difficult due to the nature of specialty crop operations, and our initial timeline was slightly delayed. Furthermore, we had initially expected to conduct the survey during the summer of 2015; however, responses informed us that a survey during growing season would garner a low response rate. While we would have liked to have completed the survey for distribution at the beginning of winter 2015-2016, setbacks from survey modification and university review slowed this process.

Funds Expended to Date:

\$25,386.95

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Project Title:

Highland Community College 2015 Viticulture and Enology Extension Project

Project Summary:

This project initially had three distinct goals in mind. First to continue the “extension” work that HCC has begun with funding from past projects. HCC is the “go to” source for expertise in viticulture (grape growing) and enology (winemaking) in Kansas. HCC staff offers workshops statewide as well as traveling to individual vineyards and wineries for consultation visits. The budget of this project included partial-salary funding to continue that work.

Secondly, the project sought to create an internship program for students to acquire seasonal jobs at Kansas vineyards. With assistance of Kansas Department of Agriculture, an agreement between HCC and Kansas State University has allowed a transfer of Viticulture credits from HCC to the KSU Horticulture Department. To continue that effort and collaboration, this project request included funding for administrative time to work with the Horticulture Department at KSU to create an internship program. The bulk of the funding request for this project was to pay the students for some of their living expenses while doing their internships.

The final part of this project was to fund enology activities in Kansas. Initially the idea was to bring professional wine experts to conduct a wine judging on Kansas wines. While receiving awards for good wines was the “carrot” for wineries to participate, the hope was for the panel to offer constructive criticism to wineries that may have been struggling to produce chemically sound, good tasting wines.

Project Approach:

As has been the case over several years of SCBG funding, the consultation and workshop activities were a beaming success. Hundreds of participants attended grape growing and winemaking workshops over the two-year period of this project. Workshop topics were chosen with input from the Kansas Grape Growers and Winemakers Association. HCC staff performed consultation visits at roughly 30 vineyards and wineries over these two years as well.

During the first year of this project, we had five students take advantage of the internship opportunity, depleting the majority of the funds allocated for that portion of the project. In year two we only had funds for one more internship which was completed as well. The year-two student was a repeat student from year one.

As time progressed, it was found that wineries were hesitant to participate in a wine judging; therefore, the funds were used for other enology activities including wine sensory and wine chemistry workshops taught by nationally recognized experts in the field of Enology as well as purchasing a small amount equipment for students to conduct experiments and produce over 25 small batches of wine in the HCC Wine Lab. The wine sensory (tasting) workshop held during the first year of this project had nine participants. During year two the wine chemistry workshop had twenty participants.

Goals and Outcomes Achieved:

Attendance at workshops, speaking engagements, and consultation visits around Kansas saw a total of 264 participants in the first year of this project, far exceeding the benchmark number of 215 expected participants. Visits to vineyards and wineries totaled 19 in the first year of the project, somewhat lower than the expectation of 30. However, HCC can only perform consultations as they are requested, so this number is somewhat out of the hands of the staff.

The goal was to have ten students participate in internships during the first year of the project. Only five students participated, but three of them extended the length of their internships due to available funding, thus using up eight “sets” of funds. The final two sets of funds were used by one student doing an extended internship in year two.

We used the 12 participants in the Kansas Wine Technical Group from 2014 to estimate a benchmark number for this activity, hoping to increase by 25% to 15 participants in the wine judging. As mentioned previously, the wineries were hesitant to participate in a judging. Therefore, other activities were conducted having 29 participants in the two enology workshops. A total of 18 wineries sent staff to these two workshops, exceeding the 15 participants sought.

Beneficiaries:

The beneficiaries of this project are the Kansas Wine Industry members. Those attending workshops or speaking engagements learned about the history of the industry as well as information regarding specific workshop topics. 84 attendees gained additional knowledge by attending a grant-related workshop to expand their industry knowledge and learn items related to the specialty crop industry. Industry members who requested and received consultation visits gained specific information about their businesses, what they are doing right, how to improve, and answers to their specific questions in a one-on-one interaction. We also completed 3 vine planter demonstrations with a total of 11 individuals attending/watching/assisting.

Students participating in the internship program received additional experience working in the industry, making contacts with industry members, and got employment for a period of time. Throughout the course of the grant, we impacted 7 students, plus their employers, for a total of 12 industry members. The vineyards employing the students gained employees and benefitted from the work performed by those employees.

No less than 18 wineries learned more about the sensory evaluation of wines as well as the chemistry involved in producing wine at the two enology workshops. Those individual businesses are better able to make decisions to improve their products, and their customers will benefit from having better wines.

All of these beneficial outcomes lead to economic stimulus around Kansas. As wineries make more and better wines they will gain in both the number of repeat customers and those customers purchasing more and more wine. As the wineries sell more wine they will, in turn hire more employees in their tasting rooms and demand more grapes from Kansas vineyards. Thus, the vineyards will continue to expand in both size and number which leads to more employment in

the Kansas grape industry. These outcomes have something of a snowball effect in the way they multiply through the economic system of the Kansas Wine Industry.

At the end of the grant, it was determined that approximately 107 total impacts from the grant had been completed.

Lessons Learned:

The most obvious lesson is that wineries do not like being judged in the open at local venues. Most wineries have medals and newspaper clippings from wine competitions “far away” such as the San Francisco Chronicle competition, Indiana State Fair (Indy), but they don’t want to be viewed critically by local competitions.

We also found that, while vineyards and wineries ask HCC to provide a trained workforce to them, it is difficult to find students willing to work for another vineyard or winery. The majority of HCC V&E students are entrepreneurs and are not interested in working for someone else. We had no idea that finding and placing ten students at vineyards would be a challenge. We expected to likely turn away students because of funding limitations.

Finally, even after HCC has offered workshops and consultation visits for nearly five years, there is still strong demand for such activities. The number of new vineyards and new wineries continue to increase; thus, prolonging the need for advice and mentoring of new entrepreneurs. HCC continually strives to meet this demand as the industry continues to grow.

Funds Expended to Date:

\$50,252.76

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Project Title:

Harper County Community Educational Center & Harper County Fair Kitchen Renovation

Project Summary:

Needing to make improvements to the Concession / Kitchen area of the Harper County Fair Boards' main Building, the Fair Board sought out assistance from the Harper County Extension Board and staff to determine ways to better utilize the Kitchen. It was determined that having it as a Commercial Kitchen would allow it to be utilized as an income producing facility as well as the Extension Staff could hold workshops on best practices for food preservation and use of specialty crops in food preparation. For those enrolled in 4-H Food projects, the area youth would be able to learn and prepare foods in a food safe kitchen. The Fair Board was awarded some funds to make improvements to the building that would make it more feasible to be used by the community such as the kitchen improvements as well as adding better restroom facilities.

Project Approach:

Between September and January, the contractors renovated the concession/kitchen area of the Fair Building by moving a wall and enlarging the space approximately 6' in width and by extending the length by approximately 6' to accommodate a concession window into the exhibition area of the building. After January 2015, the K-State Extension staff began holding the workshop outlined in the grant to support the use of specialty crops. A kitchen coordinator was hired and supplies to be utilized in the kitchen were selected and purchased as outlined in the grant budget and as needed for the various classes held.

Goals and Outcomes Achieved:

One of the first classes was a class on "Starting a Food Business" which included area and state residents who were at various stages of developing a food-related business mainly with specialty crops. The attendees included those thinking about a retail product to those who had already developed and packaged their product and were wanting to expand their market. The class included partners from Kansas Dept. of Agriculture, the Small Business Development Center, already successful entrepreneurs as well as K-State Research and Extension Staff, both local and from Manhattan. About 14 people attended this workshop.

During the growing season, classes were held on using and preserving specialty crops including fruits, vegetables and herbs.

A class was held on extending the growing season by the use of high tunnels. The class toured a local facility that utilized greenhouses to grow tomatoes as a commercial business. A local community garden was on the tour as well. Former K-State staff member, David Coltrain helped with this workshop as well as K-State Extension staff. The 4-H youth enrolled in a foods project, prepared the meal for the day using locally grown fruits and vegetables from the strawberries they picked at a local strawberry farm in the spring and froze to the fresh vegetables from area

gardens. The table decorations were locally grown flowers. A complete listing of the classes that were notated as part of the grant and offered were:

Growing Fruits and Vegetable Courses (5)

The original grant plan had 5 “Growing Fruits and Vegetable Courses” listed, but was updated to 4 after the removal of one course due to a course not being approved. However, an additional course (Gardening in Small Spaces) was held in 2016 as a part of the three-year plan of the original grant, after the close-out of the grant.

Course: Backyard Garden Basics

Description: This course will give you an overview of some basic gardening techniques, such as fertilizers to use, watering schedule, mulching and plant selection.

Backyard Garden Basics was presented at the Anthony Extension CAFÉ on March 4, 2015. The presentation covered plant selection, drip irrigation, mulching and insect control. There were 15 participants. Anecdotal evidence noted through questions asked and comments from participants indicated an increase in knowledge and interest in home gardening for self-consumption and preservation.

Course: Growing Fruits and Vegetables Utilizing a High Tunnel and Conservation Practices – Field Tour & Workshop (offered in spring and fall)

Description: The workshop will go through the logistics of setting up a high-tunnel for fruit and vegetable production. Also, the Natural Resource Conservation Service will provide information on how to utilize conservation practices while growing fruits and vegetables.

This course was offered July 11, 2015 as an all-day event covering 5 topics: High tunnel 101: Basics of high tunnels, construction to production, Marketing Considerations for High Value Crops (what is a high value crop), Turn Your Hobby into a Business, High Tunnel 202: What’s Next and Extending the Season with Plasti-culture and other Technologies. There were 14 potential producers in attendance with varying degrees of experience. We toured two local gardens, (peach trees, tomatoes, and a variety of vegetables) to observe different styles of production; high tunnel and open air. Pre- and Post- surveys indicated that majority agreed they were more confident and plan to grow more specialty crops to share with family, friends and some even, indicated participating in local Farmers Markets. Presenters opted to do one large workshop instead of 3.

Course: Fruit Production—Field Tour & Workshop

Description: To successful create an orchard you need to have an understanding of fruit production, soil, pests, diseases and general care of the fruit trees. Learn the basics of fruit production in Kansas. (Combined with July 11 course; see above)

Course: Vegetable Production—Field Tour & Workshop

Description: Knowing what varieties of vegetables grow best in Kansas and Oklahoma is important to your success. Learn about vegetable production and what vegetables grow best in this area of Kansas and northern Oklahoma. (Combined with July 11 course; see above)

Optional Course Offered: Gardening in Small Spaces.

With the charge of promoting vegetable production among citizens we also offered a course in small space gardening using raised beds, straw bales, or containers. Information was presented on container selection, plant selection, planting medium, fertilizer, pesticide and water requirements. This was presented at the Anthony Extension Café, March 3, 2016 with 18 people in attendance. Course held after the grant closing, however part of the three-year plan.

Preparing Fruits and Vegetables Courses (3)

The original grant plan has 3 “Preparing Fruits and Vegetables Courses” listed, but was updated to 2 after the removal of one course due to a course not being approved. However, an additional course (Squash, Roots, Tators, Oh My!) was held in 2016 as part of the three-year plan of the original grant, after the close-out of the grant.

Course: Preparing Fruits and Vegetables

Description: Learn different methods of preparing fruits and vegetables such as: steaming, grilling, sautéing, roasting and uncooked fruit and vegetable recipes. Have fun using local produce to create healthy dinners and sides.

A course called Cooking Fresh was held on June 3, 2015 with 8 participants. This course also included the second course, *Cooking with Herbs and Spices*. They learned about different methods of preparing fruits and vegetables and how to spice up meals with herbs. It was a hands-on cooking and preparation class. Pre- and Post- surveys indicated that even though many had not used the techniques (steaming, grilling, sautéing, and roasting) or cooked using herbs, they were definitely going to utilize more fresh fruits, vegetable and herbs in their future cooking for their family and friends with the recipes they were given.

Cooking with Herbs & Spices

Description: Nothing evokes summer quite like fresh herbs from the garden. Herbs are a great way to excite your taste buds and your dinner plate. Learn the basics of cooking with herbs to spice up your meals rather than using excessive amounts of salt. Participants will learn to make a homemade marinara, pesto and homemade vinaigrette dressing for those summer salads. (Combined with June 3 course; see above)

Optional Course: Squash, Roots, Tators, Oh My!

This course was held in Sept. 2015 at two different locations in Harper County with 12 people attending and learning how to prepare these fall specialty crops. This course was after the grant closing but part of the three-year plan.

Optional Course: Youth Involvement in Specialty Crops

4-H youth enrolled in the Foods Project participated in picking fresh strawberries at a local strawberry producer. After picking them, they returned to the kitchen to clean and prepare the strawberries for freezing to use later during the lunch they would be catering for the Growing Fruits and Vegetables; High Tunnel class on July 11. Their ages ranged from Kindergarten to 7th grade and they learned a variety of lessons from how to pick strawberries to how important it was to wash your hands before starting any food preparation. (Outcome 5)

Preserving Fruits and Vegetables Courses (4)

Course: Pressure Canning 101

Description: We want to enjoy those low-acid veggies from our garden or local market all year round but many folks are hesitant to use grandma's canner sitting in the garage. Is it still safe? Learn what it takes to replace old parts safely can at home. Learn to pressure can low-acid vegetables such as green beans, corn and carrots. Understand the proper and safe research based techniques of using a pressure canner.

This course and *Preserving the Harvest: Freezing 101*, was held on August 22 with Karen Blakeslee from K-State assisted by local Extension staff assisting 11 participants learning basic freezing, storage and labeling techniques for fruits and vegetables. This was an all-day canning workshop which also included the *Jams and Jelly 101*. The instructor showed various ways to safely preserve fresh fruits and vegetables as well as safe processes for Jams and Jellies. The participants learned various techniques and got to use a variety of equipment to process a good selection of locally grown fruits and vegetables. Survey results showed that participants ranged from beginners to seasoned canners; they gained knowledge in canning and using a pressure cooker as well as hints to help in the various phases of preparation and the canning process. The class included mainly women from 18 to over 70 years of age from a 60-mile radius. Several shared that they had gained confidence enough to plant larger gardens in order to preserve more.

Course: Preserving the Harvest: Freezing 101

Description: Learn basic freezing, storage and labeling techniques for fruits and vegetables. (Combined with August 22 course; see above)

Course: Jams & Jelly 101

Description: Learn to create wonderful jams and jellies and the simple yet safe ways to prepare them by water bath canning for shelf storage. Learn why it's not safe or accurate to use paraffin wax. (Combined with August 22 course; see above)

Course: Pickling 101

Description: Learn to pickle anything you please with the proper recipe. Turn your bountiful crop of cucumbers into wonderful pickles or pickle cabbage to make sauerkraut. Some people pickle their fruit! The possibilities for pickling are vast but you must use safe and effective methods.

“Not Your Grandma’s Pickles” was held on July 1 with 9 participants in Harper County. This course was a joint training course through K-State Extension and was held in several locations with over 60 participants in South Central Kansas. This course was designed to show participants several canning products and processes as well as safe and unsafe methods of canning and preserving pickles. The format included power point instruction, various handouts and some hands-on training. The instructor focused on preparing quick sour pickles, sweet pickle relish and bread and butter pickles. The participants shared that they had learned new techniques and processes that they were eager to try during this growing season as well as in the future. They were more confident in using the pressure cooker and safe pickling processes.

Value Added Courses (1)

Course: Adding Value to Your Specialty Crop

Description: Having several specialty crop producers in our area who want to create a value-added product from their fruits and vegetables, this course will teach the steps to getting specialty crops prepared and approved as value-added products. Specialty Crop producers will be able to utilize specialty supplies in the food safe approved kitchen. This course will only utilize specialty crops to add value to during this training course. By partnering with the KS Small Business Development Center staff, Kansas Department of Agriculture staff and KSU Value Added/Product Development Lab staff, this course will assist participants with safely bringing their value-added specialty crop from the garden to local markets.

On May 20, 2015, the Harper County Education Center along with K-State Research and Extension hosted a “Starting a Food Business” workshop. This workshop was designed to help aspiring or current business owners navigate such topics as understanding food safety and licensing regulations and getting help starting a small business. Representatives from the Kansas Department of Agriculture, Land of Kansas, K-State Research and Extension Food Safety Lab, and the Kansas Small Business Development Center presented information on the role that each agency can play in starting a food business or developing a value-added product. Local entrepreneurs were also in attendance to share their experience with developing a salsa and barbeque sauce. Survey results indicate that the majority of the respondents achieved an increase in their knowledge of starting a food business in regard to marketing, writing a business plan,

getting the proper licensure and who regulates food businesses. Demographics for the participants were primarily white women, non- Hispanic with an even distribute of ages from 15-46 years old or older.

Therefore, 4 of the 5 original “Growing Fruits and Vegetable” courses were offered with a substitute course being offered for the fifth course, for a total of 5. 2 of the original 3 “Preparing Fruits and Vegetable” courses were offered, with an additional two being offered for a total of four. All four of the original “Preserving Fruits and Vegetable” courses were offered, as well as the one “Value-Added” course.

Beneficiaries:

Area Residents – 71 attended the 6 workshops held to carry out goals of the Grant (multiple workshops were combined due to various reasons. 12 workshop titles were combined into 6, with 2 an additional 2 being completed outside the closeout of the grant)
4-H Youth - 10 youth attended the Foods project training sessions
Local Caterers – used by 3 caterers to prepare foods or serve foods for events
Commercial users for the purpose of preparing a retail product - 1 at the end of the grant period, however, several have contacted the Kitchen Coordinator about using the facility.
Several attending the hoop house workshop have indicated they plan to install the use of a hoop house to further their growing season of specialty crops.

Breakdown by Class Offering:

“Growing Fruits and Vegetables”

Backyard Garden Basics (3/4/2015): 15 attendees
Utilizing a High Tunnel and Conservation Practices— Field Tour & Workshop (7/11/2015): 14 attendees
Fruit Production—Field Tour & Workshop (7/11/2015): 14 attendees (combined with above)
Vegetable Production—Field Tour & Workshop (7/11/2015): 14 attendees (combined with above)
Gardening in Small Spaces (3/3/2016): 18 attendees

Total: 47 attendees (29 during grant period)

“Preparing Fruits and Vegetables”

Preparing Fruits and Vegetables (6/3/2015): 8 attendees
Cooking with Herbs & Spices (6/3/2015) 8 attendees (combined with above)
Squash, Roots, Tators, Oh My! (Sept. 2015): 12 attendees
Youth Involvement in Specialty Crops- Multiple

Total: 20 attendees (8 during grant period)

“Preserving Fruits & Vegetables”

Pressure Canning 101 (8/22/2015): 11 attendees

Preserving the Harvest: Freezing 101 (8/22/2015) 11 attendees (combined with above)

Jams & Jelly 101 (8/22/2015): 11 attendees (combined with above)

Pickling 101(7/1/2015): 9 attendees

Total: 20 attendees (20 during grant period)

“Value-Added”

Adding Value to Your Specialty Crop (5/20/2015): 14

Total: 14

Total Beneficiaries: 71

Lessons Learned:

Over 65 people have been shown how to use specialty crops in their daily food preparation and consumption; in preserving their products for personal use or as a retail business. Timing did not allow us to have any “how to grow” classes, but those will be covered over the next year by the K-State Extension staff and the Harper County Master Gardeners. Lessons learned, it takes getting everyone’s input into creating a community venue like the commercial kitchen from the Fair board that will have the upkeep of the facility to the Kitchen Coordinator who does the planning and working with the users of the facility, as well as the youth leaders who will be working on future growers and producers of Specialty Crops.

Funds Expended to Date:

\$61,858.00

Program Contact(s):

Emily Schlickau, Kitchen Coordinator, 316-259-1208, harpercountyedcenter@gmail.com

Dollie Mathes, Grant Administrator, 620-896-7378 or 620-243-3059, dollie@sunflowerccd.com

Project Title:

Printing of a Statewide Beverage Brochure Supporting Farm Wineries

Project Summary:

The Kansas farm winery industry is a growing industry that has a significant economic impact on the state's economy. An increase in the Kansas wine industry's sales will help drive an increase for more grapes to be grown in Kansas. The Kansas Department of Agriculture is committed to supporting the grape and wine industry and will partner with the Kansas Department of Wildlife, Parks and Tourism to support the farm winery businesses and drive consumer interest.

This project includes:

1. Kansas Farm Winery brochure – a multi-fold map highlighting farm wineries in the state, as well as regional wine trails. Each licensed farm winery will have the opportunity to participate at no cost.
2. Kansas Farm Winery microsite – this microsite will be housed with the *From the Land of Kansas* state agriculture trademark program.

Project Approach:

The winery maps were updated and printed. Kansas Department of Wildlife, Parks and Tourism managed the distribution of the winery brochures and maps. The Kansas Department of Agriculture promoted the map to farm wineries, as well as social media and WIBW Chef Ali segments. Copies were also provided for the 5th annual Governor's Beer and Wine Sampling. An additional 10,000 wine brochures were printed in the months of April- June. In September, 420 wine brochures were distributed at the 2016 Kansas State Fair. We continue to promote the wine brochure at event and speaking engagements including: Local Food and Farm Task Force meetings, Lake Region RC&D, North American Agricultural Marketing Officials, Topeka Optimists and others. In addition, the brochure is available at many farm wineries across the state.

A feature story on the first wine passport completer was shared through the *From the Land of Kansas* distribution networks.

Goals and Outcomes Achieved:

Goal 1: Promote farm wineries in destination via an all-inclusive opportunity for the farm wineries to be included in a beverage-industry focused brochure.

Kansas Department of Agriculture staff printed and distributed 10,000 wine brochures in Year 2, in addition to the original 12,000 wine brochures printed in Year 1.

YOUR GUIDE TO EXPLORING
KANSAS
Farm Wineries



FROM THE LAND OF
KANSAS

Mastering for a handcrafted wine?

Did you know...

FromtheLandofKansas.com/Wine





2016
Edition

2016

PASSPORT TO EXPLORING
KANSAS
Farm Wineries

DETACH & RETURN YOUR COMPLETED PASSPORT TO RECEIVE A FREE SET OF KANSAS WINE GLASS*

Explore Kansas Farm Wineries

<p>1 JERRY VINTAGERS</p> <p>100% Cabernet Sauvignon</p>	<p>2 CROCKETT WINE WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>3 CROWNED POST WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>4 BAYBROTHER VINEYARD & WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>5 GLACIERE WINE WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>6 GRAPE HILL WINERY</p> <p>100% Cabernet Sauvignon</p>
<p>7 HIGHLAND COMMUNITY VINEYARD & WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>8 HILL FIELD VINEYARD & WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>9 JOHNSON HILL VINEYARD</p> <p>100% Cabernet Sauvignon</p>	<p>10 KC WINE CO.</p> <p>100% Cabernet Sauvignon</p>	<p>11 MARL'S BOUNTYFIELD VINEYARD</p> <p>100% Cabernet Sauvignon</p>	<p>12 WOODS CREEK WINERY</p> <p>100% Cabernet Sauvignon</p>

Ready to Return YOUR PASSPORT?

MAIL TO: 1000 N. UNIVERSITY ST., SUITE 100, OMAHA, NE 68102

NAME: _____

ADDRESS: _____

CITY: _____

STATE: _____ ZIP: _____

PHONE: _____

EMAIL: _____

*OFFER GOOD THROUGH 12/31/16. SEE WEBSITE FOR DETAILS.

FromtheLandofKansas.com/Wine

WINE TRAILS

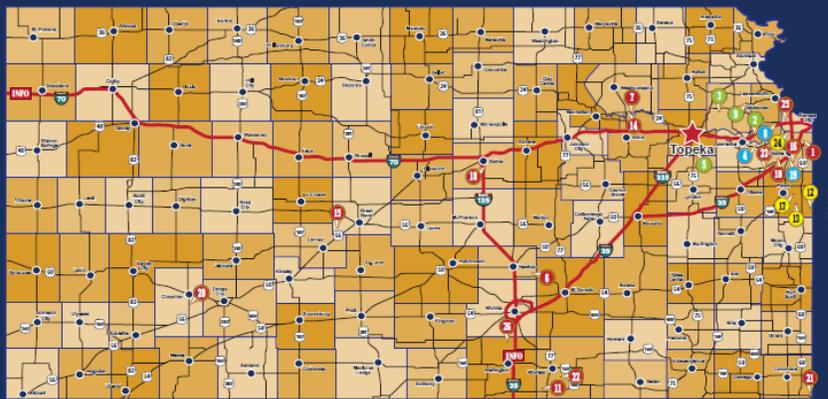
WINE TRAIL 100 MILE WINE TRAIL 200 MILE WINE TRAIL 300 MILE

AMBITIOUS

WINE TRAIL 100 MILE WINE TRAIL 200 MILE WINE TRAIL 300 MILE

KANSAS FARM WINERIES

NEBRASKA



OKLAHOMA

<p>13 HIGHLAND VINEYARD & WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>14 KC WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>15 BOURBON RIVER</p> <p>100% Cabernet Sauvignon</p>	<p>16 BERRY BRIDGE VINEYARD & WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>17 WINDY HILL VINEYARD & WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>18 WINDY HILL VINEYARD & WINERY</p> <p>100% Cabernet Sauvignon</p>
<p>19 STONE PILLAR VINEYARD & WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>20 TERRA DEL SOLE VINEYARD & WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>21 WOODS CREEK VINEYARD</p> <p>100% Cabernet Sauvignon</p>	<p>22 WEST VALLEY WINE CO. LLC</p> <p>100% Cabernet Sauvignon</p>	<p>23 WOODS CREEK WINERY</p> <p>100% Cabernet Sauvignon</p>	<p>24 WOODS CREEK WINERY</p> <p>100% Cabernet Sauvignon</p>

14 KC WINERY

15 BOURBON RIVER

16 BERRY BRIDGE VINEYARD & WINERY

17 WINDY HILL VINEYARD & WINERY

18 WINDY HILL VINEYARD & WINERY

19 STONE PILLAR VINEYARD & WINERY

20 TERRA DEL SOLE VINEYARD & WINERY

21 WOODS CREEK VINEYARD

22 WEST VALLEY WINE CO. LLC

23 WOODS CREEK WINERY

24 WOODS CREEK WINERY

25 WOODS CREEK WINERY

26 WILKINSON CELLARS



FROM THE LAND OF
KANSAS



FROM THE LAND OF
KANSAS

Goal 2: Promote farm wineries online via a mobile and desktop-friendly microsite focused on supporting the farm-winery and beverage industry in the state.

Microsite has been created and is hosted at: <https://fromthelandofkansas.com/wine>. The Kansas Department of Agriculture promoted the map to farm wineries, as well as social media and WIBW Chef Ali segments. Copies were also provided for the 5th annual Governor’s Beer and Wine Sampling. An additional 10,000 wine brochures were printed in the months of April- June. In September, 420 wine brochures were distributed at the 2016 Kansas State Fair. We continue to promote the wine brochure at event and speaking engagements including: Local Food and Farm Task Force meetings, Lake Region RC&D, North American Agricultural Marketing Officials, Topeka Optimists and others. In addition, the brochure is available at many farm wineries across the state.

Beneficiaries:

Multiple wineries have contacted us to comment that the map is a wonderful tool and that it has increased their visitor count. Furthermore, 11 people have completed the passport program to receive a wine glass as of 12/7/2016.

Lessons Learned:

As with any directory-type project, attention to detail is critical. This project had many pieces – wineries’ name, contact information, amenities, and location on the map. We learned having multiple reviews was critical to its success. Proofreading is critical before submitting and printing.

If updated, one idea for improvement would be to include not only all farm wineries, but also all farm winery outlets. For example, by including all of a farm winery’s farm winery outlets, the map will better help consumers access Kansas wine.

Funds Expended to Date:

\$29,475.43

Program Contact:

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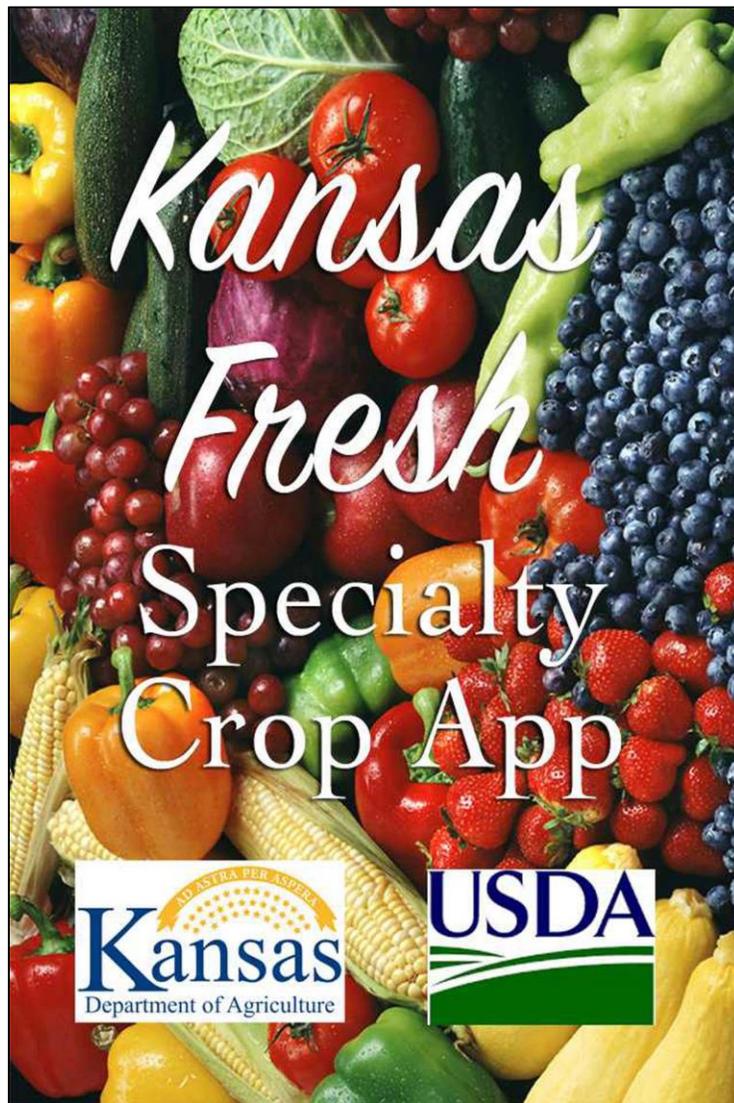
Taylor Harms
Kansas Department of Agriculture
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Phone: (785) 564-7467
E-mail: taylor.harms@ks.gov

Project Title:

Mobile Application to Support the Kansas Specialty Crop Industry

Project Summary:

As stated in the 2016 Annual Performance Report, due to lack of demand, the originally-approved FY2014 GAP auditor project was closed and the remaining funds were transferred to a new project entitled “Mobile Application to Support the Kansas Specialty Crop Industry.” (As approved by USDA-AMS on September 20, 2016.) The new project focused around the creation and distribution of a mobile application for specialty crops that would be marketed at numerous events throughout the state. The project focused on bringing together producers and consumers in a dynamic, technologically-based framework, initially starting with farmers’ market venues and adding other outlets as time allowed.



Kansas Fresh Splashscreen

Project Approach:

The “Mobile Application to Support the Kansas Specialty Crop Industry” utilized a fairly straight-forward approach to connect small-scale specialty crop producers with potential consumers. As a part of the project, the Kansas Department of Agriculture gathered and updated information about farmers’ markets operating in the state, determined the necessary and engaging elements to include in the application, and reviewed potential companies to build and host the application. The structure of the application was designed by an application developer, and additional information and details were added by student interns and supplementary staff. Once completed, the application was thoroughly reviewed and vetted in a beta testing phase before being released for general use. At that time, food demonstrations of specialty crop recipes included on the phone application were conducted across the state, in concert with multi-media publicity through newsletters, television, and live appearances.

Goals and Outcomes Achieved:

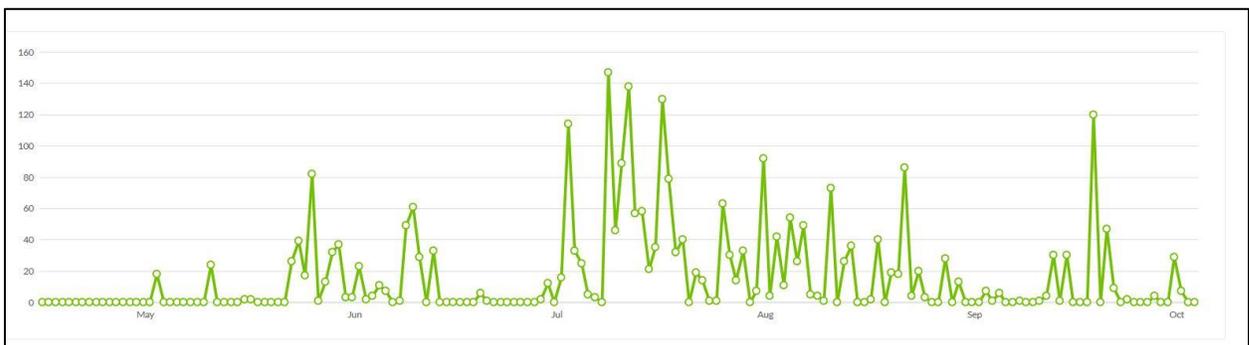
Goal 1: Promote the Kansas specialty crop industry in a dynamic phone application

Performance Measure: Completion and distribution of the phone application

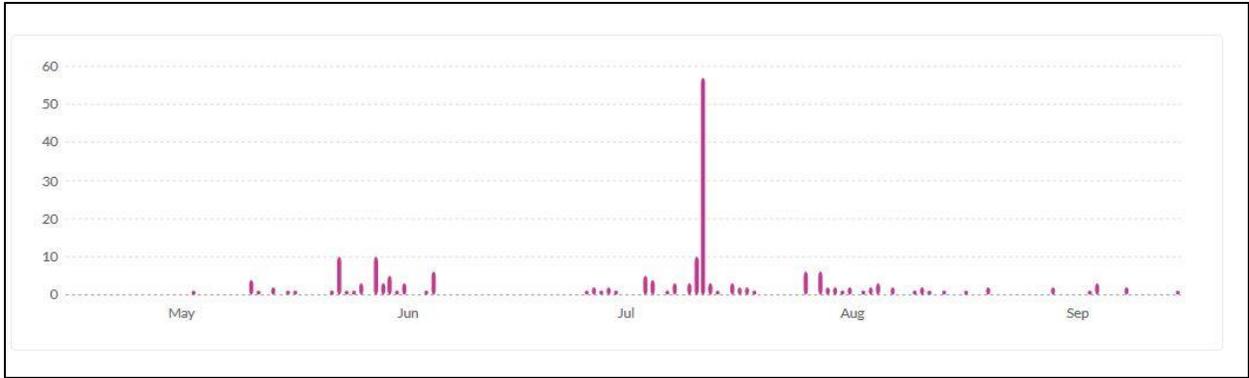
Benchmark: The specialty crop phone application does not exist, so the benchmark is 0

Target: Have 500 successful downloads of the phone application by the end of the grant period

- Unfortunately, we did not meet our end target of meeting 500 successful downloads of the phone application by the end of the grant period. We selected GoodBarber as the online interface in which to build the phone application, and were able to have the application originally submitted to the Apple Store and Google Play Store in mid-May. **By the end of the grant period of performance, we had received 201 successful downloads of the phone application.** While we did not meet our metric for phone application downloads, we were still quite successful in creating a fully-functional, operational mobile application with multiple scalable uses for the future.



Pageviews of Kansas Fresh mobile application



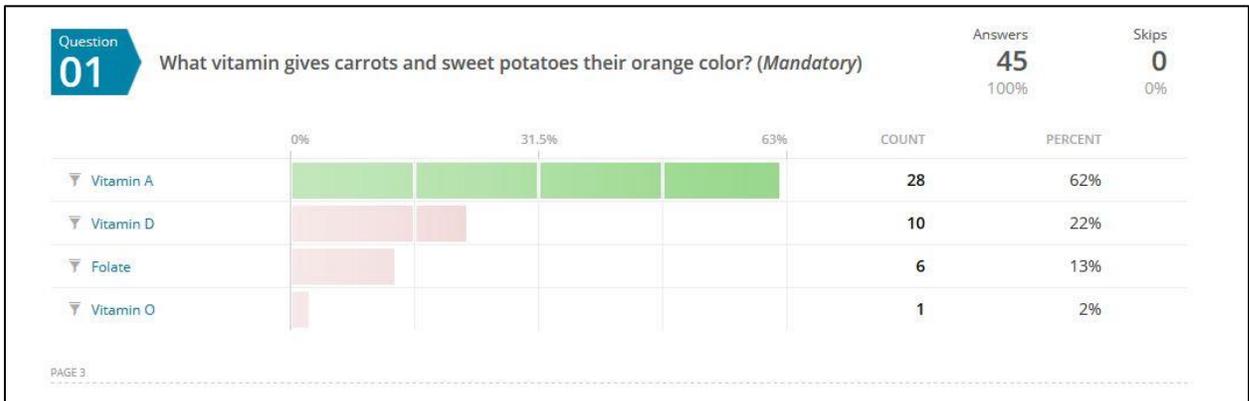
Downloads of Kansas Fresh mobile application

Goal 2: Increase awareness/education of the specialty crop industry in the state
Performance Measure: Survey of attendees of food demonstration about food awareness and preferences

Benchmark: Current understanding and consumption of specialty crops

Target: Have 90% of the attendees at a food demonstration try a specialty crop in some format that they had not previously consumed or learn a fact not previously known

- As previously stated, an informal quiz was designed to engage with consumers on facts about specialty crops, which was created and mediated through PollDaddy. The quiz had 8 total questions and consisted of items about fruits, vegetables, and the Kansas specialty crop industry.



Sample of PollDaddy Quiz Question

- Throughout the food demonstration and outreach events, 45 individuals completed the specialty crop quiz. 3 of the 45 individuals answered all 8 questions correctly, meaning that 93.3% of the participants missed at least one question. This provided us with an opportunity to speak with them and have a conversation about the specialty crop industry and provide them with a fact not previously known to meet our Goal 2 target. 31.1% of the individuals taking the quiz scored a 50% or lower, showcasing the need for extended and more robust specialty crop education in certain populations.

- Questions included in the quiz:

What vitamin gives carrots and sweet potatoes their orange color?

Vitamin A, Vitamin D, Folate or Vitamin O

Which of these foods is actually a fruit in plant biology?

Peppers, Sweet Onion, Peas or Kale

Carrots, onions and sweet potatoes are all vegetables and are what part of a plant?

Root, Seeds, Flower or Stem

Which of these nutrients can you get from eating whole fruit that is not usually found in juice?

Fiber, Vitamins, Minerals or Sugar

Fruit is a source of which of the following?

Vitamin D, **Folate**, Calcium or Protein

What is the most abundantly grown specialty crop in Kansas (according to the 2016 KDA Specialty Crop Survey)?

Tomatoes, Pumpkins, Lettuce or Cucumbers

How many counties in the state grow specialty crops (according to the 2016 KDA Specialty Crop Survey)?

53-79, 80-105, 27-52 or 1-26

Where is the most common place to market specialty crops in Kansas (according to the 2016 KDA Specialty Crop Survey)?

Farmers' Markets, Local Grocery Stores, Vendors or Restaurants

Beneficiaries:

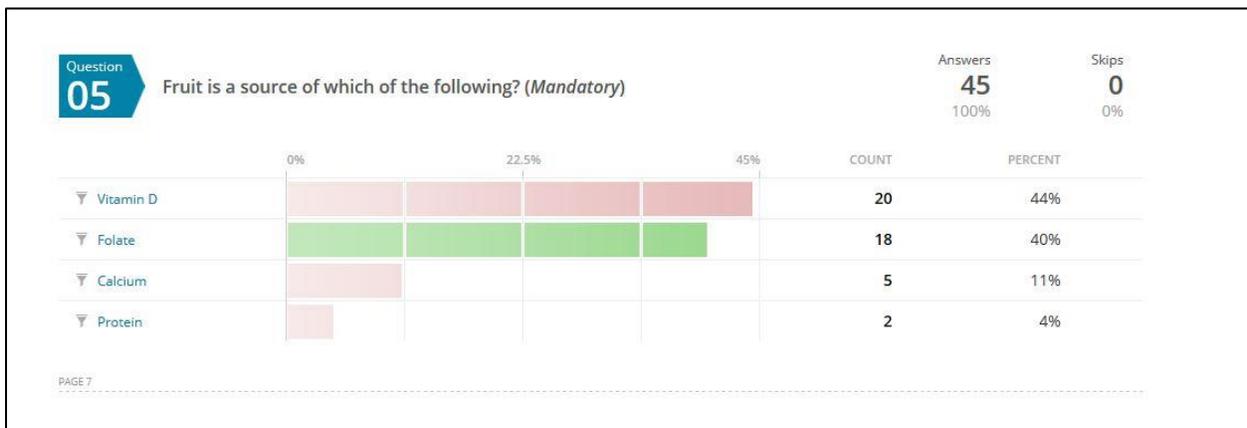
There were multiple beneficiaries of the project at numerous levels. At the producer level, the 70+ farmers' markets that were added on the map feature of the mobile application were beneficiaries as consumers can now connect and interact with these vendors in a more seamless and easy manner. The 45 individuals who took the specialty crop quiz and learned new knowledge were most certainly beneficiaries of the project. As a portion of this grant, five outreach events were conducted at differing geographic locations throughout the state to introduce potential consumers to the application and to the resources offered as a part of the application (farmers' market locator, recipes, videos, etc.) Three events were held at farmers' markets, two smaller local farmers' markets with attendance numbers of roughly 100 each (Hoxie, Kansas and Leavenworth, Kansas) and a larger regional market (Wichita, Kansas) with attendance numbers of roughly 1,000. Two additional events were held at retail locations, a farm store and market and at the Kansas State Fair. The event at Britt's Farm Market (Manhattan, Kansas) had approximately 50 attendees, while the event at the Kansas State Fair (Hutchinson, Kansas) reached approximately 200 individuals. Therefore, a total outreach number of slightly less than 1,500 was seen for the awareness and education portion. Additionally, the over 200 individuals who have downloaded the phone application are beneficiaries of the knowledge and information.

Lessons Learned:

Many worthwhile lessons were learned throughout the mobile application project. First and foremost, it was determined that working with larger technology companies such as Apple and Google can be difficult to manage and navigate. They often have their own requirements to post applications for organizations and a delegation of authority had to be received through our Secretary of Agriculture and legal in order for the application to be published.

A significant lesson was also learned that KDA does and should not operate in a vacuum. The power and resource of significant other networks should always be explored and expanded upon when available and all facets should be reviewed when completing a project. Demographic should also be reviewed in order to not target an audience that would most likely shy away from utilizing technology or feel that it would not be beneficial.

Additional lessons were also learned on the extent to which the general public does not know or recognize certain knowledge about the advantageous benefits of specialty crops, where they can be procured, where they come from, etc. For example, only 40% of the respondents of our quiz knew that fruit is a source of folate. While this is just a simple example, this could be explored further and expanded upon to showcase the healthful and “fruitful” uses and sources of specialty crops.



Quiz Folate Example

Problems and Delays:

Many of the problems and delays of this project are actually symptomatic of the fact that “Mobile Application to Support the Kansas Specialty Crop Industry” was a project submitted to replace the original project entitled “State-Federal Employee of KDA to become a GAP Auditor.” Therefore, because this project was not submitted (September 14, 2016) and approved (September 20, 2016) until almost two full years into the program, it was understood that only one year of performance was left for the approved project. However, one year is still a short timeline to accomplish developing, reviewing, testing, releasing, and marketing any product, let alone one that must go through stringent approval at multiple levels. We did encounter the following delays and remedied them in the appropriate manner:

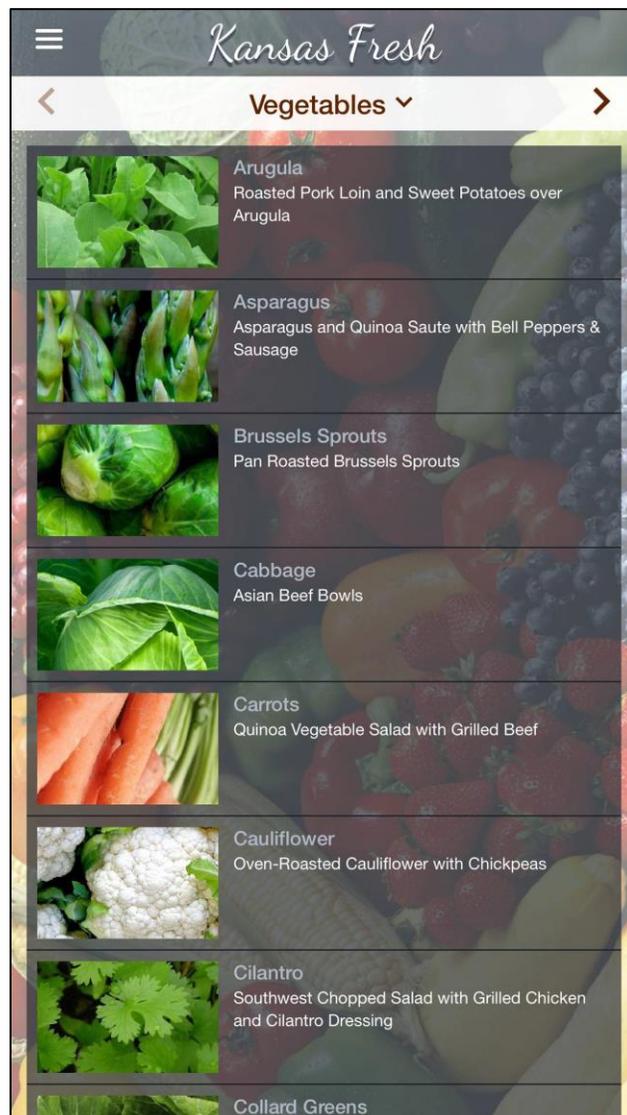
- The approval process for the Apple Store took longer than anticipated.
- Hosting package did not originally include support for iPads and the original application had to have minor edits completed and be re-loaded to support iPad development
- Encountered issues scheduling five outreach events during peak growing season. Retail outlets seemed less than enthusiastic to allow food demonstrations due to food safety concerns.

Funds Expended to Date:

\$23,694.93

Program Contact:

Kellen L. Liebsch
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Manhattan, KS 66502
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Email: kellen.liebsch@ks.gov



Kansas Fresh Recipe Screen

Project Title:

Statewide Survey of Specialty Crop Production

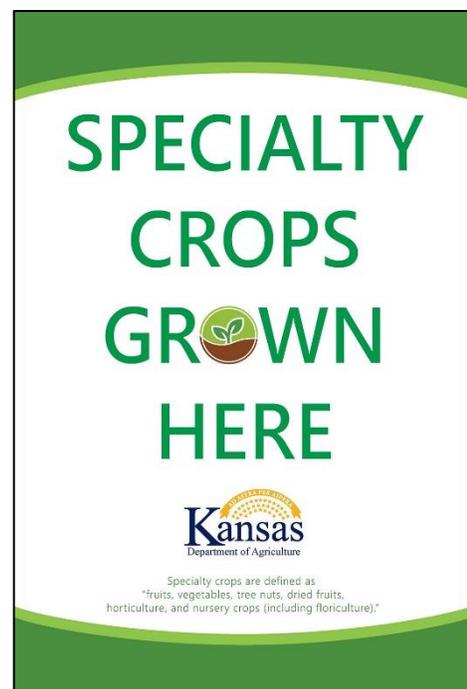
Project Summary:

This project was developed in response to significant need identified by stakeholders including growers, educators, extension personnel, Kansas Department of Agriculture and grower/community associations. The long-term goal of the project is to determine the economic impact of fruit and vegetable producers in Kansas in order to catalyze economic impact of the industry.

Project Approach:

Following Year 1, a survey was created by Dr. Cary Rivard of K-State Research and Extension. The survey was distributed summer of 2016. During the distribution stage, seven (7) farmers' markets were visited, ranging in geography across the state. Manhattan, Garnett, Iola, Derby, Wichita, Topeka, and Great Bend were visited within several months by Julie Roller, Taylor Harms, Kandace Griffin (KDA intern) and Molly Bertz (KDA intern). Farmers' market managers were contacted prior to arrival of KDA staff members. In addition to Farmers' market visits, a press release to notify of the survey's distribution was also sent to potential participants and KDA's Farmers' Market listserv. A WIBW interview was completed, as well as postcards, reminder postcards, and thank-you notes and signs were sent out. The survey was hosted on the Qualtrics database through Kansas State University and paper copies were available upon request. The survey closed October 30, 2016, and results were received November 1, 2016, from K-State. There were 312 recorded responses, with 115 of these surveys completed and 90 respondents requesting a 'Specialty Crops Grown Here' sign as a thank you for their participation.

Following the retrieval of the survey results, 'Specialty Crops Grown Here' signs were sent to those respondents that provided their names and addresses. The survey showed that of the producers that have been growing specialty crops for the past 3 years, 30% of respondents made less than \$1,000 per year with their specialty crop operations. 31% of respondents made between \$1,000 and \$10,000 per year. Over 85% of respondents made less than \$50,000 per year with their specialty crop operations. On this account, it is notated that there is substantial room for growth. The survey also showed that 58% of the survey respondents acquired their land for their specialty crop operation by purchasing it. 12.26% of respondents reported renting and 30.32% reported



acquiring the land in the 'Other' category. 94.95% of survey respondents reported the organizational structure was 'For-profit' business, while 5.05% reported their organizational structure as '501(c)3 non-profit corporation'. This information was additionally organized into a report which is being distributed through media channels and to interested parties across Kansas.

Goals and Outcomes Achieved:

The goal of this project was to reach specialty crop producers, as well as gain their insight on the specialty crop industry (as well as their own operations), in an effort to better understand the industry within our state. The team's goal was to leave this project better-equipped to serve the Kansas specialty crop industry.

Goal 1: Gain intimate knowledge of specialty crop production in Kansas.

A survey was created by Dr. Cary Rivard with K-State Research and Extension and **this survey was sent to a distribution list through USPS. An online option was hosted on the KDA website as well. The public was made aware of the opportunity to take the survey through a press release, WIBW interview, various listservs, and postcards. The surveys were mailed to 81 recipients and 9 farmers' markets. Responses were received from 85 producers. Through the results collected from surveys, a report was created (attached) to convey the results. The benchmark was met, however the target of receiving responses from 500 unique producers was not met. Based on further interaction with the specialty crop industry, we believe the industry in Kansas is smaller than was originally perceived. Kansas actually has closer to 200 growers of specialty crops, and many of these are on more of a hobby basis. Thus, the 500-response target was not met.**

Goal 2: Identify and prioritize challenges faced by specialty crop producers in Kansas.

While a portion of the survey focused on obtaining economic data, the survey also obtained information pertaining to current and future barriers in the industry. Additionally, information was collected about rent, operating expenses, business structure, and other challenges. **The results of the survey were then compiled and analyzed. While responses were only received from 85 producers, this is more representative of those producing specialty crops in our state than the initial goal of 500 producers. The benchmark of distributing the survey to 800 producers was not met. The questions regarding challenges in the survey were itemized in the report based on collected answers. The target of receiving more than 500 unique producers' input about challenges was not met due to the scale of the industry as well. However, the Kansas Ag Growth Summit, held in 2016 and 2017, provided an opportunity for specialty crop stakeholders to discuss challenges in the industry. These challenges were documented for the industry, rather than on a by-producer basis.**

Goal 3: Create a plan to disseminate results with Kansas State University and begin sharing summary statistics

Survey data was provided by K-State Research and Extension and Kansas Department of Agriculture economist, Kellen L. Liebsch, turned the data into a digestible format. Taylor Harms, along with KDA communication staff, will create a functional report for the survey including the results. The summary of the survey was made available at the 2017 Kansas Ag Growth Summit, through multiple listservs through K-State Research and Extension, through KDA, and through a press release to the public. At this time, no further plans have been made for perform more in-depth studies of the survey results. However, the Specialty Crop task force for Ag Growth has identified several of the challenges identified in the survey as outcomes for growth in the industry. The benchmark of hosting a meeting with KSU to share summary results was not met. This was due to the overturn of employment managing this grant at KDA. During the course of the grant, it was managed by four different project administrators. During this overturn, the status of the grant outcomes and tasks were difficult to determine through the transition.

Beneficiaries:

The specialty crop industry will benefit from this project because it will give the State of Kansas and partners a better understanding of what is grown in Kansas, by whom and how much. This data is key to gaining additional support for and knowledge about the industry. Survey results showed that respondents were from 57 different counties, while over half of those counties were in the state. 5 respondents started their specialty crop operation between 1960 and 1980. 28 respondents started their operations between 1981 and 2000. 56 respondents started their operations between 2001 and 2010, while 62 respondents showed to be fairly new. These 62 respondents stated that they started their specialty crop operations between 2011 and present day. The survey showed that of the producers that have been growing specialty crops for the past 3 years, 30% of respondents made less than \$1,000 per year with their specialty crop operations. 31% of respondents made between \$1,000 and \$10,000 per year. Over 85% of respondents made less than \$50,000 per year with their specialty crop operations. With all accounts considered, it is noted that there is substantial room for growth. The survey also showed that 58% of the survey respondents acquired their land for their specialty crop operation by purchasing it. 12.26% of respondents reported renting and 30.32% reported acquiring the land in the 'Other' category. 94.95% of survey respondents reported the organizational structure was 'For-profit' business, while 5.05% reported their organizational structure as '501(c)3 non-profit corporation'. This is just a snapshot of the data gleaned from the survey.

Additionally, each individual who completed the survey and provided contact information was sent a "Specialty Crops Grown Here" sign to use on their farm. This totaled 85 signs mailed to producers. These signs help to raise awareness of specialty crops across the state and can be

utilized as an advertising tool for the farmer. This survey was identified as a necessity by stakeholders, educators, extension personnel, and growers. Obtaining and distributing the survey information will answer many questions about challenges and growth in the Kansas specialty crop industry. To understand the information gathered, economic impact, and groups affected, review the survey report. (attached) Additionally, the specialty crop industry as a whole benefits from this survey by gaining insight to challenges, opportunities for growth, and barriers existing in this sector of agriculture in our state.

Lessons Learned:

We believe the lessons learned from this project include timeliness, efficiency, and relevancy. Project staff ran into several issues with timeliness, as we did not hit peak farmers' market season while visiting farmers' markets. When calling market managers, we learned that we had missed their peak numbers, therefore in-person outreach was not as strong. Staff traveled to farmers' markets during August and September. We found that efficiency was key in the farmers' market travel. Staff tried to coordinate travel, so that at least two farmers' markets could be visited during one trip. After analyzing our audience, KDA staff believes that there are lessons to be learned in relevancy. When speaking with specialty crop producers at farmers' markets, many producers asked if they had to fill out the entire survey because there was a great deal of information that would not apply to them. It is important to know the audience, as well as connect with the appropriate audience that will answer the questions that need to be answered. Furthermore, as a state department that has some responsibilities in regulation, growers are sometimes hesitant to provide "too much" information. This lack of open communication is a challenge faced as we try to learn more about the challenges and inhibitors to growth existing in the industry. Bringing together educators, research and extension personnel, state employees, and growers will be vital to make progress in facing the challenges discovered through the survey.

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