

Food Waste Prevention Playbook



Pollution
Prevention
Institute

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Project Summary

Educating students and communities about food waste, food waste prevention, and strategies to reduce organic waste in Kansas landfills

In October 2020, PPI received an EPA Environmental Education grant to work cooperatively with universities, community colleges, K-12 schools and local government public health and policy councils, as well as food banks located in southeast Kansas to provide educational workshops to communities and students, develop a food recovery educational playbook, as well as strategies that can be implemented immediately to reduce the amount of food waste going to Kansas landfills. Southeast Kansas is generally recognized by the Kansas Department of Health and Environment, or KDHE, as the southeastern most area of the state made up of 16 counties, with the outer-most counties bordering Oklahoma and Missouri. These counties are Allen, Anderson, Bourbon, Chautauqua, Cherokee, Coffey, Crawford, Elk, Greenwood, Labette, Linn, Lyon, Montgomery, Neosho, Wilson and Woodson. The total population of the 16 counties based on information from the United States Census Bureau^[i] is estimated to be 237,153 people or 0.08% of the total population of Kansas.

According to the USDA, up to 40% of the food supply in the United States is wasted.^[ii] Environmental education that results in action and stewardship is the key to ensuring communities and residents are equipped with the strategies to change our current levels of food loss. Of the 16 counties to be targeted, eight counties have a population food insecurity rate of 14.5% or higher^[iii]. All but two of the counties have either a good portion of the county or their communities designated by the USDA^[iv] as low income and having low access to grocery stores and food markets.

In Kansas, a 2016 report on the state's solid waste management plan estimated that the percent of food waste found in municipal waste being disposed of into state landfills had increased since the previous report in 2012 from 13% to 17%.^[v] Freeing up landfill space is critical for non-compostable and non-biodegradable refuse that has fewer disposal or recycling options, and that could otherwise pollute our environment through open dumping, stream and river contamination, and leaching into groundwater from improper disposal. Food waste, along with other organic materials, can be reduced at the source, donated to the food insecure or can be composted and produce nutrient-rich soil for use in urban and suburban community gardens that strengthen the resiliency of local residents and improve the local food economy.

Reducing food waste is ranked as the No. 3 actionable item^[vi] communities, states and regions can employ to reduce greenhouse gas, or GHG, emissions. GHGs, including carbon dioxide (CO₂) and methane (CH₄) as well as other air contaminants such as volatile organic compounds (VOCs) are created by landfills as a result of the breakdown of organic material. These air pollutants not only impact ambient air quality and contribute to climate change, they can be a serious safety concern when migration of gases from landfills, such as methane, infiltrates basements of nearby homes. By reducing food waste to the landfill, ambient air quality can be improved. Throughout the project, reduction efforts will be measured and GHG reductions will be calculated to demonstrate ambient air reductions.

Five subaward partners received funding to work on projects in the areas of southeast Kansas toward their goals and the overall goal of this project.

During the project period, the COVID-19 pandemic struck and impacted the ability of the project work to be completed. Despite the setbacks, the projects were completed and the findings, recommendations and measurable success of the projects were recorded and are detailed in this playbook. Each subaward project is discussed in individual case summaries.

Case Study: Lyon County

Summary and background

This project, funded in part through EPA's Environmental Education grant, was performed by the Lyon County Food and Farm Council (LCFFC), which was established by resolution in 2019. Members include a diverse representation of the food system in the county. Project work took place in Lyon County, Kansas, primarily in Emporia, and in collaboration with three groups: a community coalition, Healthier Lyon County and two Emporia State University student organizations: Hornets for Hunger and Emporia At the Table (EAT).

Emporia is the largest of the eight communities in Lyon County and the home of major food manufacturing and distribution companies such as Dolly Madison, Tyson and EVCO Wholesale Food Corp. All of the full-service grocery stores and the largest number of fast food and full-service restaurants are located in Emporia as well as the majority of food pantry locations. As the county seat, Emporia hosts and maintains public services such as recycling and waste management, which were important partners in this endeavor. Lyon County is also home to Emporia State University, a regional public university and a major employer in the area. The other communities in Lyon County are all considered food deserts, which makes it imperative to utilize the resources available in Emporia to help recover and redirect food to the entire county. Using food waste and recovery educational campaigns, workshops and webinars, the Lyon County Food and Farm Council and its partners included interactive activities for multiple food system stakeholders to build relationships, foster collaboration and identify actions.

Food waste prevention efforts prior to this project

The LCFFC council members have been engaged in a community food system assessment since early 2020. By taking a holistic approach to the food system, the project work sought to increase food access as well as reduce food waste.

In late 2020, a partner organization, Healthier Lyon County, was awarded a Pathways to a Healthy Kansas grant from Blue Cross and Blue Shield of Kansas, and together the groups set about working to initiate community-wide food reclamation efforts. The action phase of this work began in February 2021. By June 2021, members of the LCFFC's 'Food Recovery Subcommittee' had assessed awareness of and interest in food reclamation opportunities and advantages with five restaurants, three grocery stores and four potential recipient organizations.

Subcommittee members have worked with the KDHE, Lyon County Public Health, Natural Resources Advisory Board and local K-State Consumer Extension Agents to compile food safety guidelines, as well as requirements of organizations that receive the food. Members have also sought assistance from the Public Health Law Center and other communities with successful food reclamation efforts. Finally, members worked to identify barriers businesses may face such as being unaware of tax incentives or the Good Samaritan Law that may protect food redistribution efforts. To aid in relationship building, members collaborated with the EAT Initiative, a collaborative and interdisciplinary effort to address food insecurity on ESU's campus and in the greater Emporia community. The project discussed in this case study assisted in these efforts by bringing in additional resources to help support the work with a particular focus on increasing local knowledge about food waste prevention and increasing collaboration among stakeholders.

Key actions

The Lyon County Food and Farm Council made heavy use of marketing channels like social media, farmers markets and other community events in the pursuit of fulfilling project objectives. They partnered with three schools to both supplement awareness efforts and implement composting programs. Additionally, they explored the possibilities of potential partnerships with multiple local restaurants and public works entities.

Throughout the entirety of the project, the LCFFC attended the farmers markets in Emporia with extensive booth displays. Several different educational brochures and handouts were made available to booth visitors. The LCFFC members and their partners presented on food waste reduction and the composting process, as well as its importance, utilizing a full-size composting bin display. Visitors could enter to win countertop composters,

composting books and other LCFFC-branded novelties. Seed packets for frost-hardy vegetables were given to any visitors who wanted them.

During Halloween markets, the LCFFC made use of youth-centered materials such as coloring books and candy, while also distributing information on ideas to “recycle” leftover candy by using it for cookie dough instead of throwing it away. The summer market in July 2022 saw the 17th annual “Emporia Homegrown Celebration.” Farmers market attendees enjoy this event for traditions such as the children’s watermelon roll and watermelon seed-spitting contest, as well as free watermelon slices. LCFFC booth members collected watermelon rinds that would normally have been thrown away and composted them. This was the first time that this had been done. LCFFC recommended that containers to collect similar food items be made available at future events.

The LCFFC utilized social media to advertise its farmers market booth participation in advance. The group made multiple social media posts throughout the project on a variety of platforms with content ranging from information related to food waste reduction to infographics provided by the EPA. Special considerations were made for posting on Earth Day, and social media was also utilized through the annual food art contest collaboration with EAT and Hornets Against Hunger. The rules encourage that entries either be pictures of food, food art or written stories or poems about food. The top three entries were chosen through a Facebook vote and received gift cards to a local restaurant. All entries were printed on 11x17 paper and hung in a downtown business as part of Emporia’s First Friday Art Walk. At the Art Walk, a table provided information on all of the community groups involved in this project, as well as information on keeping food fresh, reducing food waste, and how and what to compost.

In addition to a strong educational outreach presence in the community, the LCFFC partnered with three schools to increase awareness and implement composting programs. Kendra Smith, a culinary arts instructor at Flint Hills Technical College, was troubled by the amount of food scraps thrown away with all of her cooking classes. The LCFFC and its partners found a Hot Bin brand composter and installed it at the college. Smith also expressed an interest in having a garden where she could grow fresh food to use in the menus for her classes and could also provide compostable material. During the first quarter of implementation (July-September 2021), Smith composted 600 pounds of food waste that would normally have been thrown away. The LCFFC followed up with the Director of the Culinary Department at Flint Hills Technical College after installation to ensure that she was aware of the Hot Bin composter that had been purchased for the school with grant funds, and that she knew how to use it and how to harvest the compost.

The LCFFC also partnered with Walnut Elementary School in Emporia. Five teachers were interested in starting a project involving gardening and composting at their school and incorporated lessons on these topics into their curriculums. The LCFFC provided them with a compost bin which the teachers planned to utilize for kitchen scraps as well as leaves and debris from their outdoor garden area.

Emporia State University partnered with the LCFFC in a variety of ways for this project. Two of the partners which were integral to the execution of the entire project were university groups: Hornets for Hunger and Emporia At the Table (EAT). The LCFFC also involved students in a communications class at ESU to perform a social media audit on the LCFFC’s social media strategy to determine the best methods to reach a broader audience. One suggestion that was implemented was to begin using an Instagram account, which has allowed the LCFFC to follow pages that



“The pictures and essays of and about food really demonstrated the importance of fresh food in our lives and how we should celebrate it and find ways to reduce the waste of it.”

promote ways to reduce the amount of food that has to be discarded and share that information with similar pages. The audit project concluded with a presentation by students that included ideas about fonts, colors and other ways increase visibility and help capture insight into what may be most attractive to followers. Following the social media assessment by the ESU communications class, a contest was held to draw people to the LCFFC Facebook page. Participants were invited to respond with one idea on how they prevent throwing away food.

The LCFFC purchased a clear composting visual for demonstrations and loaned it to an ESU student from Hornets Against Hunger. The student spoke about composting and food waste at the state conference for 4-H and used the visual to help explain which items are compostable and which are not. Items were placed in the visual's three separate chambers and positioned so that the compost progress was visible, and discussion took place on which items composted and how quickly.

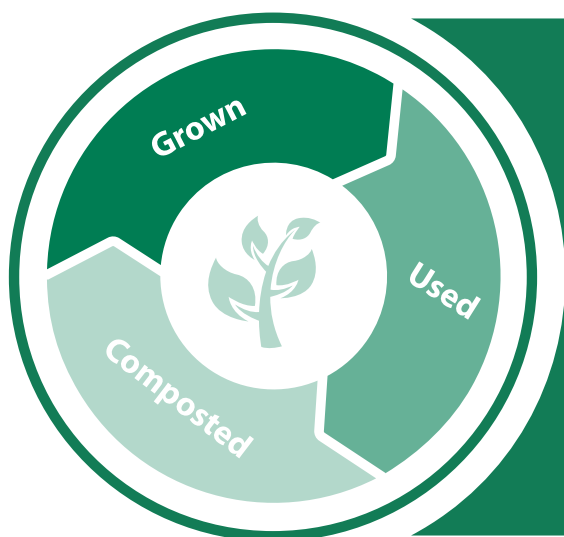
Partnerships with other entities in Emporia were also explored by the LCFFC. Through conversations with several businesses, such as restaurants and grocery stores, they discovered that each of the establishments were already donating all that they could to Abundant Harvest, a shelter for men, and Shiloh House, a shelter for women. They also learned that managers work hard to keep food costs low and try to utilize any leftover food in different recipes, so they did not have the volume of food to donate or dispose of that the LCFFC initially anticipated.

The group also inquired with the Directors of the Transfer Station Recycling Department and the Public Works Center of the City of Emporia as to their interest in community composting. The Director of the Transfer Station informed the LCFFC that he saw potential in changing the designation of his composting capability to collect and gather methane gas. However, this was deemed too costly to be accomplished within the scope of this project.

Social and environmental impacts

Throughout the duration of this project, the LCFFC utilized a variety of community partners and outreach channels to increase awareness of pollution prevention concepts such as food waste donation and diversion, as well as composting. They partnered with local schools to not only further these awareness efforts and foster related interests in community youth, but to actively reduce the amount of food waste being sent to landfills through the implementation and facilitation of composting programs. Food waste generated by Flint Hills Technical College was diverted from the landfill, amounting to 600 pounds in just one quarter, which saved 0.18 metric tons CO₂ equivalent. In the process of forging strengthened ties to community entities, the LCFFC has presented its organization to the community as a valuable resource to future pollution prevention efforts in Lyon County.

For more information, email lycofarmandfood@gmail.com or call 620-481-1197.



Closed-Loop Economy

A traditional "linear" economy approaches production by generating or sourcing all new raw materials at the beginning of a process and sending waste to a landfill at the end. Instead, a "circular" or closed-loop economy is a standard by which no waste is produced because materials are regenerated, reused, recycled and shared. Subaward partners applied this concept to the food production process throughout the span of this project. The use of hydroponics, container gardens and composters allowed project participants to produce their own food, harvest what they needed to use and compost any food that could not be eaten to enrich the soil that generates their food.

Case Study: Cherokee County

Summary and background

The Cherokee County K-State Research and Extension (KSRE) project was performed in partnership with area businesses, organizations and volunteers. The project focused on communities in Cherokee County with the goal of reducing food waste, creating county-wide composting programs, and raising awareness through targeted education efforts.

The Cherokee County KSRE office worked to reduce food waste by collaborating with local city governments and school districts to implement non-consumable food waste composting programs throughout the county. Educational training was provided to show local citizens how they could participate in the project and the environmental benefits it would produce. The goal was to raise awareness of the items that could be composted, implement programs for local citizens to engage in composting and reduce the amount of food waste sent to landfills. The project was also focused on increasing food access and developing avenues for locally sourced food.

Food waste prevention efforts prior to this project

Throughout 2020-21, Cherokee County KSRE collaborated with local partners and stakeholders to establish a county-wide food policy council. The council was created to increase engagement, establish policy, system, and environmental change regarding pollution prevention, and accelerate efforts and projects for long-term change in the county. The extension office has also partnered with Highland Elementary to establish a school composting program that utilizes produce scraps from school meals into their gardening program. Third grade students assisted in building a composter that students coordinated.

Key actions

With funding in part from the Environmental Education subaward, Cherokee County KSRE partnered with three schools and two city governments in the county throughout the project period (July 2021 – December 2022). Their work impacted a substantial number of Cherokee County citizens through composting programs, educational outreach and increased food access. KSRE engaged community partners, created educational materials and built awareness of the importance of composting.

The group initially focused on one city, Columbus, where they implemented a composting program and offered community education with the intention of using what was learned there to implement similar programs in other communities and schools in the county. KSRE staff developed an educational curriculum, utilized social media and even designed a logo to use for the project. They created a consistent message through the development of educational materials that could be used in a variety of settings. These materials can be utilized for face-to-face education as well as at events and fairs in communities throughout the county. They enlisted the help of two Columbus High School students who were interested in creating composting and recycling programs in Columbus.

Building on these efforts, Cherokee County KSRE staff finalized agreements with the city of Columbus and the RISE Learning Center in Columbus to implement composting programs at both sites. The RISE Center is a school for youth with developmental disabilities. They had recently received funding for a greenhouse and were interested in starting a school composting program as well. The RISE Center program provided education to students and staff and equipped them with a composter to educate youth on the full cycle of food growth, consumption and composting. With the assistance of their Columbus High School volunteers, KSRE staff offered additional training where students learned more about composting.

The city of Columbus elected to receive two composters in addition to the educational outreach provided by KSRE staff. Columbus Days, a large community event in Cherokee County, was selected as a prime educational opportunity. KSRE staff set up an informational booth to raise awareness, educate and obtain contact information of individuals interested in composting.

Cherokee County KSRE staff also worked with the city to implement a citywide composting program. Columbus city council approved the project and the composter was installed on Nov. 16, 2021. The composting program was promoted through social media and in city newsletters. Newsletter content aimed at raising awareness of the new composting program was provided to the city to be distributed in the newsletters, which go out in monthly water bills.

After implementation, the city of Columbus composting site needed to be relocated during the second quarter of 2022. The site designated by the city turned out to be inconvenient for area residents. As a result, KSRE staff reached out to Farmers COOP as a new community partner, and the composter was moved near the community garden in Columbus. This relocation created a more centralized composting site, allowed compost to be easily added to the community garden, and provided an opportunity for more community outreach to raise awareness. The city highlighted the change in their monthly water bill insert so the community was aware of the relocation.

Cherokee County KSRE staff took the knowledge and experience from their work in Columbus and focused efforts on providing education and establishing a composting program at Baxter Springs High School. KSRE staff met with the school's family and consumer sciences teacher, Leslie Bowman, and her five classes (approximately 49 students) to teach students how to compost, how to use the composter and the benefits of composting. A composter was installed and students had the opportunity to practice putting food scraps into the composter. Bowman then began working with the school cafeteria to compost leftover food scraps from the salad bar. She continues to collaborate with school administration and staff to expand the composting program, even involving the trades students on a project to build raised garden beds where future compost will be added to improve the growth of vegetables for her classroom.

The next community partner established was the city of Riverton's Walking Trail and Community Garden. In partnership with the property owner, Liberty Utilities, permission was granted to construct a large three-stage composting area. In addition to food waste, grass clippings and tree chips can be composted at the site. The compost can then be used for the community garden and landscaping around the half-mile walking trail. Keith Wilson, a community member, cares for the garden that provides fresh vegetables for anyone who wishes to pick them.

In order to further increase food access and develop avenues for locally sourced food in the county, Cherokee County KSRE staff worked with the statewide Local Foods Initiative to develop a new website that is a "one-stop shop" where producers, consumers and organizations can find resources to sell, find and purchase locally produced foods. The group also planned three regional food meetings in 2023. These meetings helped livestock producers understand the regulations associated with selling locally sourced meat and how to effectively market meat to the public.

To aid in their goal to establish a local foods system, the Cherokee County KSRE staff members partnered with Leafy Green Farms. Leafy Green Farms grows vegetables using hydroponics in storage containers. Utilizing grow lights and a regulated growing solution, they produce fresh vegetables with no pesticides. Leafy Green Farms previously donated a growing container to Pittsburg High School in Pittsburg, Kansas, that provides fresh vegetables for students to eat. The container is also utilized as an educational tool for science and business concepts. Students sell the excess produce to the community and learn about running a business. The partnership with Pittsburg High has been very successful and Leafy Green Farms is looking expand this program to other school districts. KSRE staff



Casey Soper and Emily Welch, Columbus High School students who were instrumental in the successful implementation of composting programs on campus and throughout Cherokee County.

connected Leafy Green Farms with USD 493 in Columbus as part of this expansion, and discussions are currently underway to implement the program during the 2023-24 school year. This would provide students in Columbus with fresh vegetables at school and increased learning opportunities as it has for students in Pittsburg.

Social and environmental impacts

This project expanded composting education and access to local county communities, schools and organizations. Additionally, Cherokee County KSRE sought to supplement implementation by assisting community members in providing education to raise awareness and understanding of the program. The project worked with local city governments and organizations to hold education trainings in local communities and established composting programs in each selected community.

For example, after implementation and education at the RISE center, the 53 students committed to utilizing the composter every day after lunch. The compost is then utilized for their greenhouse project, resulting in less non-consumable food waste in local landfills and the opportunity to improve the soil fertility in local community and school gardens. The outreach, education and implementation efforts expanded knowledge and understanding of pollution prevention as well as strengthened engagement for future opportunities to continue to reduce pollution in Cherokee County.

For more information, email ck@listserv.ksu.edu or call 620-429-3849.

Case Study: Crawford County

Summary and background

Greenbush, located in Girard, works with schools, communities and agencies in Kansas to ensure equal educational opportunities for all. Its goal is to help schools accomplish more by working together. This includes offering student learning and enrichment, professional development for teachers, and family and community programs.

Greenbush Student Enrichment serves more than 20,000 students annually, offering in-person programs at the Girard location and reaching students statewide through its virtual programs. The region targeted for this project was not only southeast Kansas, but all children in Kansas. The key piece of these programs is the education that goes along with them.

Students participate in daily hands-on education at Greenbush. This includes lessons in the greenhouse that highlight the ways food can be grown hydroponically. This food is later used in the Greenbush culinary kitchen. Greenhouse interns participate in the growing and harvesting of lettuce and are educated in food waste prevention. Students in the culinary program learn how food can be reused and how food is grown through the onsite greenhouses.

This project, funded in part through EPA's Environmental Education grant, aimed to reduce food waste throughout the Greenbush campus by creating a composting program and using that compost to grow fresh fruits and vegetables in the "rainforest greenhouse." Greenbush Student Enrichment harvested and served those fruits and vegetables as needed for their food service program. Greenbush used the rainforest space, food program and composting program to educate campus students and staff, as well as visiting learners, on sustainability, natural resource management and reducing waste throughout the course of everyday life.

Food waste prevention efforts prior to this project

Greenbush promoted food waste prevention and food recovery education prior to this project by growing food in the onsite hydroponic greenhouse and serving it through its culinary arts program. The greenhouse was renovated into a production greenhouse that yields a variety of lettuces that are served on campus. This allows Greenbush to be efficient in food waste prevention because only what is needed daily is used. Additionally, the culinary arts program works to eliminate waste by using all aspects of the food products received, including those foods grown in the greenhouse. This is accomplished through turning as many scraps as possible into stocks that are used in food production and by sending certain types of remaining food waste to farmers to feed their livestock. Three staff members have rotated repurposing the food waste as needed, one farmer repurposes to egg laying chickens, one repurposes to pigs and goats, and one repurposes to rabbits. All food waste repurposed for livestock consumption is collected in a separate, labeled bucket from the culinary kitchen, where only trained culinary staff have access. This waste contains uncooked vegetable and fruit scraps prepared in accordance with food safety regulations in the culinary kitchen and does not include or come in contact with animal-derived products or animal materials.

Key actions

This project had three major elements: implementing a composting program, expanding the existing rainforest greenhouse to include fruit in production and using these developments in outreach efforts as well as internal educational opportunities.

Greenbush built vermicomposting bins and set up collection containers in the various buildings at its Girard location for staff and others on campus to place their daily food waste, which was picked up regularly according to a predetermined schedule. The containers were collected weekly by student interns participating in the greenhouse program and the waste was weighed for tracking purposes prior to either being emptied in large vermicomposting bins or distributed to local farmers' livestock.

Information about the program was shared with staff by sending out a campuswide email, as well as an update in the campus “All-Call,” announcing the program, informing staff of compost bin locations, and distributing an educational piece on vermicomposting best practices. Greenbush experienced excellent advocacy from staff, quickly receiving requests from employees to bring in composting scraps from home to contribute to the program. In response, take-home compost buckets for an employee pickup/drop-off were added to the composting program. The compostable waste in take-home buckets that employees composted themselves offsite was not weighed and added to the diverted waste prior to employees taking it home. Additionally, one staff member began repurposing all coffee and teabags from her building for at-home composting and one culinary staff member began feeding legally allowable scraps to her livestock. Neither of these numbers were consistently weighed or included in the diverted waste totals either, so the recorded food waste diverted from landfills throughout the course of the project is conservative. From July 2021 through December 2022, the recorded weight of food waste diverted from the landfill totaled 2,773 pounds.

At the onset of this project, Greenbush only grew lettuce hydroponically. Fruit was being ordered in bulk, but could not be reused as easily as lettuce, which resulted in food spoiling prior to use. In order to grow fruit-producing plants for the culinary program, Greenbush sought to expand and renovate the existing rainforest greenhouse area. This expansion allowed the group to minimize waste by growing what is needed daily and harvesting accordingly. Additionally, they sought to renovate the outdoor garden areas to grow additional items in the soil. With a dedicated space to grow soil plants, compost from the newly implemented composting program can be used to feed the plants. These plants would then also be used in food production. A container garden allows them to grow a variety of summer vegetables such as tomatoes, squash, cucumbers, peppers and more in large, repurposed livestock protein tubs. They continue to seek additional funding to build permanent, accessible, raised garden beds.

Greenbush experienced unforeseen roadblocks during preparation of the rainforest space for expansion. To appropriately prepare for the addition of new plants and sustainable growing systems, all old foliage and outdated, dysfunctional structures needed to be cleared, then the ground inside leveled and a base layer of soil and mulch added. However, the deconstruction of old and outdated elements required more time, labor and equipment than originally anticipated. Accordingly, Greenbush reached out to community partners to assist with the renovations. The addition of community partners to assist in the renovations was essential, but resulted in some adjustments to the timeline. During the waiting period, staff worked with students in the gifted department to design different elements for the space and reached out to local greenhouses to order plants. Some plants were also donated to the project from Pittsburg State University.

Once the initial preparation of the space was complete and the heating and cooling systems were operational, plants could once again be stored there, temporarily potted instead of planted while remaining renovations were finished. A fish pond, water feature and grow beds make up the new aquaponics system and a fresh layer of soil was added to the space. Finally, a handicap-accessible walkway was added throughout to complete the rainforest greenhouse renovations by the project conclusion in December 2022. A few finishing touches will be added in the spring of 2023, such as the precision irrigation system setup and the planting of all trees and plants.



“The rainforest space is such a unique and educational feature for children and adults alike. This grant has really helped us expand those opportunities all while reducing food waste and promoting sustainability by example.”

In addition to the success of the composting and rainforest greenhouse projects, Greenbush Student Enrichment incorporated these concepts into daily instruction of both students and teachers and hosted teacher training and community training workshops to increase food recovery education. The composting program was used as an example project for a school participating in its Green Schools Virtual Academy. Staff at this school took the idea a step further and held a school waste assessment and began investigating future waste reduction projects. Participants will implement what they have learned through educational opportunities for faculty and students at their school, partner with local farmers, build a garden and start a composting program.

Greenbush also hosted a professional development event for thirteen local teachers. The rainforest project, composting program and incorporation of homegrown produce into the lunch program were all highlighted topics at the event. The purpose was to educate teachers about sustainability practices and growing produce within schools, specifically with the methods of hydroponics and aeroponics, as well as how to incorporate that into daily curriculum and class projects.

In addition, Greenbush hosted summer horticulture interns, who benefited from expanded educational opportunities because of the project work. The interns helped with the composting program, the gardens and the rainforest project. Waste reduction was modeled for the interns through the practices of composting and repurposing food waste to local farmers. The group used the compost to fertilize the container garden produce, which presented an excellent educational experience in the circular economy for the interns.

Social and environmental impacts

The projects performed by Greenbush Student Enrichment were impactful from a variety of perspectives. Greenbush epitomized the reuse, regeneration and waste reduction necessary for a circular economy. Project work afforded valuable hands-on educational experiences in sustainability, natural resource management and waste reduction throughout the course of everyday life for campus students and staff, as well as through outreach to visiting learners. The group took special care to impact people in underserved communities, in particular, individuals with disabilities, by ensuring that the greenhouse area was handicap accessible. Additionally, food waste generated by Greenbush was diverted from the landfill, at least 2,773 pounds over an 18-month period, which saved 0.85 metric tons CO₂ equivalent. The compost produced by Greenbush can improve the soil fertility of onsite school gardens and the internally-sourced whole foods expand healthy diet choices for students.

For more information, email sydney.becker@greenbush.org or call 620-724-6281.



On Food Donations

Federal and state “Good Samaritan” laws exist to protect food donors from liability for injury or illness caused by the consumption of donated food. The food donated can be either perishable foods or food with a long shelf life like canned foods. Donors can be individuals or organizations, and Kansas law protects them from civil or criminal liability except in cases of “willful, wanton, malicious or intentional misconduct.”^[vii]

The Kansas Department of Agriculture restricts the donation of food for animal feeding from containing animal derived by-products or any refuse that has been associated with animal derived by-products.^[viii]

Case Study: Allen County

Summary and background

The Thrive Allen County organization is a rural health advocacy organization in Kansas. This project took place in the city limits of Iola, Kansas, in Allen County, the 2nd Congressional District of Kansas. The project benefits the roughly 12,000 residents in Allen County, aiming to make it the healthiest rural community in the state and a community that thrives both physically and fiscally. This project, funded through the EPA's Environmental Education grant, allowed the Thrive Allen County organization to purchase edible plants to add to the already established orchard and explore different models for distributing the produce, including donations to area food banks and sponsor-a-harvest options with sales to benefit local organizations.

Promoting local food sources and environmental conservation

In 2017, Thrive Allen County's vision for making Allen County a community that thrives was recognized nationally, as Allen County won the prestigious Culture of Health Prize from the Robert Wood Johnson Foundation for pursuing innovative ideas and bringing partners together to rally around a shared vision of health.

After a flood in 2007, Iola was left with more than 130 vacant lots that were scattered throughout town. Since the city acquired the lots through the FEMA buyout program, there cannot be any new construction on those green spaces. The city spends nearly \$12,000 a year to mow them during the spring and summer months. The City of Iola has had a community garden for several years that is managed by a local nonprofit, Humanity House. In 2019, Thrive Allen County had a vision to construct a community orchard that would build on the success of the community garden and include fresh fruit for those living in Allen County while beautifying the city's empty lots.

Key actions

By the end of the project period, Thrive Allen County project participants have increased edible plants in the community orchard by planting 10 trees: six peach and four apple. They have also added 12 berry plants: six raspberries and six blackberries, along with trellis fencing to support the blackberry vines. Ten more trees have been purchased and are slated to be planted in the spring. A new addition to the orchard in the spring will be a milpa garden. The milpa garden will provide squash, pumpkins, gourds and melons for the community. Success for the community orchard during the project period resulted in a small blackberry and peach harvest for community members. The community garden was promoted through multiple platforms. Information was shared by Thrive Allen County on its Facebook page, which sees traffic from just under 4,500 followers. It was also shared in the local newspaper, the Iola Register, and promoted by the Allen County Multi-Agency Task Force, which reaches many agencies throughout the county. With the expanded planting in the orchard, project participants hope to continue to provide additional fruit to the community in the years to come, offering healthy, locally sourced food to food insecure individuals in Allen County. Thrive Allen County has reached out to the local Girl Scout troop and a 4-H Club to discuss maintaining the garden and possibly distributing the produce. The group has also opened a dialogue with Humanity House to discuss how the organization goes about distributing its produce.



Project participants have increased the accessible food available to Allen County's residents, as well as promoted enhanced plant biodiversity in the city's green spaces.

Social and environmental impacts

The impacts accomplished by the Thrive Allen County organization are multifaceted; by expanding the available fruit to be harvested in Lola's community garden, project participants have increased the accessible food available to Allen County's residents, as well as promoted enhanced plant biodiversity in the city's green spaces. Thrive Allen County has replaced the previous empty, grassy lot that was expensive to upkeep, with a productive garden. The natural, whole foods grown locally also encourage residents to make healthy diet choices, as well as encourage them to participate in tending to the community garden or perhaps create a garden of their own. Additional trees slated to be planted also encourage future participation from community members, as well as the continued involvement of the Thrive Allen County organization.

For more information, email marcia@thriveallencounty.org or call 620-365-8128.

Case Study: Montgomery and Wilson Counties

Summary and background

The K-State Research and Extension Wildcat District, or Wildcat KSRE, provides reliable information on a variety of lifestyle-enriching topics to Crawford, Montgomery, Labette and Wilson Counties. Prior to this project, the education Wildcat KSRE provided in the area of food waste and recovery was limited. The project, funded in part through the EPA's Environmental Education grant, provided the opportunity to create a full circle of local food production from growing, preserving, composting to distributing homegrown produce. The project sought to accomplish this in a variety of ways, firstly, by identifying and supporting current community gardens in the Wildcat district. Next, Wildcat KSRE sought to evaluate food pantry clientele and identify needs related to the food received. Wildcat KSRE also sought to support farmers markets in the Wildcat district with educational opportunities to reduce food waste. Lastly, Wildcat KSRE sought to identify city composting opportunities within the district. The implementation of these projects was facilitated by district-wide publicity, as well as partnerships with community organizations, businesses, government offices and individuals, depending on the focus of each particular goal.

Key actions

Wildcat KSRE began project work by identifying existing farmers markets, community gardens and food preservation educational opportunities within its district. Local food pantries and distribution sites were surveyed to identify additional resource needs. Evaluations were gathered for in-person educational events, tabulated and shared with the grant funders. Two community gardens were identified, both in Parsons, Kansas: the Parsons Community Garden and the Labette Health Community Garden. Wildcat KSRE worked with the Parsons youth garden program to rejuvenate the local community gardens. Ten families participated in this effort and learned about various gardening topics.

Wildcat KSRE worked to support farmers markets in the region by increasing accessible food for community members at the Pittsburg Farmers Market through implementation of the Double Up Food Bucks program, which included the installation of EBT card readers. Wildcat KSRE also partnered with a Pittsburg State College Family and Consumer Science department professor to create a practicum, which will entail developing a farmers market newsletter for vendors to hand out to marketgoers.

Additional educational opportunities provided by Wildcat KSRE varied in content and extended all throughout the district. While Wildcat KSRE staff had trouble identifying existing opportunities for community composting, they were able to shift their focus to spreading knowledge on composting throughout their communities. Information was distributed on composting at the Earth Day event in Pittsburg Park and at Girard Ag Day, which saw around 300 attendees. Classes on composting and using compost in gardens were provided for Independence Community College, as well as Westside Elementary in Pittsburg, which saw 241 children in attendance. Additionally, in fall 2021, eight food preservation training classes open to the public were held in four different communities: Independence, Fredonia, Parsons and Girard. A total of 55 participants



Twelve food preservation classes impacted five separate communities, spreading awareness of preservation practices that not only reduce food waste, but help to alleviate food insecurity for families by providing them with the knowledge to reserve food as it is readily available to set aside for future use.

attended the eight classes. Attendees were taught about proper food preservation techniques and methods such as drying and freezing to preserve foods, consequently reducing food waste. Attendees enjoyed the opportunity to ask questions throughout the sessions about techniques like water baths, pressure canning, drying and freezing. Through hands-on teaching practices, attendees made pepper jelly, strawberry jam, canned carrots and dehydrated fruits and vegetables.

The food preservation classes were advertised through newspaper articles, which focused on reducing food waste through food preservation with topics such as the explanation of food best-by dates. The high attendance rate of the classes is attributed in part to the local papers running articles and interviews the week before the program began. Another element to the success of the classes was the ability to provide the program free of charge through grant funding. Normally these classes would have been \$20 per person for each of the two nights, unless attending both nights in which case a reduced fee of \$30 would have been charged. Being able to provide the classes free of charge allowed many families to attend together, parents and children alike.

Four more food preservation classes were scheduled for the summer of 2022 in Independence, Girard, Fredonia and Altamont. A total of 63 community members participated in these additional classes, and one of the classes required a venue change to accommodate a higher-than-expected number of participants. These classes were advertised via two newspapers and the Wildcat KSRE social media pages, and the classes generated media exposure through three newspapers, one radio station, one TV station, a social media page and four newsletters.

Social and environmental impacts

Wildcat KSRE positively impacted the awareness of food conservation throughout its district by providing extensive educational opportunities. A total of 12 food preservation classes impacted five separate communities and 118 community members, spreading awareness of preservation practices that not only reduce food waste, but help to alleviate food insecurity for families by providing them with the knowledge to reserve food as it is readily available to set aside for future use. In partnership with the Double Up Food Bucks organization, infrastructure was established at local farmers markets to facilitate support for those who may be food insecure. Awareness opportunities at local farmers markets were also identified and expanded upon through partnership with a local college. Composting classes held throughout the community implemented a foundation of the education necessary to reduce the food waste that is sent to landfills throughout the district. Each of these educational opportunities and local partnerships touched on a different aspect of the goal to create a full circle of local food production — from growing, preserving, composting and distributing homegrown produce — in the district.

For more information, email haminer@ksu.edu or call 620-331-2690.

Final Results and Best Practices

Summary

Opportunities given to PPI through an EPA Environmental Education grant allowed PPI to identify the five subaward partners outlined above to receive funding toward projects which met the overall goals of this grant. All subaward partners advanced the environmental education in food waste reduction and recovery in their respective counties. These educational efforts resulted in the action and stewardship necessary to ensure that residents are supplied with the knowledge and strategies required to reduce current levels of food loss. This action is essential at a local level in communities that experience high rates of food insecurity. Food waste diversion will reduce the amount of food waste going to landfills while in turn recovering and repurposing that food in an impactful way for community members through preservation, donation to people or animals, or composting to produce nutrient-rich soil for community gardens which improves local food quality.

Social and environmental impacts

Throughout the duration of this project, subaward partners provided an array of educational outreach efforts that centered around food waste reduction and diversion. These efforts led to strengthened community partnerships, which increased the engagement from community residents as well as provided the opportunity for subaward partners to present themselves as valuable community resources for future food waste prevention and diversion efforts in their counties. Multiple school partnerships led to broadened awareness of food waste prevention and diversion practices and fostered related interests in community youth. Many schools also provided a site for subaward partners to actively reduce the food waste being sent to landfills through the implementation and facilitation of composting programs and community gardens. The tracked food waste diverted from landfills saved a total of 1.03 metric tons CO₂ equivalent.

Subaward partners displayed a circular economy approach to local food production processes by growing their own food, only harvesting what they need, preserving food to elongate shelf life and composting food that could not be consumed to enrich the soil quality and the food that it produces. Implementation of community gardens shaped a landscape of enhanced plant biodiversity and more productive community spaces while also expanding healthy diet choices for community members. Subaward partners worked with statewide organizations such as the Local Foods Initiative and the Double Up Food Bucks organization to increase food access and availability, and in many cases took special care to impact individuals in underserved communities such as those with disabilities or low-income families. This range of combined efforts by subaward partners provided progress, which met the overall goals of this grant project, to reduce food waste being sent to Kansas landfills, reduce GHG emissions and increase knowledge and awareness leading to less food insecurity in southeast Kansas.

Works Cited

- [i] United States Census Bureau, July 1, 2018 data for Kansas - www.census.gov/quickfacts/fact/table/KS/PST045218
- [ii] USDA FAQs, www.usda.gov/foodwaste/faqs
- [iii] Feeding America, Map the Meal Gap, 2017 Kansas Overall Data - map.feedingamerica.org/county/2017/overall/kansas
- [iv] United States Department of Agriculture Food Access Research Atlas - www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas/
- [v] KDHE BWM 2016 State SWMP, pg. 20, <https://web.archive.org/web/20191215071246/http://www.kdheks.gov/waste/reportspublications/stateplan16.pdf>
- [vi] Drawdown, The Most Comprehensive Plan Ever Proposed to Reverse Global Warming, Paul Hawken - April 18, 2017, www.drawdown.org/
- [vii] www.publichealthlawcenter.org/sites/default/files/resources/phlc-fs-kansas-Food-Donation-web-2016.pdf
- [viii] policyfinder.refed.org/kansas/