BOOK OF ABSTRACTS

URBAN FOOD
SYSTEMS SYMPOSIUM

CULTIVATING

COMMUNITIES
CITIES
& FOOD SYSTEMS

SEPT. 14 -17 2026

KANSAS CITY, MISSOURI

KANSAS STATE
UNIVERSITY

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Invited Speakers & Panelists

Cultivating Resilience: Urban Agriculture as a Catalyst for Food-Secure Community Development

Erika Allen, Urban Growers Collective

This presentation examines the operational methodologies of Urban Growers Collective, Inc., an organization dedicated to cultivating nourishing environments that integrate public health, economic development, and creative practice through urban agriculture. The discussion will elucidate how community-led agricultural initiatives in Chicago serve to advance food sovereignty, mitigate systemic inequities, and foster economic mobility through regenerative land stewardship, structural healing, and climate resilience. Rooted in the foundational legacy of Growing Power, Inc. (est. 1993) and the "Good Food Revolution," this work demonstrates the capacity of localized food hubs to transform urban landscapes through inclusive and economically viable systems. Expanding upon this lineage, the session introduces advancements in "environmental alchemy", Allen's research and theory of change, exploring the strategic reclamation and transformation of neglected urban brownfields into vibrant, productive ecological landscapes. Central to this analysis is the Green Era Renewable Energy and Urban Farming Campus, which functions as a pioneering model for circular technology and climate resilience. By utilizing anaerobic digestion to convert organic waste into clean energy and nutrient-rich compost, the project illustrates a critical transition from emergent grassroots activity toward sustainable, community-led infrastructure. Furthermore, the presentation evaluates how these localized innovations interface with national movement trends, utilizing community-based intelligence to respond to rapid climate volatility and socio-economic emergencies. Through the analytical lenses of structural healing and land stewardship, the session outlines a trajectory toward food sovereignty and economic mobility, positioning urban agriculture as a definitive staging ground for collective action and the generation of long-term community wealth. In an era characterized by climate instability and persistent structural disparities, traditional models of food production and distribution often fail to address the requirements of historically divested urban centers. This inquiry frames urban agriculture not merely as a local food source, but as a robust mechanism for addressing structural disparities and fostering inclusive community development. Drawing from the "Growing Resiliency Pathways" strategic framework, we explore the integration of regenerative stewardship with community intelligence to establish sustainable food sovereignty.

Leveraging City Land and Federal Funds to Start New Urban Ag Sites

Shani Fletcher, GrowBoston

The City of Boston's Grassroots Program supports the development of community gardens and other open spaces. The program provides CDBG grant funds, City-owned land, and technical assistance to neighborhood groups and nonprofits that want to organize, develop, own, manage, and maintain community gardens and open space in the low and moderate income neighborhoods. Typically, projects are funded in two phases. Requests for Proposals are issued offering land and funding to help with the creation of community gardens and other open spaces. These spaces will provide low- and moderate-income residents with the opportunity to establish urban agriculture spaces. Our goal is to grow healthy food for families and the community. The Mayor's Office of Housing will make a tentative designation and award of funds to the selected development entity. Then, we work with them to finalize their proposal, and guide them through property acquisition and construction.

Expanding the Toolbox: Leveraging Controlled Environments for Urban Food Systems

Joshua Craver, Colorado State University

Controlled environment agriculture (CEA) is an innovative approach to crop production that focuses on optimizing an environment within a protected structure, such as greenhouses and vertical farms. This approach offers an array of benefits for urban food systems, including local, year-round production, improved crop quality, and enhanced resource use efficiency. However, the implementation of CEA also presents distinct challenges

that require innovative and sustainable solutions. In this presentation, Dr. Joshua Craver will provide an overview of ongoing programs at Colorado State University (CSU) Spur, a new campus located in Denver, CO dedicated to advancing research, education, and community engagement. He will also highlight the work of the Metropolitan Agricultural Research Center (MARC), an integral part of CSU Spur, which focuses on addressing the unique challenges of urban agriculture and promoting sustainable production practices. Dr. Craver will discuss the strategic use of high-tech greenhouses and indoor growing systems to support urban growers, advance workforce development, and strengthen connections with local communities.

Designing Living Cities — Building-Integrated Agriculture and the Future of Urban Food Systems

Gwynne Mhuireach (moderator), University of Oregon; August Stolba, University of Oregon; Meg Horst, Portland State University; Matt Arrington, Brigham Young University

Urban areas are at a pivotal moment: climate change, inequitable food access, and aging infrastructure are calling for bold, integrated solutions. This panel brings together architects, planners, plant scientists, microbiome researchers, and food-systems experts to explore how Building-Integrated Agriculture (BIA) and regenerative urban food systems can transform the way cities function and thrive. Drawing from applied research across building science, ecology, vertical farming, and community-based planning, the panel will highlight how emerging knowledge—from plant-specific lighting needs to microbial interactions within built environments—can inform designs that support food production inside and atop buildings. Panelists will share insights into how policy, technology, and design can converge to support more resilient, just, and climate-positive cities. A central theme of the discussion is collaboration: how interdisciplinary partnerships can turn buildings into living systems; how practitioners and researchers can co-create solutions with communities; and how integrating food production into the built environment can strengthen local food systems, improve health outcomes, and expand urban resilience. Participants will leave with inspiration grounded in real-world examples—alongside actionable pathways for bringing together science, design, and community priorities to build the next generation of living, food-producing cities.

Oral Session 1 - Food System Policy, Planning, and Advocacy I

Tuesday, September 15 1:30 – 2:50 pm

One Size Fits None: Rethinking Urban Agriculture Policy

Henry Gordon-Smith, Agritecture

Urban agriculture policy is struggling in most cities in part because policymakers are writing rules for a category that does not actually exist as a single thing. Urban agriculture is a spectrum, ranging from soil-based community gardens that deliver food sovereignty and social connection with minimal investment to high-tech vertical farms with sophisticated climate control, with an often-overlooked range of production models in between, each with its own land use profile, infrastructure requirements, economic logic, and community benefit potential. Policy that treats them as one category serves none of them well. This presentation draws on more than 350 completed planning and policy engagements by Agritecture across six continents, including work in New York City, Atlanta, Lorain, Dallas, Paris, Dubai, Doha, Auckland, the Maldives, and multiple Australian cities, as well as regional food systems planning in North America, the Middle East, and the Pacific, along with findings from the 2025 Global CEA Census tracking controlled environment agriculture adoption, economics, and policy conditions across more than 70 countries. The core finding is that cities need policy frameworks mapped to the full production spectrum, organized around five levers: land access and zoning, infrastructure and utility support, market and supply chain linkages, workforce and community integration, and data systems for ongoing governance. Each lever applies differently depending on the production model, and getting that match right is the difference between policy that accelerates urban agriculture and policy that inadvertently stalls it. The session closes with specific, actionable recommendations drawn directly from completed engagements: what has worked, what has not, and what the global data now tells us about where cities are heading.

Urban Agriculture Development in Boston: The Grassroots Program

Shani Fletcher, GrowBoston

This session covers the City of Boston's long history of developing urban agriculture projects on City-owned land. The Grassroots Open Space Program, managed by GrowBoston: Office of Urban Agriculture (part of the Mayor's Office of Housing), has supported the development of community gardens and other open spaces in Boston for more than 35 years, providing City-owned land, technical assistance, and HUD Community Development Block Grant funds to neighborhood groups and nonprofit organizations that want to organize, develop, own, manage, and maintain community gardens and open space projects in low- and moderate-income neighborhoods. In conversation with community members, urban agriculture practitioners, and City departments and agencies, the program identifies opportunities and priorities for new urban agriculture projects and manages the transition of tax-foreclosed and surplus City land into community ownership in compliance with Massachusetts law on disposition of publicly owned land (M.G.L. Chapter 30B). Fletcher will detail the disposition and funding processes that make this program possible, and share highlights as well as challenges.

Not Simply Unhealthy: How Healthful Food Offerings Vary Among Corner stores and Across a Large Consolidated Midwestern City

Jordan Blekking, University of North Carolina-Charlotte; Shellye Suttles, Indiana University; Junying Tong, Indiana University

Despite the dominant narrative that corner stores are typically sites of unhealthy food access, this research suggests a more nuanced role, using quantile regression and spatial analysis on 281 nutrition environment assessments from corner stores across Indianapolis, Indiana, to understand the diversity of healthful food offerings across census tract-level socioeconomic characteristics, including historic redlining boundaries and county-adjacent census tract data given Indianapolis's status as a consolidated city-county. The study finds that some corner stores provide many healthful, nutritious foods, particularly stores that participate with WIC or are located in areas lacking access to public parks, with mixed results tied to household income, SNAP participation,

supermarket proximity, and redlining history. Spatial analysis shows the Eastside of Indianapolis, despite its reputation of limited food access, has a strong positive relationship between healthful food availability and household income, historic redlining, and gas station co-location. The findings suggest corner stores play a more nuanced role in local food environments than the literature often states, serving as important sites of opportunity for food environment-related policies aimed at improving healthy food access based on local context.

Emergency Food Preparedness: Bridging Planning and Practice

Leslie Sullivan, University of Colorado-Denver

Communities across Colorado face growing challenges maintaining equitable food access during emergencies, in rural regions due to geographic isolation and limited infrastructure, and in urban areas due to population density and complex supply chains. This capstone project assesses emergency food preparedness in a rural region of Colorado and identifies opportunities to strengthen regional food system resilience through improved coordination and community-centered planning, using a mixed-methods approach combining semi-structured interviews with nonprofit, NGO, and government stakeholders, analysis of state and local emergency operations plans, and a newly developed Emergency Food Preparedness Risk Index (EFPRI) to identify the most vulnerable populations and areas. Results reveal persistent gaps in coordination, communication, and role clarity across sectors, with emergency operations plans often insufficiently integrating food systems and lacking clearly defined governance authority, and the EFPRI highlighting disparities tied to limited infrastructure and resource access. The project recommends revising local emergency operations plans to include specific roles, responsibilities, and coordination mechanisms for food system response, along with greater integration of community-based organizations into planning processes to enhance the equity, responsiveness, and resilience of emergency food systems in Colorado.

Oral Session 2 – Community & Economic Development I

Tuesday, September 15 1:30 – 2:50 pm

Building and Repairing the Heartland Foodshed Ecosystem

Katie Nixon, New Growth; Patty Cantrell, New Growth

As with nature, food systems are ever evolving and adapting, always turning back toward balance after every disruption, seen in the persistence of urban and rural people growing food, sharing food, and building good food businesses despite barriers from industry consolidation and concentration of political power. This creative healing power of food system building is also evident in the five-state-plus Heartland Food Business Coalition, whose partners have united to support grassroots innovators and entrepreneurs in building the next middle-market layer of the local and regional food ecosystem across Iowa, Kansas, Missouri, Nebraska, Oklahoma, and northwest Arkansas. In this region, many healthy micro local food economies exist in the form of farmers markets, CSAs, and other direct-to-consumer sales avenues, but the middle market of larger-volume sales and infrastructure for local food is still young, leaving small farmers, food businesses, and local food buyers stranded when trying to scale beyond micro and direct-to-consumer markets. The Heartland Food Business Coalition (HFBC) is a team of organizations, from community-based nonprofits to food hubs and universities, working together to help small farmers build confidence and capacity to supply new and wholesale buyers, educate and engage buyers from schools to healthcare, and build the case for and attract investment in needed middle-market infrastructure. The HFBC has a collective impact goal of getting $100 million in hard infrastructure investment into the Heartland foodshed over the next five years.

KC F.A.R.M.E.R.S Coalition: Kansas City Farmers and Ranchers for Mentoring, Education, and Resource Sharing

Ashley Bath, KC Farm School; Alicia Ellingsworth, KC Farm School; Dina Newman, Kansas City Black Urban Growers (KC BUGs); Rick Mareske, The Garden at Dogwood Forest; Mike Pearl, Pearl Family Farm; Susan Welsh, Grasshopper Urban Farm; Ryan Tenney, Sankara Farm; Izula Maximillen, Sankara Farm; Gabe Munoz, The Toolbox KC; Jacob Chapman, Moose Paw Farm

Urban and regional food systems can lack coordinated support for emerging and transitioning producers, and the KC F.A.R.M.E.R.S. Coalition addresses this gap by building a regional alliance using a collective impact framework to advance equitable, resilient local agriculture across Kansas City, founded in 2023 with USDA Beginning Farmer and Rancher Development Program support and led by a backbone team including KC Farm School and Kansas City Black Urban Growers. Activities include mentorship, business training, technical assistance, and coordinated access to shared infrastructure, sustained beyond grant funding by backbone and action team leads; early results show increased engagement of beginning and historically underserved producers, strong cross-organizational collaboration, and improved knowledge transfer, with participants reporting stronger business skills, expanded market opportunities, and greater confidence, demonstrating that regional coalitions using collective impact methods can strengthen local food systems and support producer development.

Building Capacity for Agricultural Education and Resource Professionals to Serve Sustainable Urban Agriculture Producers and Organizations

Ayanfe Free, Good Lovin Farms; Takidia Jenkins, Fresh Beets Urban Farm; Kelly McClelland Horton, Michigan State University Extension; Mariel Borgman, Michigan State University Extension; Garrett Ziegler, Michigan State University Extension

Funded by a SARE Professional Development grant, MSU Extension, New City Neighbors, and Michigan urban farmers created professional development opportunities from 2023 to 2026 to strengthen agricultural service providers' ability to support urban agriculture, centering farmer leadership, regional context, and racial equity, beginning with a Farm Partner Advisory Team and four regional listening sessions that revealed barriers around land access, mentorship, community relationships, infrastructure, funding, production challenges, market

opportunities, and policy. These insights informed a four-part virtual training series for agricultural service providers hosted in 2026 covering history, human rights perspectives, and practical program insights, and a board game illustrating urban farmers' real experiences and their connection to service providers, together aiming to increase understanding of urban agriculture's historical context, strengthen relationships between service providers and growers, and improve access to services through a replicable, farmer-led model.

Expanding the Growing Growers Apprenticeship Model through Online Education and Educator Training

Claire Barnhart, Kansas State University; Courtney Marie Becker, Kansas State University; Semra Fetahovic, Kansas State University; Cary Rivard, Kansas State University

Growing Growers is a partnership farm apprenticeship program where apprentices engage in hands-on farmwork and mentoring at a host farm (about half of the 47 host farms are urban), receive 12-month access to an online course developed in 2022, and attend in-person events, with expansion coordinators hired in Kansas and Missouri through USDA-BFRDP funding adding 17 new host farms since 2024 and graduating seven apprentices with five participating in 2026. In 2025 the team developed an online "Apprenticeship Bootcamp" as part of an NCR-SARE PDP, reaching more than 90 registrants from 28 states with program resources, best practices, and graduate/host farmer discussion panels, plus a Bootcamp Resource Toolkit of editable documents, timelines, marketing plans, and evaluation instruments; the overarching goal is to elevate knowledge and peer-networking for beginning growers, showing that online learning can add capacity to an apprenticeship program alongside critical in-person events.

Oral Session 3 – Urban Farmer Training

Tuesday, September 15 1:30 – 2:50 pm

From Assessment to Action: How Statewide Urban Agriculture Findings Shaped the Development of Targeted Training Modules for New Jersey Urban Growers

Meredith Taylor, Rutgers Cooperative Extension; Ricardo Kairio, Rutgers Cooperative Extension; Claudia Urdanivia, Rutgers Cooperative Extension

As urban agriculture expands across New Jersey, the state's densely populated context creates structural challenges in defining, supporting, and scaling urban agriculture, prompting Rutgers Cooperative Extension to conduct a statewide assessment identifying needs, barriers, and opportunities for urban growers and informing adaptation of the RU Ready to Farm program for urban environments. Phase One synthesized survey data, interviews, stakeholder meetings, and statewide convening recommendations, identifying challenges including inconsistent municipal definitions of urban agriculture constrained by the Five Acre Rule, limited access to land, water, equipment, and financing, soil contamination and fragmented parcels, gaps in technical knowledge, and absence of statewide best-practice guidance. These findings guided four Phase Two training modules: Urban Soil Health & Contamination Management, Water Resource Management for Urban Farms, Food Safety in Urban Agriculture, and Integrated Pest Management for Small Urban Sites, delivered through a hybrid model combining virtual instruction with hands-on field demonstrations, demonstrating how participatory assessment can shape Extension programming that is equitable, context-specific, and responsive to New Jersey's evolving urban agriculture landscape.

Empowering Communities Through Sustainable Urban Agriculture: A Case Study of Farmer Training Program for Resettled Refugees

Ben Carpenter, Cultivate KC; Joonmo Kang, University of Kansas; Euijin Jung, University of Kansas; Cheryl Holmes, University of Kansas; Kristin Selby, Catholic Charities of Northeast Kansas

This interpretive study aims to understand the experiences of resettled refugee farmers in New Roots, a farmer training program for refugees and immigrants in Kansas City, USA. Over the course of a year, the research team fostered relationships by participating in the program before conducting interviews with both farmers and staff, allowing for rich, contextual insights into the program's impact. Findings showed that farmers were drawn to New Roots for its flexibility, its perceived benefits for mental well-being, and the opportunities it provided for social connection, appreciating the freedom to set their own schedules in contrast to the rigid and often exploitative conditions they experienced in other jobs. New Roots offers a meaningful path to independence, granting participants greater control over their daily lives and futures, while cultivating a sense of community by fostering camaraderie among farmers and expanding their social networks. The program exemplifies principles of ecosocial work and sustainable development, valuing not only economic outcomes but also the well-being of people, the health of the planet, and the inclusive processes needed to achieve them.

The MUD Farm Network: A Replicable Framework for Urban Conservation Outreach

Meag Sargent, University of Wisconsin-Madison Extension; Martin Ventura, University of Wisconsin-Madison Extension

Although urban farms are increasingly important to local food systems and urban ecosystems, many Extension and USDA resources remain rooted in rural, large-scale production or home gardening, leaving urban farmers without guidance reflecting the realities of farming in cities. Led by UW-Madison Extension's Community Food Systems Program with the USDA Natural Resources Conservation Service, the Milwaukee Urban Demonstration (MUD) Farm Network addresses this gap through place-based conservation education tailored to Milwaukee's distinctive conditions, including heterogeneous soil contamination, limited contiguous land, a Lake Michigan microclimate, and significant racial and ethnic segregation, along with community garden and farm-incubator sites as a primary

mode of land access on public land under short-term leases. MUD farms function as living laboratories where growers learn about agricultural conservation through hands-on field days highlighting NRCS practices alongside farmer cultural knowledge, piloting and adapting practices that fall outside existing NRCS standards and extending education to community gardeners as well as farmers. The presentation shares lessons learned and early outcomes from MUD's first two years, including increased conservation practice adoption and outreach and engagement strategies.

Farm Business Management and Networking Opportunities for Urban Farmers in New Jersey

Claudia Urdanivia, Rutgers Cooperative Extension; Kate Brown, Rutgers Cooperative Extension; Claudia Gil Arroyo, Rutgers Cooperative Extension

To address a need for educational opportunities in farm business management, Rutgers Cooperative Extension developed Networks to Reduce Risk: Annie's Project Builds Viable Farms in Urban and Rural NJ, funded by Northeast Extension Risk Management Education, combining in-person networking between urban and rural growers with a synchronous and asynchronous online Annie's Project 101 course to foster networking among beginning, next-generation, and underserved farmers and reduce isolation. In fall 2025 the program hosted 36 participants on field trips to an urban food hub and the Rutgers Food Innovation Center, and in winter 2026 the online course engaged 34 growers in topics including land access and leasing, agritourism, marketing, wellness, food safety, and business planning, with post-session surveys indicating the greatest knowledge gains in succession planning, land access and leasing, and farm insurance, and participants valuing casual networking and connecting with a diverse group of farmers. The program addressed traditional farm business management issues alongside challenges such as land access and tenure that are compounded for urban and non-traditional growers, expanding their network across the state.

Oral Session 4 – College and Graduate Education

Tuesday, September 15 1:30 – 2:50 pm

Global Food Systems in College Study Abroad Course

Hannah Schmitz, Kansas State University; Cynthia Domenghini, Kansas State University; Molly Proper, Kansas State University

Students who study global food systems abroad gain understanding of complex challenges and strategies for improving food security while exploring different cultures, perspectives, and policies, and a horticulture-focused study abroad program to the Netherlands, a model of technology-driven food production innovation, offers college students opportunities to engage with urban growers, community members, policymakers, and nonprofits, visiting vertical farms and controlled-environment agriculture sites alongside an online course covering Dutch culture, food sector challenges, and policy history. Through daily reflective writing abroad and post-trip application of their experiences, students strengthen their awareness of global food system issues and develop leadership skills to advocate for supportive policies; this presentation shares the program's design, goals, initial outcomes, and materials demonstrating its value and potential for replication at other universities.

Preparing the Next Generation of Leaders for Resilient Urban Food Systems

Eleni Pliakoni, Kansas State University; Semra Fetahovic, Kansas State University; Tricia Jenkins, Kansas State University; Cary Rivard, Kansas State University

Kansas State University formally launched work in Urban Food Systems in 2021 with a specialization in the Horticulture graduate program, expanding to the K-State Olathe campus to strengthen Kansas City area connections, providing interdisciplinary training in sustainable urban food production, local food accessibility, project management, grant writing, education, and safe urban food production, along with a thesis and professional-track option for working professionals and an online graduate certificate launched in January 2022 with required and elective courses across plant science, leadership, sociology, economics, and health. In Fall 2023 the professional-track MS became fully online, preparing graduates to work as directors and program managers in nonprofits, city governments, extension systems, urban farming, farmers' markets, and farm-to-school programs, reflecting the growing national need for interdisciplinary expertise as urban food systems expand across the U.S. and internationally.

Small Farm Innovation Applied Research: Participatory Data Collection and Findings

Rachel Bair, Kalamazoo Valley Community College; Holly Hooper-Rowe, Kalamazoo Valley Community College; Ben Bylsma, Kalamazoo Valley Community College; Emily Demorest Kalamazoo Valley Community College; M. Scott, Kalamazoo Valley Community College; Forest Gluys, Kalamazoo Valley Community College; Tip Maddux, Kalamazoo Valley Community College; Sven Stricker, Kalamazoo Valley Community College; Kara Smith, Kalamazoo Valley Community College

Small specialty crop farmers need reliable, unbiased, readily usable information to incorporate new climate-smart technologies, particularly given significant upfront investment requirements, and the Food Innovation Center at Kalamazoo Valley Community College established an Applied Research program in 2024 within its diverse urban farm operations in Southwest Michigan, including indoor and greenhouse hydroponics, microgreen trials, aquaponics, and composting, funded by a Michigan Department of Agriculture and Rural Development Farm Innovation Grant. A research manager developed participatory data collection systems allowing part-time staff, interns, and students to maintain growing systems, collect data on costs, labor, infrastructure, climate impacts, and outputs, and draft reports; this presentation shares results focusing on optimizing lettuce production in an indoor hydroponic system and cherry tomatoes in a greenhouse high-wire hydroponic system, along with lessons learned for participatory data collection at a small-scale urban production farm within community/technical college educational programming.

Expanding Hands-on Hydroponics Experiences for Students: Challenges and Opportunities of Multi-Site Lab Delivery

Justin M. Gross, Kansas State University; Kimberly Williams, Kansas State University

As hydroponic production and controlled environment agriculture fill an expanding niche in urban food systems, K-State expanded its 3-credit Hydroponic Food Production course to include lab sections at both the Manhattan and Olathe campuses in Spring 2026, with lectures originating at Manhattan and required weekly labs and crop care at each site. The pilot revealed challenges including differing facility infrastructure affecting system choice and space use, difficulties standardizing materials and equipment across sites, and coordination challenges from differing lab schedules, but also benefits from students comparing system performance and crop problems across campuses, improving their problem-solving skills; lessons from this pilot will help create more flexible ways to teach hands-on CEA skills in urban areas, supporting workforce growth and food systems strengthening in cities.

Oral Session 5 – Food Systems Policy, Planning & Advocacy II

Wednesday, September 16 10:30 – 11:50 am

Ushering in a New Era: A Toolkit for Transformative Cooperative Extension Food Sovereignty Partnerships that Center Black Women

Remi Harrington, Zoo City Farm and Food Network; Mariel Borgman, Michigan State University Extension

Building on a toolkit for Black women-led food sovereignty initiatives introduced in partnership with cooperative extension at the 2024 Urban Food Systems Symposium, this session updates the resource for a new era of equity work in urban food systems shaped by dramatic political and social shifts over the past two years, including the dismantling of DEI in institutions. As approaches adapt while the underlying vision is maintained, the session focuses on outreach and Extension strategies that amplify initiatives by and for marginalized urban audiences, and invites discussion of actionable strategies for building, maintaining, and strengthening institutional partnerships while prioritizing sovereignty and accountability.

Standing Out in the Crowd: Using Partnerships, PSE, and Technology to Stay Relevant in High-Density Communities

Melissa Cotton, University of Missouri Extension; Lindsay Tarasovic, University of Missouri Extension

In densely populated areas, nonprofits and community organizations face steep competition for visibility, funding, and public engagement, requiring more than direct programming to stay relevant. This session explores how Policy, Systems, and Environmental (PSE) change, combined with thoughtful use of technology and strategic partnerships, can expand an organization's reach and long-term sustainability, examining unique barriers in high-density areas such as duplication of efforts, fragmented outreach, and audience saturation, and presenting real-world strategies for overcoming them. Participants will learn how to be "in more places at once" through digital tools, influence broader change through systems-level work, and build collaborative networks that amplify their presence and purpose.

Human-Centered Design in Local Food System Policy and Planning

Whitney Strauss, Dallas-Dallas County Food Plan Collaborative; Jessica Burham, Southern Methodist University

The Dallas-Dallas County Food Plan was developed using a human-centered design approach to address how food systems intersect with public health, economic development, environmental sustainability, and community resilience, beginning with extensive listening and systems mapping rather than predetermined policy recommendations, and engaging producers, food distributors, healthcare leaders, nonprofits, policymakers, researchers, and community residents. The planning process followed a structured framework of understand, co-create, refine, and review, exploring issues from neighborhood food access and workforce development to agricultural land use, food waste, and emergency food distribution, and organizing resulting strategies around five priority areas: universal food access and nutrition stability; reducing food loss and waste; increasing local food production and distribution; integrating food as medicine within healthcare systems; and strengthening emergency food response and resilience. The Dallas experience offers lessons for other cities: inclusive engagement across sectors builds trust and increases implementation success; framing food as a system rather than isolated programs helps align economic development, public health, and environmental goals; integrating community insight with technical expertise encourages innovation; and sustained collaboration between government, nonprofit, and private-sector partners is essential to move from planning to action.

Planning the Food System: Themes, Actions, and Gaps in City and State Food System Plans

Sarah Hofmeyer, University of Iowa

As food systems planning becomes an increasingly important tool for communities seeking to improve food access, support local producers, and build coordinated governance, this presentation uses qualitative content analysis to examine city- and state-level food system plans, coding for major themes, recommended actions, policy tools, implementation strategies, and areas of emphasis, and comparing how plans define goals, identify priorities, and translate values into actionable recommendations. Findings reveal common patterns and variation across plans by region, use of consultants, and state versus city level, with many plans emphasizing food access, support for local agriculture, education, partnerships, and economic opportunity, but varying considerably in specificity, implementation detail, and clarity about responsibility, often articulating ambitious goals with less guidance on sequencing, accountability, or institutionalization. These findings matter for food system policy, planning, and advocacy because plan content shapes what communities are prepared to act on, and the presentation offers practical guidance for developing food system plans that are more actionable, coordinated, and responsive to community needs.

Oral Session 6 - Community & Economic Development II

Wednesday, September 16 10:30 – 11:50 am

Heartland Elderberry Collaborative (Heartland ECo): Building the First Elderberry AgriCluster for Regional Resilience

Bevin Brooks, Lionberry and Heartland Elderberry Collaborative AgriCluster; Mickey Gallagher, Farmyard KC and Heartland Elderberry Eco; Jenny Doty, Kansas State Extension; Lori Trojan, Wild Ivy and Heartland Elderberry Collaborative

Small and mid-sized farms face structural barriers entering value-added markets due to limited processing infrastructure, cold storage, transportation, and distribution, and the American Heartland Elderberry Collaborative, a newly established AgriCluster filing for 501(c)(3) status, organizes elderberry growers and processors in eastern Kansas and western Missouri to share infrastructure, governance, and market access, facilitated through ACRE and focused on collective capacity rather than scaling individual farms, using elderberry as an initial crop with plans to test repeatability for other non-Big-Ag crops. Key objectives include a centralized hub model near Kansas City for processing, storage, and distribution, collective grant-writing capacity, and coordinated educational outreach, with two planned pilot studies: a metabolic recovery pilot extending published research on American elderberry juice and postprandial glucose response, and an agronomic pilot comparing nursery starts versus direct field cuttings in Kansas growing conditions, with the long-term goal of generating a repeatable blueprint for local food-system resilience through shared infrastructure and collaborative governance.

A Digital Systems Model for Strengthening Regional Food Networks

Jennifer Kern, Border Queen Harvest Hub

Across the Kansas-Oklahoma border region, a diverse network of farmers, ranchers, bakers, gardeners, and food entrepreneurs produces food locally, but the local food economy has historically been fragmented, with growers facing limited visibility and inconsistent market access despite existing production and demand. The Border Queen Harvest Hub was developed as a digital systems intervention serving a 60-mile radius across state lines, functioning as a centralized online platform where producers, processors, distributors, and consumers can locate and engage with each other, listing products from fresh produce to cottage-food and licensed-kitchen goods and complemented by social media outreach, emphasizing participation as infrastructure that lowers entry barriers for micro-producers and urban growers without requiring large capital investment, with key outcomes including improved producer visibility, expanded consumer access, cross-sector partnerships, and a replicable framework for connecting rural and urban food economies.

Investigating Values-Based Food Chains in Higher Education: A Case Study of Harvest Table and Elon Dining

Samuel Montgomery, Elon University; Scott Morrison, Elon University; Jacob Rutz, Elon University

As large corporate farming structures and commodity agriculture increasingly dominate the market, contributing to rural social and economic downturn, consumers including post-secondary students are showing growing interest in locally and sustainably grown food, giving rise to values-based food chains that prioritize environmental health, community wellbeing, and social cultivation. This case study investigates Elon Dining's food procurement values, incorporating perspectives from sourcing farmers, distributors, faculty, staff, and administrators, in the context of the university's Sustainability Master Plan goals to increase local procurement to 35% and sustainably/ethically sourced food to 50% by 2035, asking how Elon Dining defines and prioritizes its values and what it looks for in supply chain interactions, with findings intended to be instructive for other institutions of higher education seeking to strengthen values-based food chains.

The Food Business Start-up Summit: An Extension Model for Urban Food Entrepreneurship and Community Food Systems Development

Quinlan E. Carttar, Kansas State Extension; Jenny Doty, Kansas State Extension

Food entrepreneurs play a critical role in strengthening local food systems, but traditional business trainings often fail to address the complex, place-based challenges they face, from regulatory navigation to distribution logistics and capital acquisition; K-State Extension's Food Business Start-Up Summit is a structured, multi-day working retreat that convenes entrepreneurs with a defined business challenge for facilitated problem-solving, peer learning, and a "resource speed-consultation" model connecting them with experts in legal, finance, market access, food safety, and distribution. Grounded in design thinking and community co-creation, the Summit cultivates cross-sector relationships among producers, institutional buyers, regulators, lenders, and community organizations, with early outcomes showing increased business model clarity, strengthened supply chain linkages, expanded capital access, and measurable next steps, offering practical templates and lessons for educators, nonprofit leaders, and municipal partners seeking to build resilient, community-embedded food economies.

Oral Session 7 – Urban Agriculture Production I

Wednesday, September 16 10:30 – 11:50 am

Input-Output Analysis of Soilless Controlled Environment Agriculture (CEA) Food Production in the United States

Andre Coelho, University of the District of Columbia; Sabine O'Hara, University of the District of Columbia; Tsakani Ngomane, University of the District of Columbia

The highly centralized, input-reliant U.S. food system has made metropolitan areas particularly vulnerable to shocks, and soilless Controlled Environment Agriculture offers an alternative that reduces environmental impacts using a fraction of the space needed for urban and peri-urban production. This research presents an Input-Output modeling approach using IMPLAN to compare CEA with conventional fruit and vegetable farming, building a CEA-specific production function reflecting differences in pesticide, energy, and labor use and simulating a standardized $1,000,000 direct investment to estimate socioeconomic effects (employment, income, transactions, taxes) and environmental effects (greenhouse gases, air emissions, land use, water withdrawals, nutrient and pesticide releases). Results show the modeled CEA investment generates $2.6 million in total output and creates 20 predominantly wage-and-salary jobs, producing higher wage income and jobs than the same investment in soil-based farming while causing higher greenhouse gas emissions due to energy use but substantially lower land use, water withdrawals, fertilizer discharge, and no pesticide releases, demonstrating the underexplored I-O modeling approach's potential for future research on CEA's social, economic, and environmental feasibility.

Evaluating Research and Extension Approaches to Ethnic Crop Production Across the United States

Fernanda Krupek, Ohio State University; Florian Diekmann, Ohio State University; Carlo Moreno, The College of Wooster; Jacqueline Kowalski, University of Connecticut

As participation of ethnic populations in the U.S. food system has steadily increased, culturally relevant crops have the potential to nourish community health, social fabric, and local economies, particularly near densely populated areas, yet little is known about existing research and outreach on ethnic fruit and vegetable crops. This presentation summarizes findings from systematic searches of academic and grey literature and land-grant university websites identifying, mapping, and describing existing research and outreach efforts for selected ethnic vegetables and food crops, including community groups, production regions, edible parts, and production information such as seasonality, pest and disease management, and harvesting, to inform future research on sustainable and culturally relevant food crop production.

Important Considerations in Pursuing Strawberry Indoor Vertical Farming

Yiyun Lin, Ohio State University; Chieri Kubota, Ohio State University

As fresh, locally produced strawberries gain popularity in urban markets, indoor vertical farming offers a strategy for consistent, year-round production of this compact, high-value specialty crop, providing advantages such as optimized growing conditions, minimized environmental variability, and reduced pest pressure, while presenting challenges including high capital and operational costs, sourcing clean planting materials, pest and disease management, cultivar selection, and crop management. This presentation discusses how careful consideration of these challenges, along with continued research on cultivar selection, environment optimization, crop management, and propagation, will further advance the viability of indoor strawberry farming in sustainable urban food systems.

Advancing Sustainable Local Food Systems through Experiential Agroforestry Demonstration Model

Lila Karki, University of Maryland Eastern Shore; Anuj Dhakal, University of Maryland Eastern Shore

Agroforestry, especially alley cropping, combines trees with annual crops on the same land to improve land-use efficiency, farm enterprise diversification, soil health, and socioeconomic and environmental benefits, creating multiple income streams by combining short-term cash flow from annual crops with medium- to long-term returns from fruit trees. This project focuses on semi-urban and peri-urban areas where land access is easier, transforming unused and marginal lots into productive agroforestry sites; UMES Extension has established 16 mini- and micro-demonstration sites across 16 locations, planting nearly 1,000 fruit trees and over 10,000 vegetables and herbs, contributing over 10,000 pounds of vegetables to the local food supply last year, supported by field days, workshops, and farmer-to-farmer learning that build capacity among small, mini, and micro farmers and strengthen local food supply chains through a "seeing is believing" approach.

Oral Session 8 – Food Security in Urban Food Systems

Wednesday, September 16 10:30 – 11:50 am

Cultivating Indigenous Food Sovereignty: Balancing Tradition, Innovation, and Regional Collaboration for Resilient Food Systems

Ariga Grigoryan, of the University of Wisconsin-Madison Division of Extension; Amber Marlow

This research examines how Indigenous communities cultivate food sovereignty by balancing traditional knowledge, modern innovations, and regional collaboration, drawing on interviews with tribal leaders and program coordinators through a Tribal Outreach Coordinator Impact Fellowship and a case study of food sovereignty initiatives within the Lac Courte Oreilles Tribe, including aquaponics, seed saving, mobile market distribution, and renewable energy-supported agriculture. The case study demonstrates that integrating traditional ecological practices with innovative technologies enhances food access, climate resilience, and economic sustainability, while persistent challenges include balancing gifting economies with viable business models, workforce participation, land access, infrastructure gaps, regulatory hurdles, and financial constraints; promising developments include elder food box programs, revitalized intertribal trade routes, and Tribal College education pathways, with recommendations for shared cold chain infrastructure, formalized intertribal logistics, and greater alignment of USDA programs with Indigenous production cycles.

Expanding Access to Fresh Foods in Urban Communities: Extension and Outreach Strategies for the Senior Farmers Market Nutrition Program

Emily Barbee, University of Missouri Extension; Melissa Cotton, University of Missouri Extension; Sidney Patrick, University of Missouri Extension

Urban older adults face disproportionately high food insecurity, diet-related chronic disease, and limited access to fresh, local food, and the Senior Farmers Market Nutrition Program connects low-income seniors with urban agriculture; this presentation highlights a multi-year Extension and community outreach initiative expanding SFMNP awareness, access, and redemption in underserved urban Missouri neighborhoods through partnerships with community centers, senior housing, farmers' markets, and public health agencies, offering on-site application support, transportation coordination, and culturally responsive nutrition education, including bulk produce boxes for homebound seniors. Evaluation data indicate increased participation and redemption rates, improved self-reported fruit and vegetable intake, and qualitative feedback highlighting reduced barriers, social connection, and greater confidence in selecting fresh produce, demonstrating that integrating Extension, public health, and urban agriculture networks can strengthen local food systems and promote healthier aging urban populations.

Saving Seeds: Insights and Lessons Learned from SNAP-Ed Funded Garden Work

Laura Vollmer, University of California Cooperative Extension; Karina Hathorn, University of California; Tammy McMurdo, University of California; Alexa Erickson, University of California Cooperative Extension; Natalie Price, University of California Cooperative Extension

The CalFresh Healthy Living Garden Initiative uses gardens to educate, promote fruit and vegetable consumption, and improve nutrition security, working with 233 sites in 2025 to support new, expanded, or reinvigorated edible gardens reaching thousands of children and community members, pairing policy, systems, and environmental change strategies with evidence-based garden and nutrition education and curricula such as TWIGS and Fresh From the Garden despite the defunding of SNAP-Ed. Examples include stipend positions for Oakland preschool teachers as garden champions and the Harvesting Healthy Habits program partnering with West Covina Unified School District and Hurst Ranch Historical Center for combined gardening and nutrition lessons for all fourth graders; the presentation shares 13 years of lessons learned, evaluation data from successful collaborations, and strategies for continuing this work through enhanced partnership with the UC Master Gardener program.

Spatial Access to WIC Vendors and Transit Connectivity in Durham County, NC: Implications for Food Security and Community Health

Michelle Eichinger, Planning4Health Solutions; Cooper Oates, University of North Carolina-Charlotte

The WIC program provides financial assistance for nutrient-rich foods to income-eligible pregnant women, infants, and young children, but geographic barriers such as limited transportation and uneven vendor distribution may restrict access; this project uses ArcGIS Pro to map WIC vendor locations in Durham County, North Carolina, generating a 0.5-mile walking buffer overlaid with GoDurham transit routes and census tract-level socioeconomic and demographic data to assess spatial accessibility. Findings indicate that while central Durham has relatively strong walkable and transit-supported vendor access, several peripheral tracts with higher poverty and SNAP participation show more limited walkable coverage, suggesting that enhancing vendor distribution and transit connectivity in underserved areas, alongside WIC's broader economic benefits (an average $2.48 healthcare savings per $1 invested in prenatal WIC participation), could improve food security and community health.

Oral Session 9 – Community & Youth Engagement

Wednesday, September 16 3:00 – 4:20 pm

Homegrown Hillsborough - Supporting Food System Success Through Leadership Development

Monica Petrella, University of Florida Extension; Dhalia Bumbaca, WellFed Community; Savannah Bennett, Homegrown Hillsborough

Food system efforts have the potential to positively impact community quality of life but are often intersectional, dynamic, complex, and under-resourced, frequently led by community champions and grassroots efforts rather than professional business leadership, creating growing pains around strategic and succession planning. UF/IFAS Extension Hillsborough County developed Homegrown Hillsborough, a peer-to-peer learning network with a free, approval-based online platform allowing members to share resources, events, and a membership directory, with online learning courses launching in summer 2026 covering skills such as grant writing, event planning, and community organizing as well as theoretical foundations like food hubs and food sovereignty. The presentation reviews the process that initiated Homegrown Hillsborough, the unique partnership between UF/IFAS Extension, Hillsborough County BOCC, and a local nonprofit, lessons learned, plans for future implementation, and how other Extension offices can adopt a similar strategy.

Regenerative Urban Agriculture as Climate, Workforce, Education, Food Access, and Agritourism Infrastructure

Alicia Ellingsworth, KC Farm School; Jennifer Thomas, KC Farm School; Ashley Bath, KC Farm School

Urban agriculture is often framed as either environmental restoration or a food access intervention, but at KC Farm School regenerative agriculture, vocational and community education, and food distribution are integrated into a unified model at a 14.5-acre nonprofit farm in Wyandotte County, Kansas, operating production, education, and access as interdependent infrastructure in a historically under-resourced urban county. The farm's 1.5 acres of intensive regenerative production alongside three acres of prairie restoration corridors support PK-12 field trips, youth apprenticeships, farmer incubator plots, adult workshops, and volunteer engagement, along with an on-site market and farm stop, a CSA Farm Share cooperative, a Pay What You're Able pricing model, and shared infrastructure including a mobile aggregation vehicle and the Let's Grow Wyandotte! community garden network of 900 backyard and schoolyard gardens, plus the KC FARMERS Coalition with KC Black Urban Growers. Since 2018, evaluation metrics including over 12,000 pounds of annual regenerative food production and more than 17,000 annual program engagements show the model has strengthened agricultural literacy, food access, youth workforce awareness, local market participation, and soil and prairie health, demonstrating that urban farms can serve as multi-sector hubs when designed as integrated systems rather than isolated programs.

Extension Collaborations that Boost the Cottage Food Industry

Cindy Brison, Nebraska Extension

The cottage food industry experienced significant growth during the pandemic and continues to thrive, driven by entrepreneurial creativity and technology advancements, with Extension playing a critical and expanding role in sustaining the sector through education ranging from food safety compliance to business development advice. This presentation analyzes successful collaborative models Extension has cultivated to maximize producer success, detailing how they benefit individual producers, strengthen the industry, and provide value to organizational partners, concluding with an interactive discussion to exchange ideas for future multi-sector collaborative efforts.

Reap What You Sow: The Interplay between Urban Agriculture and Experiential Pedagogy as Pathways to Classroom & Civic Engagement, STEAM Learning, and Place Attachment Within Urban Schools

Kaleb Bell, Kansas State University; Cary Rivard, Kansas State University; Tricia Jenkins, Kansas State University; Eleni Pliakoni, Kansas State University

This study examines Urban Food Systems and Urban Agriculture as experiential, place-based pedagogical frameworks to increase student engagement, well-being, and civic participation in urban public schools, grounded in Dewey's "learning by doing" and Bandura's self-efficacy theory, combining a literature review with practitioner-based implementation in a Title I middle school agricultural education program in Atlanta, Georgia. A four-week hands-on agricultural curriculum matrix, designed for teachers without agricultural education resources, was implemented with over 300 middle school students, drawing on qualitative observations, student learning artifacts, and educator reflective analysis. The research shows that engagement in project-based agricultural learning fosters student interest in civic dialogue, leadership, and advocacy around food systems and urban sustainability, strengthening connections to community identity, environmental justice, and local policy, and offering a scalable, equity-focused model for integrating STEAM instruction, community engagement, and democratic participation in urban schools.

Oral Session 10 – Nutrition & Human Health of Urban Communities

Wednesday, September 16 3:00 – 4:20 pm

The Impact of Hospital Gardens on Healthcare Worker Wellness

Remington Tee, University of Kansas; Sarah Norris, University of Kansas

Stress, burnout, and workforce attrition are pervasive among healthcare professionals, and while nature-based interventions have demonstrated benefits for stress reduction and mood, they remain underexplored in hospital settings; this study surveyed KUMC healthcare staff, faculty, students, and volunteers who had visited the main campus hospital gardens within the prior month, finding that among 138 respondents, 96.4% reported gardens helped manage stress, with higher garden-use frequency associated with lower perceived stress and higher positive affect (though not lower negative affect). Qualitative analysis identified themes of stress relief through nature exposure, sensory and emotional enrichment, connection and grounding, and functional accessibility such as using garden produce at home, positioning hospital gardens as a low-barrier strategy to support workforce wellness and retention across diverse ages, roles, and experience levels in healthcare settings.

Organizing with Community using Trauma-Informed Nutrition

Princess Titus, Appetite For Change; Latasha Powell, Appetite For Change

Urban food systems are shaped by inequities rooted in race, place, and access, and for 15 years Appetite for Change has used food as a tool for healing, organizing, and systems change in North Minneapolis; this interactive workshop explores Community Cooks, AFC's trauma-informed nutrition and community organizing model centering community voice, cultural foodways, and collective power, grounded in the understanding that food insecurity and diet-related disease connect to systemic racism, historical trauma, and community violence. Community Cooks brings residents together to prepare food, build skills, and discuss health, food access, and economic opportunity, serving as an entry point for community organizing that has guided AFC's broader programming, including urban farms, youth development, meal box distribution, workforce exposure, and a community cookbook, illustrating how food-centered spaces can function as tools for community organizing and systems change.

Assessing the Impact of Urban Agriculture on Community Health: A Survey of Adult Participants

Sheila Abacan, Kansas State University; Eleni Pliakoni, Kansas State University; Tricia Jenkins, Kansas State University; Priscilla Brenes, Kansas State University

Urban agriculture is increasingly recognized as a public health strategy associated with healthier diets, physical activity, reduced stress, and social connection, and this study characterized adults engaged in urban agriculture across Kansas via a cross-sectional online survey of 421 participants from February to November 2025, examining demographics, health behaviors, and outcomes including BMI, perceived health, non-communicable disease, mental health, and social well-being. Participants, predominantly midlife, female, White, highly educated, and higher-income, showed generally healthy behaviors and positive well-being, with higher fruit and vegetable intake among higher-income, more educated, female, and longer-experienced participants, greater physical activity among males and those with more production experience, and higher mental and social well-being among older, wealthier, more educated, and longer-experienced participants; overall, participants showed lower obesity and multimorbidity than U.S. adults generally, and longer food production experience was consistently associated with healthier behaviors and better well-being, supporting urban agriculture's potential as part of a community-based health promotion strategy.

Nutritional Landscapes of Farmers Markets in Durham County

Tristan Ewing, University of North Carolina-Charlotte; Michelle Eichinger, Planning4HealthSolutions

Farmers' markets are thought to provide economic support and positive nutritional impact by offering locally sourced food and enhancing local economies, and this project maps the foodshed of products sold in Durham County, North Carolina farmers' markets, detailing micronutrients such as Vitamin A- and iron-rich produce, identifying vendors and food types, sourcing locations and distances (calculated via ArcGIS network analysis), and seasonality, based on website review, farm representative interviews, and on-site inspections. Preliminary results indicate many farms offer varied produce at Durham County farmers' markets, but "locally sourced" definitions vary by micronutrient and food group since many farms are located in other counties or states, providing a general understanding of these markets' nutritional impacts and identifying opportunities to improve nutrition security by expanding access to healthy foods.

Oral Session 11 – Urban Agriculture Production II

Wednesday, September 16 3:00 – 4:20 pm

Know Before You Grow: Growing Food Crops on Previously Used Urban Sites

Sabine Martin, Kansas State University; Ganga Hettiarachchi, Kansas State University

An adequate food supply is essential to sustainable, resilient communities, and reusing vacant urban properties can address food security, but potential contamination from historic use, including legacy lead from gasoline and paint, presents environmental risks for growers and consumers. This presentation provides a roadmap for converting previously used urban properties into safe food production sites, covering how to gather historic property use information, common urban contaminants, proper soil testing for contaminants and agronomic parameters, contaminant uptake into food crops, and best management practices using locally available materials, helping growers create a safe experience, alleviate food deserts, contribute to community resiliency, and mitigate blight.

Analyzing Soil Health Management in High Tunnel Systems

Courtney Marie Becker, Kansas State University; Claire Barnhart, , Kansas State University; Ganga Hettiarachchi, Kansas State University; Bizhen Hu, Kansas State University; Terri Woodburn, University of Kansas; Cary Rivard, Kansas State University

High tunnels extend the growing season and protect crops from extreme weather, but maintaining soil health in organic high tunnels presents challenges such as nutrient depletion, compaction, and salinization; two studies examined best management practices for no-till adoption and the time-course relationship between electrical conductivity and precipitation for leaching salts from high-tunnel soils. The first study used a split-split-split plot design to assess tillage, deep-bed compost, and Humisoil effects on weed colonization, crop productivity, nitrogen availability, and soil health for kale, finding weed pressure was highest in rye treatments for tilled, no-till, and Humisoil sub-plots. The second study assessed leaching effects using six organic high tunnels with covering removed from three to allow precipitation through, finding that by late October covered tunnels' salinity increased to 3.5 ds/m while uncovered tunnels' salinity decreased to 0.62 ds/m from an initial 2.8 ds/m, with both studies providing high-tunnel producers additional soil management options while highlighting the need for further research on long-term sustainability.

Exploring the Potential impacts of Square Foot Gardening for Sustainable Local Food Production in Kentucky

Sait Sarr, Kentucky State University; Oluwafunmisho Ibiloro, Kentucky State University

Inner-city and regional food systems face growing challenges from land constraints, supply chain disruptions, and the need for more sustainable production methods, and small-space farming has emerged as a promising approach to maximize productivity in limited areas, though empirical evidence on its productivity, economic feasibility, and sustainability remains limited. This study compares the Square-Foot Gardening method with traditional row gardening in Kentucky, expecting SFG to yield more per area due to space and input efficiency, while identifying fertilization strategies that maximize productivity and cost-effectiveness, contributing practical insights for local farmers and stakeholders on strengthening local food systems and improving inner-city agriculture and food resilience.

Production Diversity and Economic Performance in Kansas Urban Agriculture Systems: A Qualitative Comparative Analysis

Anup Paudel, Kansas State University; Logan L. Britton, Kansas State University; Cary Rivard, Kansas State University

Urban areas in Kansas face localized food security gaps and fragile supply chains despite the state's central role in national grain and livestock production, motivating this assessment of how production diversity, management practices, and resource allocation jointly influence production stability and economic viability, using primary data from 22 urban agriculture operations surveyed in 2025 and analyzed through a Stability Index, Shannon Index of crop diversity, and fuzzy-set Qualitative Comparative Analysis. Preliminary results indicate that high stability and economic outcomes are driven by specific configurations of production diversity, labor allocation, and management practices rather than any single factor, with diverse production portfolios and supportive labor strategies associated with more consistent output, offering a framework to help practitioners, policymakers, and investors target context-specific combinations of practices that support viable urban agriculture enterprises.

Oral Session 12 – Urban Food Distribution Systems

Wednesday, September 16 3:00 – 4:20 pm

Food Rescue in the KC Region

Dianna H. Bryant, Mid-America Regional Council; Matt Riggs, Mid-America Regional Council

Food access and food waste reduction intersect with food rescue. Food insecure residents of the Kansas City Region benefit from numerous robust food rescue operations that significantly reduce food waste. Key organizations capture produce in the fields, in bulk from wholesale distributors, and prepared food from the food service industry. They are plugged into community organizations and infrastructure that distributes these fragile resources in an efficient and timely manner to feed people. It is unfortunate that edible food ends up in landfills at a surprising volume in the city waste stream. The Mid America Regional Council (MARC) Solid Waste Management District (SWMD) is dedicated to reducing the flow of organic materials to landfills. Composting has led the way in diversion of these resources to enrich soil. Much of this waste can be rescued and distributed to people for nourishment providing the highest value for this resource. The food journey starts with production in local gardens and farms, and widespread gleaning was organized over a decade ago to rapidly respond to available produce still in the field. Teams of volunteers responded and harvested produce before it rotted and introduced it into the food supply. Currently Urban Produce Push (UPP) is at the center of this effort to capture this food and keep it in the food system. As part of the Food Hub, they are in partnership with Kanbeâ€™s Markets for the distribution. Kanbeâ€™s Markets rescues produce primarily from the wholesale produce system where large quantities of produce that are blemished or with limited shelf life were being wasted. Nearly 2 million pounds of produce was sorted last year, with more than 50% feeding people, they hope to nearly double it this year. Through a distribution system of corner stores and food access points to nourish people, with the remaining produce for animal feed or compost. Peteâ€™s Garden rescues already prepared food from a network of food service providers and repackages it for family meals that are distributed to community organizations that get it delivered to food insecure families. Prospect KC is another local food kitchen that also engages in food rescue to meet the needs of the community they serve. The KC Region is flourishing with passionate and innovative leaders who have accepted the challenge of feeding their neighbors and created systems to efficiently recover millions of pounds of food annually.

ValleyHUB: Lessons from the Making of a Community Food Hub

Rachel Bair, Kalamazoo Valley Community College; Rosie Florian, Kalamazoo Valley Community College; Amy Buskir, Kalamazoo Valley Community College

Strong local food systems make healthy food available to more people, support local farms, and build resilience, and food hubs can bridge key gaps by helping farmers reach profitable markets and supporting local institutions in buying more food locally. ValleyHUB Food Hub, launched in 2016 as a social enterprise of Kalamazoo Valley Community College connecting Southwest Michigan farms with schools, early care, healthcare, and restaurants, has made over $6 million in sales, aligned with Culinary Arts and Sustainable Horticulture degree programs while offering employment, community education, and technical assistance to farmers and school food service professionals; this presentation reports on ValleyHUB's first 10 years, the unique model of a food hub embedded within a public institution, the importance of strong partnerships and strategic grant support, and lessons and opportunities for other hubs and institutions considering this model.

Increasing Fresh Food Access in Oakland, California

Alexa Erickson, University of California Cooperative Extension; Laura Vollmer, University of California Cooperative Extension

Many Oakland residents face health and community inequities shaped by decades of policy-driven disinvestment, worsened by the closure of full-service grocery stores, and Saba Grocers Initiative, an Oakland-based nonprofit, works to transform corner stores into sources of fresh produce through a three-pronged approach: installing refrigeration equipment, leveraging collective purchasing and warehouse distribution for wholesale pricing, and offering Fresh5x, which matches SNAP produce purchases at five times the value. University of California Cooperative Extension advisors helped Saba create a logic model and published case study finding their combination of collective purchasing, store infrastructure, and a higher SNAP produce multiplier unique among healthy corner store initiatives, following several best practices from the literature and aligning with the city's environmental justice goals, including purchasing from BIPOC-owned California farms, suggesting a model that could be replicable and scalable pending further research into which interventions most improve food and nutrition security.

Building Capacity for Healthy and Sustainable School Food Through Workforce Development

Megan Fogata McManus, Chef Ann Foundation; Reece Lyerly, Chef Ann Foundation; Emily Gallivan, Chef Ann Foundation; Rebecca Harnik, Food Insight Group

School nutrition programs serve as critical anchor institutions within urban food systems but face persistent challenges recruiting and retaining skilled labor, and the Chef Ann Foundation's Healthy School Food Pathway (HSFP) supports aspiring school food professionals in gaining skills for successful K-12 scratch-cook meal operations; a 2024-25 survey of food service directors from 118 districts found meaningful impact across urban food system dimensions, including increased scratch cooking, improved operational efficiency, and staff capacity building, with participating districts reporting increased procurement of local (66%), climate-smart (44%), and organic (42%) products and 98% district satisfaction. Direct participants positively influenced peer staff as well, and the presentation discusses implementation strategies, survey findings, and lessons for school workforce development, emphasizing how public sector apprenticeships can advance job training, institutional local food procurement, and improved nutrition for urban schoolchildren simultaneously.

Poster Session - Session 1

Tuesday, September 15 3:30 – 4:15 pm

Harvesting Innovation: A Regional, Multi-Institutional Certificate in Controlled Environment Agriculture to Strengthen the Midwest Workforce

Angela Cottrell, University of Missouri-Kansas City; Deborah Finke, University of Missouri; Eleni Pliakoni, Kansas State University; Cary Rivard, Kansas State University; Tricia Jenkins, Kansas State University; Cynthia Domenghini, Kansas State University; Mary Ann Gowdy, University of Missouri; Kimberly Williams, Kansas State University

Controlled Environment Agriculture (CEA) represents one of the most promising innovations in sustainable food production, offering year-round crop cultivation, improved resource efficiency, and proximity to urban markets. Despite rapid industry growth, the Midwest lacks a dedicated academic program to prepare a skilled CEA workforce. To address this gap, a four-campus collaboration among the University of Missouri-Kansas City, University of Missouri-Columbia, Kansas State University-Manhattan, and Kansas State University-Olathe proposes the development of a shared, multidisciplinary undergraduate certificate in CEA. The proposed 15-credit certificate integrates online instruction with hands-on laboratory experiences delivered locally at each partner campus. Required coursework will cover foundational and advanced topics, including introduction to CEA systems, engineering and technology applications, hydroponic crop production, and indoor vertical farming. A diverse menu of electives ranging from urban agriculture and sustainability policy to postharvest physiology and mushroom cultivation will allow students to tailor their learning to specific career interests. This collaborative model responds directly to documented industry demand for skilled CEA professionals, particularly farm managers, research and development leaders, and technical specialists. Building on prior planning efforts, the program is intentionally designed to align curriculum with employer-identified competencies and workforce needs. The project aims to serve at least 160 students, with measurable outcomes including certificate completion rates, demonstrated gains in CEA technical and leadership skills, and job placement in food and agricultural sciences careers. Innovation lies in the program's regionalized, resource-sharing structure, which reduces duplication, increases instructional efficiency, and strengthens inter-institutional collaboration across state lines. By combining cutting-edge technologies such as hydroponics, automation, sensors, and environmental control systems with experiential learning and leadership development, the certificate prepares graduates to design, manage, and optimize technologically complex CEA operations. Ultimately, this project advances the quality of agricultural education in the Midwest by establishing a scalable, cost-effective model for interdisciplinary CEA training. The long-term vision includes national expansion through virtual delivery and replication in other regions, contributing to a resilient, technologically proficient workforce equipped to meet the challenges of sustainable food production in the 21st century.

Growing a Community Seed Library

Patrick Nehring, University of Wisconsin-Madison Extension

A seed library provides seeds to a community at low or no cost. A portion of those plants grown are allowed to go to seed. The seeds are harvested and returned to the library to be distributed in the next growing season. This is similar to a public library that lends out books and other items to individuals. They use them for a period of time and return them to the library, so someone else can check them out again. Like a public library, a seed library provides seeds at little or no cost. Also like a public library, a seed library relies on the generous support of the local government, donors, and volunteers. In return, the seed addresses food insecurity and nutrition by fostering self-reliance and empowering people to grow nutritious food and complementary plants that support pollinators. The Brown County Seed Library is an example of how a successful seed library can be started and grow to continue to be a valuable resource to residents in Wisconsin's Green Bay metropolitan area. At the core of the Brown County Seed Library is a partnership between the Brown County Library, UW–Madison Extension Brown & Kewaunee Counties, Brown County Community Gardens Program, UW Green Bay, Green Bay Botanical Garden, Northeast Wisconsin Master Gardeners, and New Leaf Foods. It began with a convergence of interests and ideas around establishing a seed library. Seed libraries were researched and seed libraries in neighboring counties were visited and interviewed. A unique organization structure was formed based on the strengths of the organizations involved

and the individuals that represent them make up the core of the Brown County Seed Library. The seed library has grown to involve many volunteers and donors from the community. An essential element of the success of the Brown County Seed Library has been providing educational programs at least monthly on how to start fruit, vegetable, and pollinator plants from seed, addressing diseases and pests, optimizing growth, managing weeds, harvesting, food preparation, food storage, seed stewardship and seed saving. Seed and seedling swaps were established. Individuals were trained to be seed stewards. Those seed stewards provide many of the seeds for the library, completing the cycle of providing seeds and collecting them to be redistributed. Learn from the Brown County Seed Library as a model for establishing a successful seed library.

Food System Resilience Contributions by Urban Agriculture Sites

Tricia Jenkins, Kansas State University; Kara Walker, Kansas State University; Cary Rivard, Kansas State University; Priscilla Brenes, Kansas State University; Eleni Pliakoni, Kansas State University

Food systems face continued disruptions, including pandemics and severe weather events. Resilience is the ability of a system to respond and adapt to disruptions. Resilience capacities of urban and peri-urban agriculture (UPA) sites are an important part of nutritional security in cities. This project is part of a four-pronged transdisciplinary assessment of urban food systems; other assessment areas include environmental sustainability, agricultural productivity, and community health. This project aimed to develop a survey instrument to assess and compare resilience capacities of six types of UPA sites: urban production, peri-urban production, intensive production, community garden, high school garden, and training farm. A literature search resulted in the development of four categories of behavior-based resilience capacities for UPA sites: civic engagement, political engagement, social capital including trust and collaboration, and transformational capacity. A survey using validated questions based on these categories was developed with an advisory board of food system experts to collect measurements of resilience capacities. Some indicators of social capital and political engagement were found to be significant by site type for community gardens and intensive production sites, potentially correlated with increased social capital growth through participation in UA-specific education. The results shed light on the capacity of UPA sites to be resilient and promote social resilience within their networks.

Community and Agriculture Resilience Audits in Two Kansas City Communities

Tricia Jenkins, Kansas State University; Dustin Kohn, Kansas State University; Eleni Pliakoni, Kansas State University; Rebekkah Stuteville, Metropolitan Community College; Ellyn Mulcahy, Kansas State University

Due to natural disasters, COVID-19, and economic shifts, having resilient food systems has become increasingly important to cities, and grassroots urban agriculture initiatives often arise to help mitigate the effects of disturbances, relying on access to various forms of capital along with governance and political infrastructure. This project used the Community and Agriculture Resilience Audit Tool (CARAT), developed by the North American Food Systems Network, to assess how Kansas City, Missouri, and Kansas City, Kansas, are utilizing the assets of their food systems to achieve community resilience, analyzing policies, practices, and programs using CARAT's 101 indicators through interviews, focus groups, and searches of zoning ordinances and codes, scored from "does not apply" to "being implemented." Preliminary results show more policies, practices, and programs in Community Health and Well-being, and the fewest in Food Sovereignty, providing a baseline for the two cities' food systems and highlighting areas of strength and weakness to help prioritize actions that enhance food system resiliency.

The Impacts of Pocket Change: Integrating Food Systems and Agriculture in the Midwest Through Urban Agriculture Mini-Grants

Annalise Lallana, American Farmland Trust; Ellie Anderson-Smith, Cultivate KC

In partnership with urban agriculture nonprofit Cultivate Kansas City, American Farmland Trust (AFT) Midwest came together to harness the power of mini-grants for urban farmers, who play a key role in their localities but have long been excluded from financial and technical support offered to commodity growers despite bringing knowledge, education, ecological services, food sovereignty, and community cohesion. For the 2025 cohort, AFT Midwest supplemented funding for Cultivate KC's Get Farming Mini Grant program, allowing three additional grants of $3,500 each to be awarded, which growers turned into a tractor on a seed farm, a sterile room for mushroom inoculation, and an orchard preventing erosion along a creek bed on a former gravel parking lot. Using this model, the organization is now fundraising to replicate the program with new partner organizations across the Midwest, aided by a short film about the three featured farmers — Sandra Machin, Nancy Kost, and Robin Moore.

Addressing Barriers to Food Access Through Localized Interventions and Local Food Systems Coalitions

Andie-Kate White, Kansas State University; Kelsey Gardiner, University of Missouri-Kansas City; Priscilla Brenes, Kansas State University; Tricia Jenkins, Kansas State University

This case study examines the ability of a local food system coalition to improve food security outcomes among members of its low-income population. As food insecurity rates in the United States continue to rise, academia and the broader public are turning to locally adapted, community-based food networks called Alternative Food Initiatives (AFIs), though more research is needed on interventions tailored to individual communities' needs and resources. One such AFI, the Kansas City Food Hub (KCFH), is a farmer-owned cooperative that provides small farmers access to larger market channels by aggregating produce, and has partnered with Horizon Housing Foundation (HHF), a regional subsidized housing nonprofit, to deliver monthly subscription-style produce boxes to HHF complexes that residents may purchase at cost, mitigating barriers like time poverty and transportation limitations. Using a mixed-methods approach with surveys, interviews, and focus groups, the study will detail changes in diet diversity and food security for participants and speak to the impact of this grassroots collaboration within Kansas City's local food system, bolstering the broader discussion around AFIs' ability to provide local solutions to national issues.

Building Food Literacy Through Hands-on Food & Garden Education: FRESHFARM FoodPrints Curriculum Resources for Your School or Community

Beth Bacon, FRESHFARM; Christine St. Pierre, George Washington University

This session introduces the Washington, DC-based FRESHFARM FoodPrints team's hands-on, evidence-based food and garden education curriculum tied to academics, and how to use their food-systems-oriented lessons and resources in urban schools or enrichment programming. The FoodPrints program embeds teachers and immersive programming in 21 Washington, DC, public schools in predominantly historically underserved areas of the city, teaching children to grow, prepare, and enjoy fresh, local whole foods through a whole-child, interdisciplinary approach that brings science, math, and social studies to life, increasing students' food literacy through skills, knowledge, and empowerment to choose, prepare, and enjoy nutritious produce-forward foods. Attendees will get access to the FoodPrints curriculum (63 lessons, PreK–5th grade) and related worksheets and video resources, dive into an example lesson, hear how others have adapted the model, view a validated food literacy measurement tool developed by George Washington University researchers, and learn how FoodPrints staff can support adopting the curriculum elsewhere.

A Case Study on Collaboration and Evaluation in Youth Food Systems Programming: Changemakers, Youth Urban Farm Club, and Farmpreneurs

Gaby Bromfeld, Rutgers Cooperative Extension; Marissa Staffen, Rutgers Cooperative Extension; Natalia Hinds, Rutgers Cooperative Extension; Sharon Kinsey, Rutgers Cooperative Extension; Clara Lappert, Rutgers Cooperative Extension; Debra Pelto, Rutgers Cooperative Extension; Lana Mustafa, Rutgers Cooperative Extension

This poster presents three case studies of youth programming that engage youth in bettering their local food system across three counties in New Jersey: Essex, Hudson, and Camden Counties. The featured programs, Farmpreneurs, Changemakers, and Youth Urban Farm Club, prioritize the development and empowerment of underserved youth populations by fostering connections with local peers, community partners, a volunteer leadership network, and the broader 4-H community. These programs focus on topics such as food systems education, food waste reduction, and food security awareness through hands-on experiences in gardening, advocacy, and sustainable agriculture for youth aged 12 to 18. A mixed-methods evaluation, including pre- and post-surveys and focus groups, was conducted to assess youth learning in nutrition, food systems, gardening, career readiness, and leadership. Findings indicate increased youth confidence in gardening knowledge, food contributions to their families, and their role in local community impact. The poster results highlight best practices for leveraging Extension and community partnerships to maximize program effectiveness. This poster provides actionable insights for urban food systems professionals seeking to implement or enhance youth food systems education. Attendees will gain strategies for resource sharing, leveraging funding, and accessing adaptable evaluation tools to build sustainable, replicable models that empower youth and strengthen local food systems.

Engaging Youth in Food Waste and Compost Education

Gaby Bromfeld, Rutgers Cooperative Extension; Kelly Dziak, Rutgers Cooperative Extension; Marissa Staffen, Rutgers Cooperative Extension; Claudia Urdanivia, Rutgers Cooperative Extension; Jennifer Shukaitis, Rutgers Cooperative Extension; Clara Lappert, Rutgers Cooperative Extension; Jennie Thomas, Rutgers Cooperative Extension; Kendrin Dyitt, Rutgers Cooperative Extension; Brianna Boyd, Rutgers Cooperative Extension; Lana Mustafa, Rutgers Cooperative Extension

This poster will highlight the USDA grant-funded Healthy Habits Food Loss and Waste program. This collaborative effort between three Extension departments — 4-H, ANR, and FCHS — provided experiential learning opportunities on food waste and compost for elementary and high-school-aged youth to address pressing environmental challenges throughout New Jersey. The program leadership team comprised of faculty and staff from Rutgers Cooperative Extension (RCE), and the programmatic team expanded beyond, showcasing university faculty, staff in six county offices, school administrators and educators, community organizations, county juvenile services, and community garden facilities. Youth ages 9–18 participated in 10–12-week afterschool or in-school programs at sites utilizing one of two initiatives: Guardians of the Food Galaxy and Compost Champions. In its pilot year, over 150 youth at seven sites statewide developed new skills in urban agriculture, food systems education, food waste reduction strategies, and composting. Youth in the program served their community by maintaining a small-scale compost and teaching about food waste reduction, completed community service hours, led a local action project, and formed relationships with peers and adult leaders. To measure program impact, two evaluations were implemented: post-program surveys and food waste audits. About 54.7 pounds of food waste was rescued and diverted to local food pantries, community compost systems, and participating schools, demonstrating the ability for sites to adopt food diversion strategies. In post-program surveys, participants indicated they plan to use this knowledge after the program to reduce food waste at home (81%), pay attention to food waste in daily life (92%), and teach others about the environmental impacts (76%). The RCE Team has continued the Healthy Habits work in Cohort 2 and will pilot this curriculum to national audiences on the online Clover by 4-H platform, demonstrating commitment to sustainable community engagement in major urban hubs.

The Growing Place: A Community-Centered Food Systems and Urban Design Proposal Addressing Food Insecurity in Kansas City's Dunbar Neighborhood

Anna Hurst, Kansas State University

The Growing Place is a community-centered architectural proposal located in the Dunbar neighborhood of Kansas City, an area historically underserved and widely recognized as a food desert. In communities like Dunbar, residents often face limited access to fresh and healthy food, and the systems that support food production, distribution, and education are fragmented or absent. This project responds directly to those conditions by creating a place where food becomes a shared community resource and a visible, integrated part of daily life, designed not only as a building but as a system that reconnects people with the processes of growing, preparing, and sharing food. The core concept is structured around the farm-to-table cycle, making each stage of production and consumption visible and accessible: spaces for growing, harvesting, cooking, learning, and dining are organized so visitors move through and experience the full life cycle of food, with gardens, kitchens, and shared dining areas working together to strengthen social connections while promoting healthier food systems within the neighborhood. Sustainability is central to the long-term goals, with a geothermal system using vertical wells beneath the site to regulate heating and cooling, reducing energy consumption while reinforcing the project's theme of working with natural systems to support nourishment and resilience. Structurally, the building uses a flat slab concrete system that allows for large, flexible open spaces without heavy beams or dropped ceilings, keeping gardens, kitchens, and gathering spaces visually open to one another. Ultimately, The Growing Place is about restoring relationships between people, food, and place, proposing an architecture that supports community growth, resilience, and collective well-being.

Community-Based Stewardship & Green Career Pathways: An Access-Centered Model for Regenerative Urban Agriculture

Sherita Williams, Manheim Paseo Learning Garden

Urban agriculture is frequently positioned as a gateway to sustainable food systems and green career pathways, but many youth-focused garden programs rely on unpaid volunteer models that unintentionally limit participation for families navigating economic and transportation constraints. This poster presents the Roots & Shoots Youth Steward model developed in Historic Manheim Park, which reframes community garden participation as structured, access-centered training rooted in community-based stewardship, integrating modest youth stipends, caregiver transportation support, garden gear access, and cohort-based learning structures to reduce participation barriers while cultivating responsibility, agricultural competence, and leadership identity. Youth stewards engage in food production, soil health practices, environmentally responsible growing methods, culturally significant crop cultivation, and public-facing educational experiences, with structured recognition practices positioning youth as emerging contributors within their local food system. Early outcomes include improved attendance consistency, increased caregiver engagement, and sustained youth leadership progression across multiple garden sites, offering a practical, replicable framework for strengthening youth training and sustainable urban food systems through intentional barrier reduction and recognition-based program design.

Supporting Urban Agriculture Planning Using the Urban Food Systems Schema

Aryan Singh Dalal, Kansas State University; Hande Kucuk McGinty, Kansas State University

Urban agriculture initiatives are expanding rapidly as cities seek solutions for improving food access, strengthening local food systems, and increasing resilience to environmental and economic challenges. However, information about urban agriculture is often fragmented across different disciplines and data sources, making it difficult for planners and policymakers to evaluate the factors that influence successful implementation. The Urban Food Systems Schema addresses this gap by providing an ontology-based structure that organizes knowledge about urban agriculture into a unified and interpretable framework, mapping relationships among key components such as farming practices, environmental conditions, resource allocation, community engagement, infrastructure, and policy support. By representing these elements and their interconnections, the schema enables users to explore

how changes in one factor — such as government incentives, access to inputs, or proximity to urban infrastructure — may influence agricultural productivity, market flow, and access to nutritious food. The schema also links production processes with broader outcomes including food availability, public health indicators, and economic participation within communities, capturing the wider system in which urban agriculture operates and allowing users to ask goal-oriented questions such as what conditions support successful urban farming installations or how different policies may influence yield and food distribution. By organizing knowledge in this way, the Urban Food Systems Schema helps guide more informed planning and policy decisions, offering a scientific framework that remains easy for practitioners to use.

Common Grounds: A Community-Centered Composting System

Michael Aehle, Kansas State University

Common Ground is a community-centered composting system designed to address food insecurity, waste management, and environmental sustainability in Dunbar, Kansas City's first historically Black suburb, responding to challenges including limited access to fresh food resources, transportation barriers, and increasing landfill capacity concerns, where over half of landfill waste is compostable. Common Ground introduces a network of accessible neighborhood compost drop-off hotspots that allow residents to easily dispose of food scraps, which are partially broken down and transported to a central resilience hub for final processing, designed to be intuitive, odor-controlled, and low maintenance while providing gardeners with consistent, nutrient-rich compost. By transforming food waste into soil that supports local gardens, the system creates a closed-loop cycle that strengthens local food production, reduces environmental impact, and fosters community connection, reframing composting as an accessible, shared civic resource that builds resilience and pride within the neighborhood.

Food Loss and Waste: A Review of Voluntary National and Voluntary Local Reviews of the United Nations

Emi Kameyama, University of the District of Columbia; Sabine O'Hara, University of the District of Columbia; Michael Whyte, University of the District of Columbia; Marilyn Hamilton, University of the District of Columbia; Jan Eelco Jansma, Wageningen University & Research

Food loss and waste (FLW) presents a major global challenge and is explicitly referenced in Target 12.3 of the Sustainable Development Goals, and while the growing literature on FLW addresses many strategies to mitigate the problem, much of this work prioritizes technical solutions over institutional ones. This study offers a systematic review of FLW solutions discussed in Voluntary National Reviews (VNRs) and Voluntary Local Reviews (VLRs) of the United Nations, applying Elinor Ostrom's Institutional Analysis and Development (IAD) framework to 281 identified reports published in English between 2016 and 2024 across eight world regions. Findings suggest nearly 60% of reports focused on technical solutions while 40% reported socially oriented solutions, with rules-in-use dominating in VNRs and biophysical conditions (such as composting) most frequently reported in VLRs, and socially oriented solutions primarily directed toward consumers rather than businesses and policymakers. The findings suggest FLW solutions can be meaningfully advanced by placing more emphasis on informal institutions — customs, norms, and shared mindsets — and by developing local and regional partnerships that combine technical and social strategies across all levels of governance.

Building a Resilient Urban Food System: A Place-Based Decision Framework

Maria Binte Edrish, Kansas State University; Shakil Kashem, Kansas State University

Challenges of healthy food access are often discussed in isolation rather than through the broader social, environmental, and regulatory factors that shape accessibility, and building a resilient urban food system requires understanding existing access patterns while accounting for these multidimensional factors. This study presents a place-based decision-support framework using the Kansas City Metropolitan Area as a case study, quantifying a food access gap by integrating retail food environment measures with mobility-based retail activity patterns into a composite access-condition index, and constructing a neighborhood vulnerability (Need) index using Principal Component Analysis and Analytical Hierarchy Process. Combining these indices produces a Need-Gap typology identifying neighborhoods where vulnerability is high and healthy food access is comparatively low, and the study applies a suitability screening approach to the top 10% High Need/High Gap areas, aligning intervention strategies — production-oriented where viable, distribution-oriented in denser areas — with local feasibility constraints and zoning regulations. The study contributes a replicable decision-support workflow that links equity targeting with feasibility-based siting to generate actionable, locally tailored interventions for building a resilient urban food system.

Poster Session – Session 2

Tuesday, September 15 4:15 – 5:00 pm

Therapeutic Horticulture to Promote Resiliency, Health and Value-added Services for Urban Farmers

Cynthia Domenghini, Kansas State University

Quality of life is impacted by many factors including physical wellness, mental health, and financial security. For urban farmers these factors are intertwined, as their financial security relies heavily on physical health and their ability to efficiently perform daily farm operations. With limits on available land for growing crops in the city and the unpredictability of environmental conditions, the stressors urban farmers face are complex, and while many training resources equip growers with specialty farming skills, support for their well-being is equally important to foster resiliency. Therapeutic horticulture is the intentional use of plant-based interactions to promote well-being; with support from a trained professional, participants learn coping skills to regulate stress and mood while gaining practical horticulture skills. Though farmers spend many hours interacting with plants, the therapeutic benefits are not always realized, and training this population in therapeutic horticulture can improve personal well-being while affording a value-added service — sessions targeting wellness that can be incorporated into a farm's offerings, providing income not dependent on environmental conditions. This presentation shares a newly developed certificate in therapeutic horticulture, consisting of a series of four online courses providing knowledge on the use and application of therapeutic horticulture for a variety of audiences, with a flexible format accommodating the demanding schedules and geographic limitations of urban farmers, promoting resiliency in the profession and strengthening the relationship between farmers and their community.

Therapeutic Horticulture Kit for Veteran Urban Farmers

Adrian Gomez, Kansas State University; Cynthia Domenghini, Kansas State University

Many veterans return from combat with "invisible wounds," such as poor sleep, hypervigilance, anger, and loss of belonging; from 2003 to 2014, PTSD was diagnosed in an estimated 500,000 Iraq and Afghanistan veterans, hindering civilian work, heightening existing health conditions, and resisting one-size-fits-all treatments. More than 300,000 veterans now grow crops for income, skills, and productivity, but the cost and time required to start a farm create barriers, underscoring the need for trauma-informed programs that fit into the workday. Therapeutic horticulture uses intentional interaction with plants to support well-being and is a promising evidence-informed way to reduce PTSD symptoms and complement medical care for veterans pursuing urban farming. The proposed project will design and field test a portable therapeutic horticulture kit that helps veteran urban farmers transform patios, balconies, stoops, and community plots into sites for stress reduction, community reintegration, and development of job-ready urban agriculture skills, also functioning as an outreach tool connecting veterans with local educators, growers, and community organizations. Each kit will include seeds or seedlings, soil, containers, and laminated step-by-step activity cards emphasizing repetitive, calming tasks such as sowing, watering, pruning, harvesting, and sharing produce, with a validated self-check for mood, stress, pain, and sense of purpose completed at baseline, mid-season, and program end. Regular use of the kit is expected to help veterans feel calmer, sleep better, and experience less loneliness while building foundational urban farming skills that can translate into employment, micro-enterprise, and community leadership, directly linking therapeutic horticulture with urban farming to support individual healing while strengthening veteran-led, community-based food systems.

Knowing Growers: Understanding and Supporting Farmers Where They Are

Vanessa Whalen, Kansas State University; Cary Rivard, Kansas State University; Tricia Jenkins, Kansas State University; Eleni Pliakoni, Kansas State University

Farmers support our communities in ways that most of us do not understand, experiencing unique challenges and stresses, and research indicates that rates of anxiety, depression, and death by suicide are higher in farmers than in the general population, who may lack connections to community resources and resist seeking help due to misperceptions about farm life, stoicism, and logistics. This project addresses the gap between growers needing mental health and support services and those able to provide them, focusing on three groups: farmers, mental health professionals (MHP), and adjunct community supports (ACS), beginning with in-person interviews and farm visits — to date, 46 farmers have signed up and 10 have been interviewed. Following qualitative review of the data, the project will develop training for MHP as free continuing education credits and workshop-format training for ACS members such as extension agents and faith leaders, with farmers gaining ongoing access to supportive materials and programs, and follow-up interviews built into the evaluation to help make farmers' lives better.

Developing a Modular Decontamination Tunnel for Controlling Contamination on Food-Contact Surfaces

Vikas Kumar Galipothu, Kansas State University; Valentina Trinetta, Kansas State University; Londa Nwadike, South Dakota State University; Majid Jaberi-Douraki, Kansas State University; Katelynn Stull, Kansas State University; Manreet S. Bhullar, Kansas State University

Small and medium-scale growers of fresh produce are facing difficulties maintaining food safety standards due to limited processing space and increased risk of cross-contamination if sanitation is inadequate, and according to the CDC, Listeria monocytogenes is a leading cause of foodborne illness in the USA with a 20–25% death rate. This study aimed to develop and validate a decontamination tunnel providing 360-degree exposure to UV-C light and a 4% lactic acid spray to food-contact surfaces to control Listeria biofilms and reduce overall microbial populations. Listeria innocua was used to form biofilms on stainless steel and HDPE coupons, and four treatment combinations of UV-C and lactic acid were evaluated at varying conveyor-belt speeds and module configurations, with field validation studies conducted on harvest bins. Significant microbial reduction of 4–5 log CFU/cm^2 was observed on both surfaces across all treatment combinations compared with controls, with maximum reduction observed with increasing exposure time (1 to 3 minutes); field validation on harvest bins also revealed significant reductions in coliforms, yeast, and mold through sequential UV-C and lactic acid treatment. Using UV-C light in combination with lactic acid as a hurdle technology offers an effective way to control Listeria biofilms and overall microbial populations on difficult-to-access food-contact surfaces.

Plastic Alternative Packaging for Cherry Tomato

Sindhu Priya Bobbili, Kansas State University; Tricia Jenkins, Kansas State University; Eleni Pliakoni, Kansas State University

Fruits and vegetables are living, highly perishable commodities that continue to respire and undergo physiological, biochemical, and microbiological changes after harvest, and improper postharvest handling, particularly inadequate packaging, contributes significantly to quality deterioration and losses along the supply chain. Conventional plastic materials are widely used due to low cost, strong mechanical properties, and effective gas-barrier performance, but their non-biodegradable nature raises environmental and health concerns. This study focuses on identifying suitable compostable alternatives to plastic packaging for cherry tomato, packing tomatoes in five package types — conventional plastic clamshells and compostable options including paper containers, vented PLA clamshells, and two non-vented PLA clamshells (clear and green) — stored at 22°C and 50% relative humidity for nine days. Results indicated greater weight loss in tomatoes stored in plastic, paper, and vented PLA packaging, with the highest respiration rate in paper containers, and higher total phenolics and lycopene in vented and non-vented green PLA packages, while antioxidant activity remained unaffected by packaging type. Despite these differences, paper containers maintained a comparable shelf life under ambient conditions, suggesting their

potential as a practical, sustainable packaging alternative for farmers, particularly for local and short supply chains, without compromising product quality.

Using Knowledge Graphs to Enhance Urban Agriculture Policy

Aidan Beesley, Kansas State University; Aryan Dalal, Kansas State University; Cary Rivard, Kansas State University; Ganga Hettiarachchi, Kansas State University; Lakma Upendri Hewa Fonsekage, Kansas State University; Hande McGinty, Kansas State University

Urban Agriculture is the practice of growing food inside urban environments, whether through traditional agriculture on empty plots of land or other methods such as hydroponics or rooftop gardens, and has been linked to lower local temperatures and increased biodiversity in addition to increasing access to fresh food. Government policy can have a tremendous impact on Urban Agriculture, both directly through educating operators or zoning laws and indirectly through policies like pollution regulations that make soil and water more amenable to Urban Agriculture, but policymakers need good, structured data to make the most informed decisions. This paper puts forward a dashboard based on survey data from 23 Urban Agriculture operators across the state of Kansas, converting the unstructured survey data into structured data with the use of an ontology that generates a knowledge graph and Neo4j database, allowing for reasoning with queries to provide the best information possible for policymaking.

Integrating Urban Food Systems into Cities: Case Studies from South Korea

Suyun Nam, Kansas State University; Kimberly Williams, Kansas State University

Urban food systems are gaining attention as cities seek to improve local food access, reduce food miles, and strengthen connections between consumers and agriculture, and South Korea provides unique examples of urban food systems development due to its dense population, limited land availability, and large seasonal climate variations, which have encouraged diverse controlled-environment and protected cultivation systems integrated within urban environments. This study used a comparative case study approach to analyze selected examples of urban agriculture in South Korea, including indoor vertical farming companies, smart greenhouse production systems, protected horticulture using plastic greenhouses and high tunnels, and urban agriculture integrated into public and commercial spaces such as subway stations and retail environments, evaluating each based on production systems, consumer interaction, and economic or social functions. These examples demonstrate that successful urban agriculture models in South Korea often rely on diversified approaches combining high-value crop production, distributed production networks, and strong connections between food production and urban consumers, with business models frequently extending beyond raw crop sales to include value-added products, technology transfer, and experiential spaces that increase public engagement. The Korean case studies demonstrate that urban food systems can play multiple roles in cities, including local food production, consumer education, and economic development, offering useful insights for expanding urban agriculture and strengthening local food networks in U.S. metropolitan regions.

Developing and Evaluating Produce Safety Posters and Videos as an Educational Tool for Non-English-Speaking Fresh Produce Growers

Manreet Singh Bhullar, Kansas State University; Sagar Pokhrel, Auburn University; Adjetey Angelina Naa Atswei, Iowa State University; Shannon Coleman, Louisiana State University; Melissa Cater, Louisiana State University; Londa Nwadike, South Dakota State University

Produce safety has been an important training topic for growers, particularly for the safety of fruits and vegetables grown on farms. The project team developed produce safety posters and videos using culturally relevant animated visuals with minimal text in the native languages of refugee growers in the Midwest, aiming to develop and evaluate the effectiveness of these resources in improving the knowledge, attitudes, and behavioral intentions of refugee growers regarding produce safety. An advisory board helped identify key topics including sick worker management, visitor management, animal-associated germ control, and fertilizer safety, and the four posters and two videos were translated into Burmese, Swahili, Nepali, and Kirundi, with evaluation through pre- and post-intervention surveys during a workshop measuring understanding, attitude shifts, and likelihood of implementing safe practices. This study highlights the importance of culturally and linguistically tailored educational materials to bridge language and cultural gaps in produce safety training, with findings expected to improve refugee growers' training, engagement, and safety practices.

Field Performance and Fruit Quality of June-Bearing Strawberry Cultivars in Kansas

Shubham Kumar, Kansas State University; Cary Rivard, Kansas State University; Eleni Pliakoni, Kansas State University; Ravneet Sandhu, Kansas State University

Strawberry is a high-value fruit crop widely appreciated for its nutritional quality and strong consumer demand for locally produced fresh fruit, but production in the north-central United States is limited by harsh winter conditions, variable spring weather, and the recent emergence of Neopestalotiopsis spp. in strawberry nurseries. A field study was conducted in 2024–2025 at the Olathe Horticulture Research and Extension Center, Kansas State University, to evaluate the performance of four June-bearing strawberry cultivars — 'Ruby June', 'Chandler', 'Camarosa', and 'X08' — for plant growth, yield, physicochemical characteristics, and nutritional quality under an annual plasticulture production system. Among the cultivars, 'X08' was least adapted to Kansas conditions with approximately 50% winter plant mortality and significantly lower yield, while 'Camarosa', 'Ruby June', and 'Chandler' produced similar marketable yields, though 'Camarosa' had significantly lower plant biomass; 'Chandler' had significantly higher titratable acidity, antioxidant capacity, and total phenolic content, and fruit harvested later in the season had higher total soluble solids and titratable acidity. Overall, 'Chandler', 'Camarosa', and 'Ruby June' demonstrated good adaptation and comparable performance under Kansas climatic conditions and may represent suitable cultivar options for regional strawberry production.

The Impact of Perceived Environmental Satisfaction on Farmers' Market Use and Dwell Time: Lessons Learned from a Cross-Sectional Survey

Herminia Machry, University of Kansas; Hui Cai, Georgia Institute of Technology; Yilun Zha, Georgia Tech

The number of farmers' markets in the United States has grown significantly during the last two decades as a potential strategy to increase access to healthier food and support community development, and while existing studies have primarily examined economic and accessibility factors, the role of social interactions as a behavioral cue remains underexplored. This study examined how frequency of visits and dwell time relate to customer demographics and perceived satisfaction with social and built environment features, using a 2024 cross-sectional survey of 695 customers at 10 USDA-certified farmers' markets in Johnson County, Kansas, analyzed through Kendall rank correlation and ordinal logistic regression. While most perceived satisfaction levels were positively correlated with visit frequency, average dwell time was particularly influenced by retail programming, lively atmosphere, seating and places to relax, and aesthetics and appearance, with seating/relaxation areas and aesthetics significantly predicting longer stays after controlling for demographics and distance. The study suggests designers, managers, and policymakers should prioritize features that enhance the social and built environment to encourage more frequent and longer visits, and the Johnson County Food Policy Council is developing a prototype county-wide marketing tool based on these findings to promote social activities that boost sales.

Effects of Magnesium Fertilization on Chlorophyll Accumulation in Watercress

Hattie Makumbe, Kentucky State University; Affoue Sephora, Kentucky State University; Theoneste Nzaramyima, Kentucky State University

Magnesium is a critical macronutrient in plant physiology, playing a central role in photosynthesis, enzyme activation, and energy metabolism as the core atom in the chlorophyll molecule. This study investigated the effects of varying magnesium sulfate concentrations (100, 150, 200, and 250 mg/L) on chlorophyll accumulation in hydroponically grown watercress, using a split-plot design and measuring chlorophyll content via SPAD meter readings, HPLC, and spectrophotometric analysis. Results revealed that all magnesium treatments led to significant increases in chlorophyll content compared to the untreated control, with the most significant effects at 200 and 250 mg/L, and 200 mg/L emerging as the most efficient level for promoting chlorophyll accumulation without physiological stress, correlating with improved leaf coloration and overall vigor. These findings offer valuable guidance for growers seeking to optimize yield and quality through targeted magnesium fertilization, with future research needed on biomass accumulation and interactions with other macronutrients.

Community Science in the Garden: Participatory Variety Trials as an Extension Method in Santa Clara County, California

Lucy Diekmann, University of California Cooperative Extension; Nicolas Enjalbert, SeedLinked

Participatory variety trials can encourage broad participation in scientific research while capturing variability in environmental conditions, production practices, and individual preferences. Since 2024, the Master Gardener Program in one California county has run a participatory tomato variety trial as a new way to reach and engage the public while developing locally relevant information about tomato growing, with 50 gardeners reporting results in the first year and 94 in the second year. More than 80% of gardeners said they learned something new by participating, and what they enjoyed most were the opportunities for learning and sharing that came from being part of a cohort all growing the same thing; in each successive year, Extension staff and volunteers have adapted to overcome challenges and added elements such as a newsletter and open house to increase participation and satisfaction. Now entering its third year, the project has shown promise as a tool for facilitating information exchange among gardeners, Extension engagement throughout the growing season, and developing applied information responsive to local environmental and garden conditions.

The Future of Urban Agriculture: A Systematic Review of Agricultural Education and Workforce Development in the United States

Michael Whyte, University of the District of Columbia; Sabine O'Hara, University of the District of Columbia; Michael Whyte, University of the District of Columbia; Marilyn Hamilton, University of the District of Columbia; Jan Eelco Jansma, Wageningen University & Research

This research examines how agricultural education in the United States must be reimagined to meet the evolving needs of farmers and communities in the 21st century, focusing on how education and training systems prepare new farmers to address climate change, food insecurity, urban food system expansion, and demographic transitions within the agricultural workforce, including the growing population of veterans transitioning into agriculture. The dissertation's first paper conducts a systematic review of agricultural education literature across three interconnected domains: academic programs through land-grant universities and agricultural colleges, cooperative extension outreach and applied training, and alternative education pathways including nonprofit initiatives, vocational training, and farmer-to-farmer learning networks, evaluating how these approaches have shaped farmer preparedness and adapted to urban agriculture, workforce changes, and climate pressures. The study also incorporates a comparative analysis of agricultural education systems in Germany and the Netherlands to identify best practices, aiming to generate actionable insights that align U.S. agricultural education more closely with practical skills, workforce demands, and outcomes-oriented training for a sustainable and adaptive agricultural sector.

Physical Pest and Disease Management for Butternut Squash in Manhattan, Kansas

Sam Sarrat, Kansas State University; Cary Rivard, Kansas State University; Raymond Cloyd, Kansas State University; Bizhen Hu, Kansas State University

Insect pests and diseases are persistent issues in the horticultural industry, and with a strong push toward sustainable farming practices, the use of physical barriers for crop protection is increasingly adopted among fruit and vegetable producers, with trellis systems shown to reduce disease and pest occurrence in crops such as cucumbers, tomatoes, and grapes, though research combining trellising with insect netting under low tunnels for squash remains limited. Six treatments combining three netting management strategies — netting on throughout the season with manual bee introduction, netting removed during flowering for pollination then reinstalled, and no netting — with or without a horizontal trellis system will be evaluated on butternut squash production, monitoring pest and disease occurrence, microclimate, crop yield, and produce quality. The hypothesis is that squash grown on a horizontal trellis under full-season insect cover with pollinator introduction will have the greatest number of marketable squashes, with results from the 2026 growing season to be shared at the symposium; potential economic benefits include reduced pesticide use, increased yield and quality, and minimized environmental impacts.

Environmental Sustainability of Different Urban and Peri-Urban Agriculture Farm Types

Lakma Upendri Hewa Fonsekage, Kansas State University; Jeremy Cowan, Kansas State University; Ari Jumpponen, Kansas State University; Eleni Pliakoni, Kansas State University; Cary Rivard, Kansas State University; Ganga Hettiarachchi, Kansas State University

Despite growing interest in urban and peri-urban agriculture (UPA), little research has assessed how different farm types adopt sustainable practices, address environmental risks, and transition from linear to circular production models. This study compared the environmental sustainability of UPA farms in Kansas (16), Missouri (5), Columbia (1), and Ohio (1) through structured surveys with site owners and on-site observations across six farm types: Urban Production, Peri-Urban Production, High School Gardens, Training Farms, Community Gardens, and Intensive Farming. Sustainability practices were widely adopted but unevenly integrated: compost use was universal in soil-based systems, soil conservation practices (mulching, cover cropping, reduced tillage) were common, and contamination risk was linked to land use history, with High School Gardens and Urban Production Farms reporting detected soil contaminants while other types reported none. Overall, findings reveal that while many UPA systems actively implement sustainable practices, gaps remain in contamination screening, input traceability, water testing, waste management, sustainable energy use, and institutional support, with type-specific management frameworks needed to improve resource efficiency, minimize environmental risk, and enhance long-term ecological resilience.

Utilization of Vertical Bifacial Arrays for Small-Scale and Urban Agrivoltaic Vegetable Production

Alex Thill, Kansas State University; Claire Barnhart, Kansas State University; Tricia Jenkins, Kansas State University; Eleni Pliakoni, Kansas State University; Cary Rivard, Kansas State University

Agrivoltaics includes the combination of agriculture and photovoltaic energy production on a single plot of land. Agrivoltaics has been proposed as a way to integrate agriculture into large-scale photovoltaic arrays or integrate energy production into established agricultural operations. The objectives of this project were to establish replicated agrivoltaics research trials with fixed vertical bifacial panel photovoltaic arrays and investigate the feasibility of growing various warm- and cool-season crops between them. Warm-season crops included tomato, watermelon, bush bean, and zucchini. Cool-season crops included fall-planted lettuce and beets as well as spring-planted spinach and lettuce. Vertical bifacial arrays were constructed with four replications that examined systems effects of the agrivoltaics system compared to the open field. A split-plot randomized complete block design was utilized whereby main plots included system and sub-plots were the crops. For each crop, yield, marketability, and crop quality data were collected. PAR sensors were located within crop rows to characterize light availability between the panel arrays. Sensors were placed approximately 2.5’ above the ground surface to mimic mature plant canopy height, transversely across the expected light-treatment area. Light data indicated that the vertical bifacial array setup is very effective for horticultural crop production. Daily light (PAR) levels were seasonably variable and changed with weather conditions. There were no “dead zones” (areas with <25% PAR) and in most cases, PAR was reduced by 20-25% across all rows between the panel arrays. In regards to crop yield and quality, similarities among the two systems were more numerous than significant differences. Only one significant treatment effect was found on crop yield, among one of two lettuce varieties grown in the fall ($P<0.005$). Crop quality parameters that were measured across the two systems were similar, except for firmness ($P<0.05$) and visual quality ($P<0.05$) in watermelons and firmness in tomato ($P<0.005$). Power generation modeling suggested that the production of electricity in the vertical bifacial array system was similar to popular racking systems such as fixed-tilt arrays. As landowners integrate more solar production into their agricultural systems, the development of best management practices for agrivoltaics will be instrumental for their success. Vertical bifacial arrays could be an effective strategy for developing agrivoltaics applications for vegetable production, particularly for small-scale and urban growers where space is limited.

Index of Authors

*** Presenting authors**