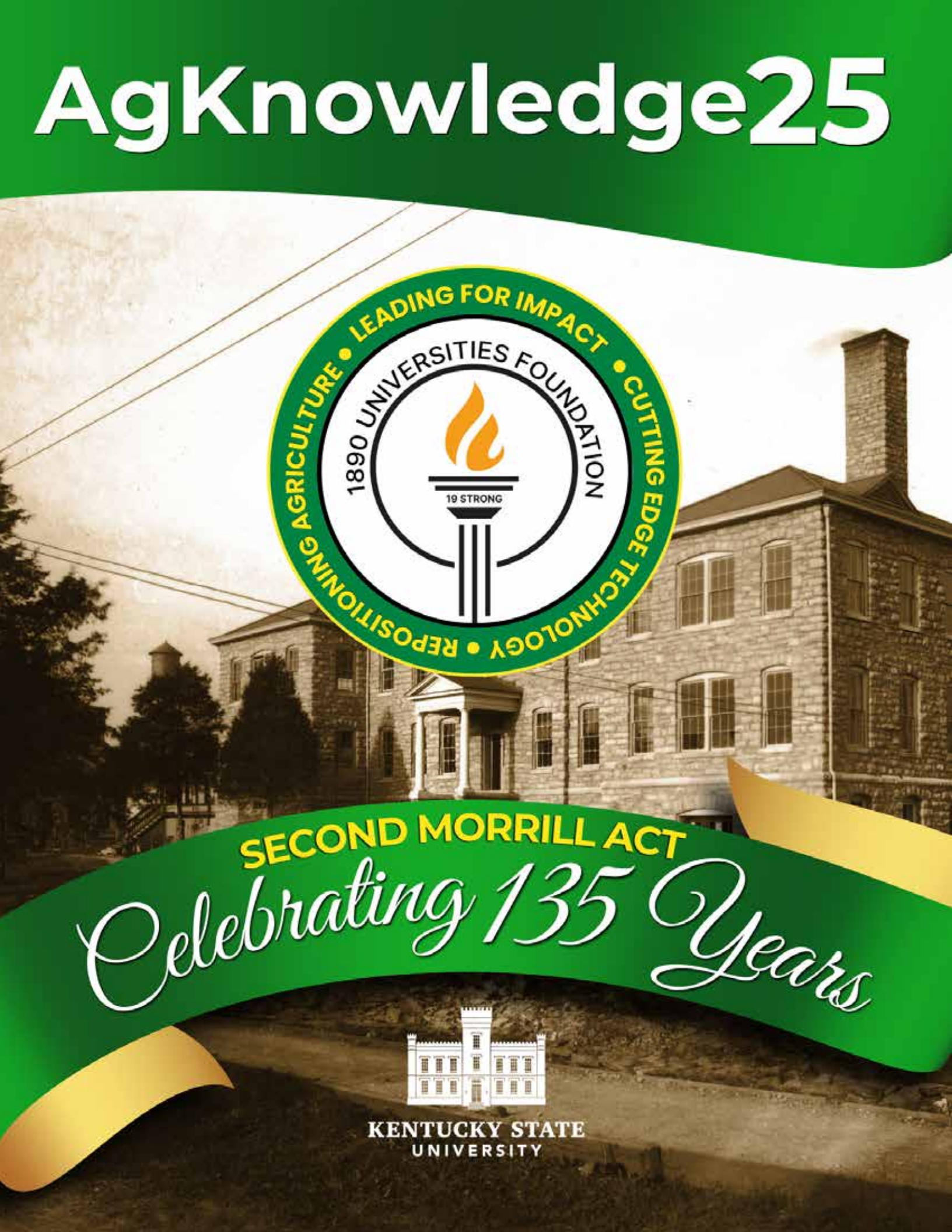
AgKnowledge25



Greetings,

Since its inception in 1886 as a small normal school for the training of African American teachers, Kentucky State University has grown into a vibrant 1890 land-grant, liberal arts institution providing transformative educational experiences that prepare graduates to make meaningful contributions to society.

2025 marks the 135th anniversary of the Second Morrill Act of 1890 established by the 23rd President of the United States, Benjamin Harrison. This act expanded educational opportunities, especially in agriculture and mechanical arts, for people of color who were often excluded from such opportunities at land-grant universities established by the first Morrill Act of 1862. The act also resulted in the designation of a set of Historically Black Colleges and Universities (HBCUs) as land-grant universities.

Kentucky State University is proud to be one of 19 1890 land-grant institutions dedicated to supporting higher education, research, and Extension activities that serve communities all across the Commonwealth.

Our AgKnowledge magazine is a celebration of the many important works and achievements Kentucky State University has experienced over the course of this past year.

We look forward to many more years to come.

Warm Regards,
Koffi C. Akakpo, Ph.D.
President, Kentucky State University

Dear Students, Faculty, Alumni, and Friends,

Welcome to the 2025 edition of the Kentucky State University AgKnowledgeAnnual Magazine! We are proud of our institution's rich history and are committed to serving the Commonwealth and beyond.

Each year, this publication offers us the opportunity to pause, reflect, and celebrate the milestones, stories, and voices that define our Kentucky communities during the past year. As you turn the pages of this edition, you'll find a tapestry of insights—from achievements and innovations to heartfelt narratives that speak to our shared values and ambitions.

In 2024, we navigated challenges, embraced change, and continued to grow in ways that were both unexpected and inspiring. This issue captures that spirit, featuring contributions from a broad range of stakeholders, writers, photographers, and visionaries who remind us why our work—and our stories—matter. Whether you're a long-time reader or joining us for the first time, we're grateful for your continued support and engagement. We hope this issue informs, uplifts, and sparks new ideas for the year ahead.

This collection of stories testifies to the great impact 1890 land-grant universities, like Kentucky State University, make on the communities we serve. As 2025 marks the 135th anniversary of the Second Morrill Act, the enclosed highlights remind us of the transformative power of education and the importance of staying connected to one another.

In closing, I invite you to reflect with pride on what we've accomplished together, and to look forward with optimism and ambition. Thank you for being a vital part of our community.

Sincerely,
Marcus Bernard, Ph.D.
Dean of the College of Agriculture, Health, and Natural Resources
Director of Land Grant Programs, Kentucky State University

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KENTUCKY STATE UNIVERSITY

Land Grant Program

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KENTUCKY STATE UNIVERSITY
ONWARD UPWARD
1886

KENTUCKY STATE UNIVERSITY

ANNOUNCES $7,000,000

Driving AgTech | June 27, 2024

National Science Foundation

Project Highlights:

This project aims to establish an innovative, cross-sector research incubator dedicated to enhancing nutrient management, food safety, and the sustainability of soilless agriculture systems in Kentucky.

Intellectual Merit:

- Will employ cutting-edge metatranscriptomic and proteomic approaches to explore microbial activity in aquaponic systems
- Microbiota Nutrient recovery from aquaculture systems
- Characterization of soilless systems
- Food safety assessments
- Environmental impact and sustainability of soilless agriculture operations
- Collaborations with Bluegrass Community and Technical College, University of Pikeville, Kentucky Science and Technology Corporation, and FoodChain Inc.

The National Science Foundation (NSF) awarded KSU $7,000,000 for the "Driving AgTech Research and Education in Kentucky (DARE-KY) through Network Building, Impactful Research, and Workforce Development for Soilless Food Systems" project. This monumental achievement is set to transform the landscape of agriculture technology and STEM education in Kentucky as well as establish a research incubator for the Commonwealth.

"What a great day it is for Kentucky and for KSU," shared Dr. Koffi C. Akakpo, President of KSU. "We could not be more proud of the work completed everyday here on campus and throughout the Commonwealth. NSF, along with our partners in this endeavor, see our potential and the impact we will have for years to come."

PI: Dr. Avinash Tope, Associate Dean, Associate Professor, Human Nutrition, and Food Safety

Tanya Berry 2024 Small Farmer of the Year

Tanya Berry was named KSU's Small Farmer of the Year at the 2024 Kentucky Small, Limited-Resource, Farmers Conference. Tanya and her husband, John, own Berry Farms, a greenhouse, and produce store in Monticello, KY (Wayne County).

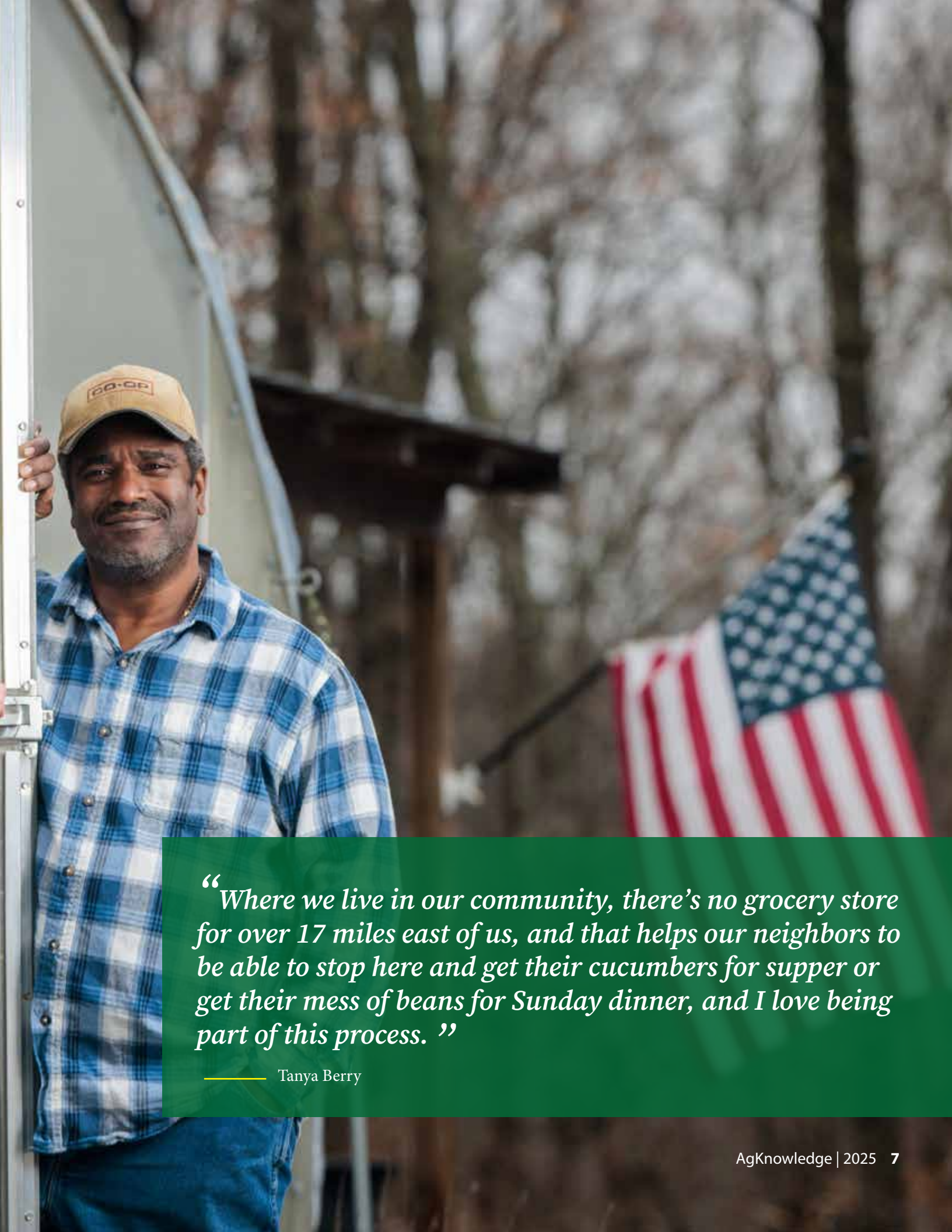
In 2020, with the help of Danny Adams and Glen Roberts from their local KSU Extension office, Tanya applied and received a Small-Scale Farm Grant from Kentucky State University. This made it possible for her to purchase a 24x60 greenhouse and increase production. The produce and plants she grows are sold in her produce store and at the Wayne County Farmers Market.

Berry Farms is a key business for the local community. Together, Tanya and John are always finding new ways to grow their business.

"My mind is probably like hers. I'm always trying to figure out how to make the operation better and more efficient to help improve production on her side of growing," said John.

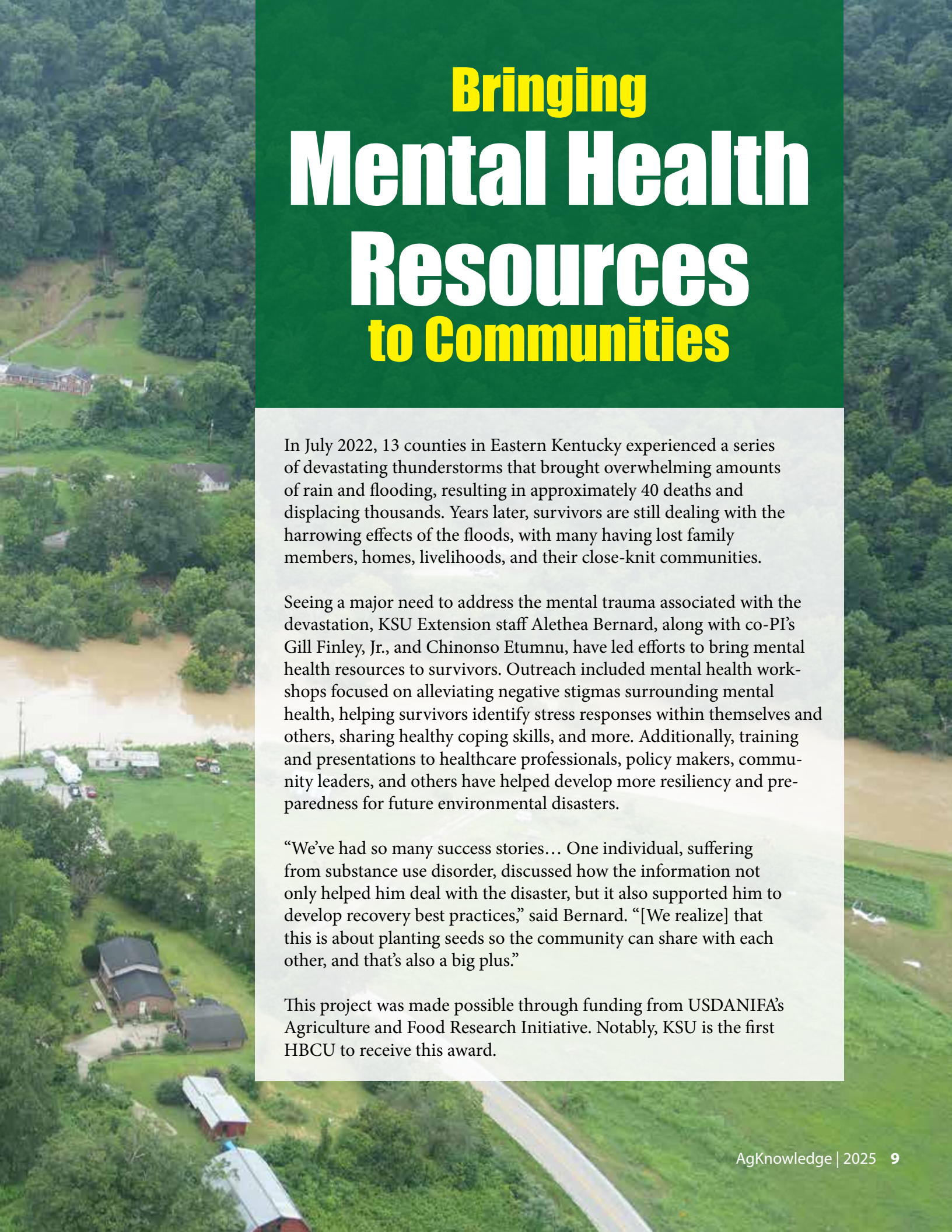
The Small Farmer Conference of the Year will be held on November 18-20, 2025.

- 2024 KSU Small Farmer Conference celebrated 26 Years
- 220 participants included farmers, community, federal and state agricultural agencies.
- The program also featured farmer success stories, farm tours, a health fair, and educational programs on estate planning, use of the Apps, and local food systems.



"Where we live in our community, there's no grocery store for over 17 miles east of us, and that helps our neighbors to be able to stop here and get their cucumbers for supper or get their mess of beans for Sunday dinner, and I love being part of this process."

Tanya Berry



Bringing Mental Health Resources to Communities

In July 2022, 13 counties in Eastern Kentucky experienced a series of devastating thunderstorms that brought overwhelming amounts of rain and flooding, resulting in approximately 40 deaths and displacing thousands. Years later, survivors are still dealing with the harrowing effects of the floods, with many having lost family members, homes, livelihoods, and their close-knit communities.

Seeing a major need to address the mental trauma associated with the devastation, KSU Extension staff Alethea Bernard, along with co-PI's Gill Finley, Jr., and Chinonso Etumnu, have led efforts to bring mental health resources to survivors. Outreach included mental health workshops focused on alleviating negative stigmas surrounding mental health, helping survivors identify stress responses within themselves and others, sharing healthy coping skills, and more. Additionally, training and presentations to healthcare professionals, policy makers, community leaders, and others have helped develop more resiliency and preparedness for future environmental disasters.

"We've had so many success stories… One individual, suffering from substance use disorder, discussed how the information not only helped him deal with the disaster, but it also supported him to develop recovery best practices," said Bernard. "[We realize] that this is about planting seeds so the community can share with each other, and that's also a big plus."

This project was made possible through funding from USDANIFA's Agriculture and Food Research Initiative. Notably, KSU is the first HBCU to receive this award.

2024 ARD Symposium

The 1890 Association of Research Directors (ARD) Symposium is a bi-annual event that celebrates advancements in agricultural research and innovation. KSU's College of Agriculture, Health, and Natural Resources achieved resounding success at the 2024 ARD Symposium by showcasing cutting-edge research and student initiatives. Held in Nashville, Tennessee, the event attracted over 1,700 participants from across the nation.

Dr. Avinash Tope, KSU, Associate Dean, expressed congratulations to the winners of the ARD Graduate Student Awards and to Dr. Anuj Chiluwal, the recipient of the prestigious B. D. Mayberry Young Scientist Award.

KSU Student Bhoj Raj Bhattarai stated, "ARD is a great platform for students who share the interest of broadening wisdom through exploring more research work from peers and work on networking and finding the people who share a common interest."

Additional award recipients were honored for their exceptional achievements in various categories:

Sudip Poudel: 2nd Place in the Graduate Oral Competitive category, Section-Plant Production, Health and Plant Products. Mentor: Dr. Anuj Chiluwal.

Samuel Oshikoya: 3rd Place in the Graduate Oral Competitive category, Section- Plant Production, Health and Plant Products.
Mentor: Dr. Buddhi Gyawali.

Alyson Whitted: 3rd Place in the Graduate Poster Competitive category, Section: Youth, Family and Economic Development. Mentor: Dr. Buddhi Gyawali.

Student Success

From the Classroom to the Lab

Benjamin Zingg's interest in chemistry first peaked in high school. Little did he know that, years later, he would be awarded an appointment with the prestigious National Nuclear Security Administration Minority Serving Institutions Internship Program (NNSA-MSIIP).

The NNSA-MSIIP is a valuable opportunity to receive hands-on experiential learning with NNSA national laboratories and site offices in projects focused in a variety of subjects such as engineering, science, research, technology, and more. Zingg's appointment will take place at the Oak Ridge National Laboratory in Oakridge, Tennessee, where he will serve under his mentor, Dr. Felipe Polo Garzon.

As a mentee of Dr. Garzon, Zingg will assist in the study of the conversion of polyolefins using liquid metal catalysts, a project he is eager to work on.

"I'm excited to meet all the wonderful people from other institutions around the nation," said Zingg. "Being able to make friends with people at universities who are doing research is important for our students as well."

Zingg's appointment will begin Summer 2025, and he is looking forward to making the most out of this special experience.

Students in Agriculture

Under the direction of Dr. Nzaramyimana Theoneste, a group of four graduate students and three undergraduate students at KSU conducted research on urban farming. Urban agriculture focuses on generating fresh produce and making it available to areas that lack access to it. This research took place at the Dr. Harold R. Benson Research Farm and the KSU West Farm. Throughout the duration of three months, research associates seeded, transplanted, grew, and harvested 15 different species of fruits and vegetables.

Research associates began by tilling the land and implementing plastic mulching to protect crops from weeds and pests. Plastic mulching involves laying plastic sheeting over soil to suppress weeds, conserve moisture, and regulate soil temperature. A drip irrigation system was also implemented. Seedlings were first grown in a greenhouse because it offered several advantages, including the ability to regulate temperature, humidity, and light; reducing the risk of transplant shock; and producing more resilient and adaptable plants. After transplanting the plants from the greenhouse, they easily adapted to their new environment and produced high yields of fresh produce in just a few months. Yellow summer squash, zucchini, and pickling cucumbers produced the highest yields.

During the project, research associates recognized the need to adjust their harvesting methods to ensure the quality of their produce. For vegetables such as squash and zucchini, it was found best to harvest when they had reached 6-8 inches long. If harvested too late, they become full of water, lack flavor, and are at a higher risk of rotting and spreading fungus. During the project, research associates also battled Phytophthora blight, which is a disease caused by the fungus-like organism *Phytophthora capsica*, also known as water mold. Although this disease can be caused by a number of factors, it was concluded that the crops developed this from overwatering.

Land management was another major challenge due to the overgrowth of weeds and the watermelon plants. Frequent weeding was needed to ensure crops were not losing resources. The watermelon plants also threatened the collard plants and zucchini crops due to overgrowth. Pruning and/or a use of a trellis to control the watermelon plants is the proposed solution for this.

Overall, the project produced 7,127 pounds of crops that students donated to local community shelters, students, staff, and faculty. Adjustments to management practices of crop land will be encouraged for future research.

KSU and Farm Credit Mid-America

Seven students from KSU attended the Farm Credit Mid-America Success Program for MANRRS Leaders. This two-day professional development event was held in Louisville by Farm Credit Mid-America and invited student representatives from Minorities in Agriculture, Natural Resources and Related Sciences (MANRRS) chapters at KSU, the University of Kentucky, Tennessee State University, and Purdue University.

Students were able to participate in professional development workshops and seminars, network with Farm Credit Mid-America professionals and industry leaders, attend panel discussions, and connect with other MANRRS students.

"I think the biggest takeaway from this event for me was, if time is taken to listen to the perspectives of other people, you can gain so much traction and advice that will help you excel in a multitude of spaces," said Jaiya McCargo, a sophomore majoring in Environmental Systems and Sciences.

KSU's student participants included: Alecia Daniels, Sienna Stewart, Jade McCargo, Eric Taylor, Jaiya McCargo, Jasin Burnam, and Javan Crute.

"Their engagement and professionalism were truly commendable and left a lasting impression," said TJ Jamerson, Senior HR Relationship Manager for Farm Credit Mid-America.

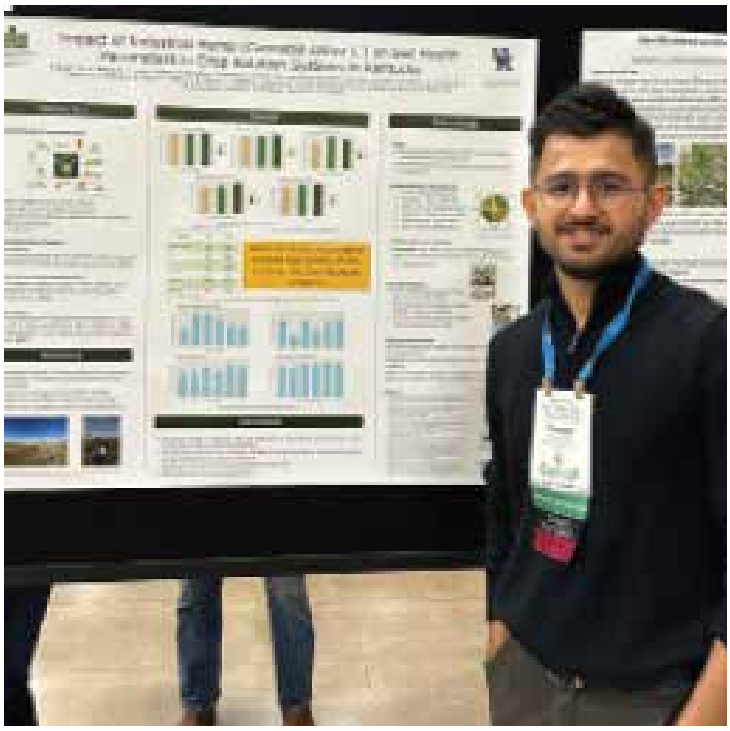
The overwhelmingly positive feedback from this event from both students and event coordinators underscores the University's commitment to excellence, leadership, and professional development.

Research in Soil Health

KSU graduate student Prashant Bhatt was awarded third place in the Graduate Student Oral Presentation, Soil Health Session, at the 2024 ASA, CSSA, SSSA International Annual Meeting in San Antonio, TX. Bhatt, who will graduate in May 2025 with a Master's of Science in Environmental Science, presented his research titled "Integration of Industrial Hemp in Conventional Crop Rotation System and its Effect on Soil Health." "It is a great experience to be in these kinds of conferences where we directly interact with our scientific community to get feedback or give our experiences to them," said Bhatt.

Under the guidance of advisors Dr. Shawn Lucas and Dr. Anuj Chiluwal, the project assessed the potential of industrial hemp to improve soil health under sustainable agriculture practices. Research was conducted over three and a half years by using industrial hemp as a rotational crop and comparing results with corn-soybean rotation.

Research found that the inclusion of industrial hemp in crop rotation has significant potential to improve soil structural stability. But in the case of active carbon of soil, it has shown similar effects compared with corn-soybean rotation. Analysis and research are still ongoing, but initial results can play a significant role in exploring the additional benefits of this crop.



Most Successful GIS Day

KSU marked its 10th annual Geographic Information Systems (GIS) Day with resounding success, drawing about 130 enthusiastic students, educators, and professionals from around the Commonwealth. The program took place in November 2024 and hosted more than 65 high school students from Eminence High School and Franklin County High School. This year's theme was "Mapping Minds, Shaping the World: 25 Years of GIS Excellence," celebrating a quarter century of the global community's dedication to advancing geospatial education and innovation.

In 2015, KSU first celebrated GIS Day under the leadership of Dr. Buddhi Gyawali, professor of geospatial applications. This annual event has since become a cornerstone of the University's efforts to promote STEM education. "KSU is proud to be part of the global GIS Day movement, showcasing how geospatial technologies can empower communities and shape the world," said Dr. Gyawali.

Funded by the National Science Foundation and U.S. Department of Energy, this year's GIS Day was led by graduate assistant Ms. Shreesha Pandeya and research associate Mr. Amrit Nepal with the support of volunteers from students enrolled in ENV 508: "Introduction to Geographic Information Systems," making it a vibrant showcase of hands-on learning and collaboration.

District Wide Partnership

Bringing an Outdoor Classroom to Tates Creek Middle School

In December 2024, KSU and Fayette County Public Schools (FCPS) held a groundbreaking ceremony at Tates Creek Middle School in Lexington, KY, for a greenhouse that will serve as an Outdoor Classroom for the community. This marks the beginning of a unique collaboration between educational partners to provide enhanced agricultural experiences to Kentucky students that will include a dynamic mixture of classes and hands-on training.

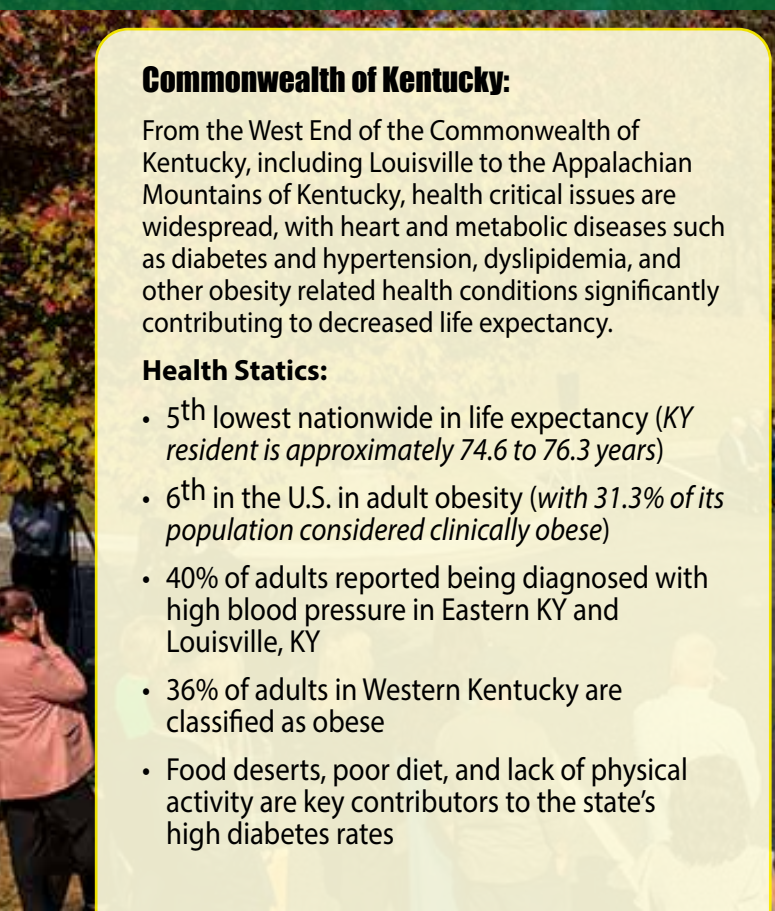
The Outdoor Classroom provides an exciting opportunity for students from Tates Creek Middle School to learn the best agricultural practices both in theory and through hands-on practice led by our distinguished KSU faculty. "This collaboration was truly led by the community, for the community, to enhance learning opportunities to students. Student Ag Ambassadors of Tates Creek Middle School played a major role in envisioning the future of this Outdoor Classroom, testifying to the truly collaborative spirit of the project," said KSU President, Dr. Koffi C. Akakpo.

The greenhouse for the Outdoor Classroom was made possible through a grant awarded by Farm Credit Mid-America (FCMA) to provide a site for students to experience classroom-type lectures and practical farming activities. Students will learn a variety of methods such as hydroponics, aeroponics, and aquaponics, which have been shown to be some of the most productive avenues of food production in the world. In addition, students will receive hands-on training on topics such as post-harvest safe handling of food, sales of food, and farm financial management.

"We look forward to this partnership with KSU and how it will help us guide learning and develop independence for our students into the future."

Dr. Demetrus Liggins, FCPS Superintendent

Accessible Healthcare



Commonwealth of Kentucky:

From the West End of the Commonwealth of Kentucky, including Louisville to the Appalachian Mountains of Kentucky, health critical issues are widespread, with heart and metabolic diseases such as diabetes and hypertension, dyslipidemia, and other obesity related health conditions significantly contributing to decreased life expectancy.

Health Statics:

- 5th lowest nationwide in life expectancy (*KY resident is approximately 74.6 to 76.3 years*)
- 6th in the U.S. in adult obesity (*with 31.3% of its population considered clinically obese*)
- 40% of adults reported being diagnosed with high blood pressure in Eastern KY and Louisville, KY
- 36% of adults in Western Kentucky are classified as obese
- Food deserts, poor diet, and lack of physical activity are key contributors to the state's high diabetes rates

Bringing Accessible Healthcare Across the Commonwealth

KSU launched two of its three planned mobile health units to serve communities across Kentucky, bringing critical healthcare services directly to needy areas. The first unit launched in October 2024 in Louisville at the Family Health Centers, Inc. Portland site, while the second unit debuted on October 25 at Hazard Community and Technical College. These launches represent a powerful statewide collaboration with the Cabinet for Health and Family Services, the Kentucky Department for Public Health, and local partners, with the goal of reducing healthcare disparities in Kentucky's most impacted regions.

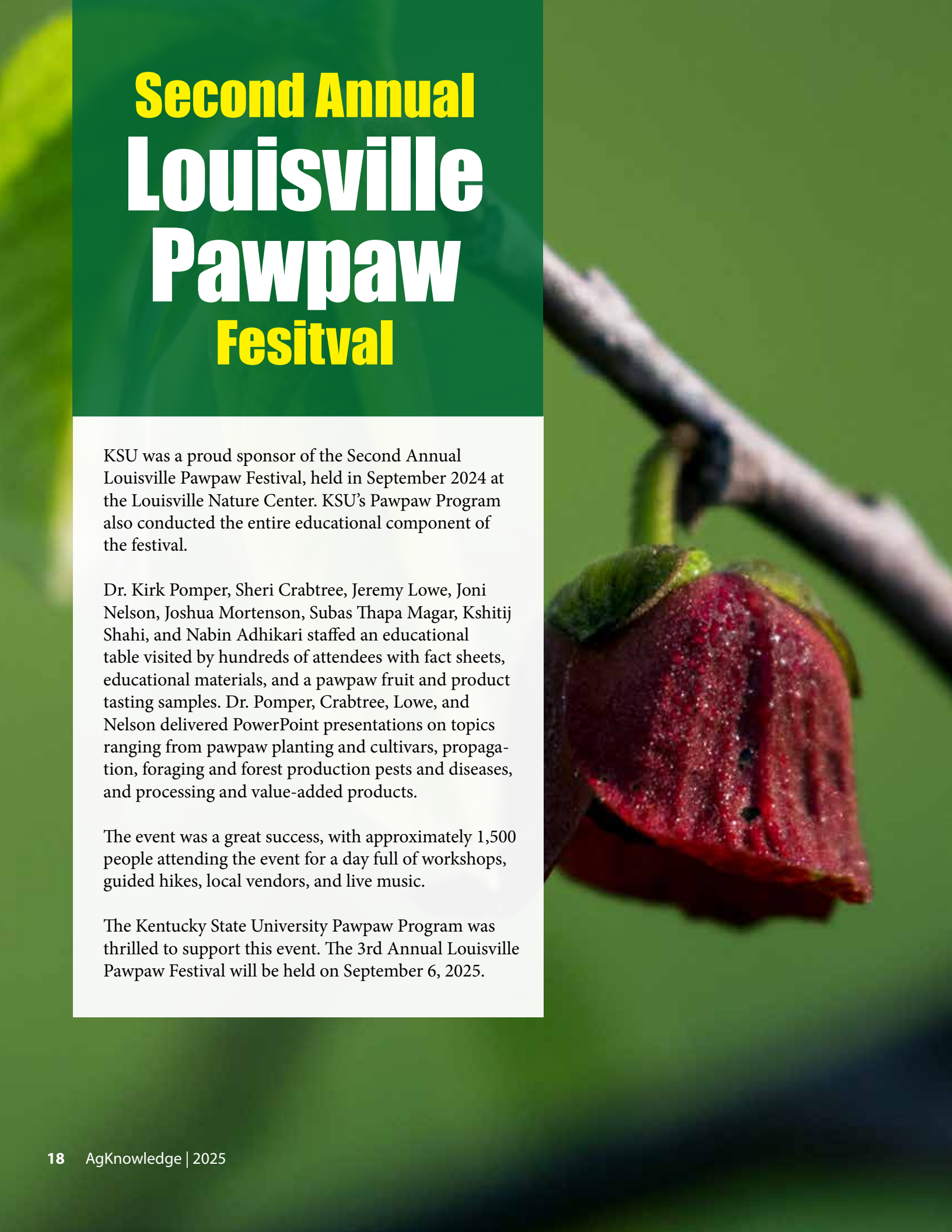
These mobile health units will provide diagnostic and treatment services for metabolic syndrome—a cluster of conditions that includes hypertension, high blood glucose, abdominal obesity, and abnormal cholesterol or triglyceride levels, which elevate the risk of heart disease, stroke, and type 2 diabetes. The units alternate between clinical care and Kentucky State University's Nutrition Education Program (KSUNEP), which uses the "food as medicine" approach to promote preventive health and long-term wellness.

KSU President Dr. Koffi C. Akakpo expressed the University's commitment to outreach: "We are very excited to launch these mobile health units and bring healthcare directly to communities across the Commonwealth. Etched onto Carver Hall at KSU is, 'Enter to Learn, Go out to Serve,' and this initiative reflects our commitment to expanding our impact far beyond the classroom to those who need us most."

KSU's mobile health units are designed to deliver both clinical and educational services, offering convenient, transportable healthcare access for individuals and families with limited resources. This program is led by Dr. Avinash Tope, Associate Dean, Associate Professor, Human Nutrition, and Food Safety, and by data-driven research to identify areas with the greatest health needs.

The University collaborates closely with local health providers and partner organizations to deliver referrals, follow-ups, and coordinated care to maximize the health benefits for participants.

Second Annual Louisville Pawpaw Fesitval



KSU was a proud sponsor of the Second Annual Louisville Pawpaw Festival, held in September 2024 at the Louisville Nature Center. KSU's Pawpaw Program also conducted the entire educational component of the festival.

Dr. Kirk Pomper, Sheri Crabtree, Jeremy Lowe, Joni Nelson, Joshua Mortenson, Subas Thapa Magar, Kshitij Shahi, and Nabin Adhikari staffed an educational table visited by hundreds of attendees with fact sheets, educational materials, and a pawpaw fruit and product tasting samples. Dr. Pomper, Crabtree, Lowe, and Nelson delivered PowerPoint presentations on topics ranging from pawpaw planting and cultivars, propagation, foraging and forest production pests and diseases, and processing and value-added products.

The event was a great success, with approximately 1,500 people attending the event for a day full of workshops, guided hikes, local vendors, and live music.

The Kentucky State University Pawpaw Program was thrilled to support this event. The 3rd Annual Louisville Pawpaw Festival will be held on September 6, 2025.

New Pawpaw Cultivar for Small Farmers

Pawpaw (*Asimina triloba*), a tree fruit native to the Eastern U.S., is in small-scale commercial production with increasing popularity. Pawpaw fruit has fresh-market appeal for farmers markets and Community Supported Agriculture, and processing appeal for frozen pulp production for sale to gourmet restaurants.

According to the recently released 2022 Ag Census, there are approximately 100 limited-resource farmers in Kentucky alone with small plantings of grafted, seedling trees, or wild pawpaw trees. Two new Kentucky State University pawpaw advanced selections, Hi 1-4 and Hi 7-1, have excellent fruit quality and average fruit weights of 214g and 202g, respectively. Trees of these selections were propagated at KSU and trees of these two selections were established in grower plantings in Kentucky, Ohio, Indiana, and West Virginia to test for survival and fruiting.

With the success of these studies, these two advanced selections will be released to the public in September 2025 as part of the 5th International Pawpaw Conference, to be held at KSU, as new KSU trademarked pawpaw cultivars to be propagated by licensed nurseries. These new and improved pawpaw cultivars will aid the economic opportunities for small farmers by increasing production of higher quality fruit with higher yields than many currently available cultivars.

The Kentucky Academy of Science's Annual Meeting at KSU

In November 2024, KSU hosted hundreds of scientists and students for the Kentucky Academy of Science's (KAS) Annual Meeting. This event took place on KSU's campus and highlighted exciting advances in science, technology, engineering, and math (STEM) fields.

Summer Transportation Institute

Celebrating 21 years and counting, the Annual Summer Transportation Institute (STI 2024) took flight at KSU. Facilitated by 4-H Youth Development, STI is a signature summer camp that stands out for its innovative approach to fostering interest and expertise in transportation-related fields among youth. STI goes beyond traditional classroom learning by immersing participants in dynamic, real-world experiences. KSU collaborated with the Kentucky Transportation Cabinet to provide hands-on learning experiences with flying drones, bridge design, computer science, and geospatial information systems. Participants engaged with industry leaders to learn more about new advances in STEM and career opportunities in the transportation industry.

STI 2024 aligns perfectly with KSU's mission to reach rural and urban communities, ensuring that all youth have access to transformative opportunities that can shape their futures. A standout experience was in aviation. Guided tours at Louisville Muhammad Ali International Airport and Frankfort's Capital City Airport gave students first-hand knowledge about the mechanics of airplanes, standard procedures, and logistics, and all students had the opportunity to fly real airplanes. This hands-on experience expanded their understanding of transportation beyond the roads and onto the runways. In addition to learning about aerospace, a key component of this year's program was a tour of the Toyota Manufacturing Plant in Georgetown, Kentucky. Students had the opportunity to watch plant engineers in real time. Significantly, all the engineers who volunteered their time were role models embodying the potential career paths available to participants.

Celebrating 20+ Years

Then...

2025 marks the 135th anniversary of the Second Morrill Act of 1890 established by the 23rd President of the United States, Benjamin Harrison. This act expanded educational opportunities, especially in agriculture and mechanical arts, for people of color who were often excluded from such opportunities at Land-Grant universities established by the first Morrill Act of 1862. The act also resulted in the designation of a set of Historically Black Colleges and Universities (HBCUs) as land-grant universities.

Data provided via 1890 Foundation.

Celebrating 135 Years

of the Second Morrill Act

Now...

1890 Universities Enroll

118,000
UNDERGRADUATE STUDENTS IN
33,000
DEGREES YEARLY

OVER 3,700 DEGREES IN STEM FIELDS

CUTTING EDGE RESEARCH & TECH INNOVATIONS

SIX CENTERS OF EXCELLENCE (2018 FARM BILL FUNDED)

1890 UNIVERSITIES EMPLOY

17,206
STAFF
+
4,465
FULL TIME INSTRUCTIONAL STAFF

Fast Facts

Over $5.5 Billion Annually
Generated in 1890 institutions' Local Economies

123
U.S. Patents

Learn more at www.1890foundation.org

Bee School

Celebrating 20+ Years

The KSU campus was buzzing with excitement as over 260 beekeeping enthusiasts from Kentucky, Ohio, and Indiana visited the campus for the 2025 Bluegrass Beekeeping School. The Bluegrass Beekeeping School has taken place at KSU for over 20 years, providing both novice and experienced beekeepers with a full day of exciting workshops, presentations, demonstrations, and more.

Dr. Thomas Webster, KSU Professor and Extension Specialist for beekeeping and beekeepers, explained that people become interested in beekeeping in a variety of ways and that both new and experienced beekeepers are always looking to learn new methods and knowledge, leading to the growing popularity of the program.

"[Attendees] can get a lot of information all in one day. There are many people with expertise, many people giving presentations, and there are also vendors that they can buy from. It's very convenient for them to buy bee keeping equipment right there," he said. "It's a good way to spend a Saturday in March if you want to get into beekeeping. You learn a lot at once."

Participants were able to select from plenty of sessions with topics ranging from basic beekeeping equipment and getting started, candle making and using wax, to enhancing pollen substitutes to promote honey bee health. This year's keynote speaker was Dr. Michelle Flenniken who presented on the topic "The Impact of Viruses on Honey Bee Health at the Colony, Individual Bee, and Cellular Levels." Dr. Flenniken is a professor in the Plant Sciences and Plant Pathology Department at Montana State University.

This event was cohosted by KSU, Bluegrass Beekeepers Association, and Capital City Beekeepers.

Those who want more information on local beekeeping events can contact Dr. Thomas Webster at Thomas.Webster@kysu.edu. The next Bluegrass Beekeeping School is anticipated to be held on the first Saturday of Spring Break in 2026.

Farming for Cash

Beginner Farmer Programming

The project titled "Farming for Cash: A Training Program Leading to Farm Ownership" will provide military veterans and beginner farmers hands-on skills in farm management, harvesting, production and sales, and is expected to serve over 300 participants. The training program is free to beginner farmers and will last 12 months, with the option to extend training and mentorship as needed.

KSU was awarded $709,042 by the National Institute of Food and Agriculture (NIFA) to provide education, mentoring, and technical assistance to help veterans and beginner farmers and ranchers own and operate successful farms. The program is led by KSU Associate Research Director and Professor Dr. Siddhartha Dasgupta, in partnership with The National Center for Appropriate Technology and other organizations such as Bluegrass Community and Technical College, Camp Brown Bear, The Growing Warriors, Laurel County African American Heritage Center, and the Ag-First Community Cooperative.

Participants will be trained on subject matters such as a Tomato School, where farmers will be taught to specialize in organic tomato production in high tunnel, a method that extends tomatoes' growing season, yields better quality tomatoes, and extends cashflow; hydroponics, a technique to grow plants using a water-based nutrient solution rather than soil; and a tractor training program called Tractor School that teaches farmers how to safely operate and repair tractors and tractor-powered implements.

KSU will be one of a small number of institutions in America that provides a hands-on Tractor School for beginning farmers.

Participants will also attend workshops regarding farmland access, United States Department of Agriculture (USDA) and State programs/services for beginner farmers, entrepreneurship, retail and wholesale food marketing, food safety, business planning, and farm safety, for example. The combination of hands-on training coupled with educational workshops will provide beginner farmers with the knowledge and skillset needed to start farming and running their respective business using the best, research-based agricultural methods and business practices.

"We give them commercial, agricultural skills and that's what makes this project special because it's not just about gardening. Some people may think, 'Well, I can grow those things in my backyard,' Yes…but it would not be the same quality as the market wants. So, if you want to sell to restaurants, if you want to sell to grocery stores, or even in a produce auction, the price that you will get is dependent on the quality of your product… And that is where we come in and we give those types of trainings to help farmers be successful," said Dr. Dasgupta.

"We are very excited to bring the best training and agricultural strategies to military veterans and beginner farmers to help make farming a sustainable livelihood for them and their families."

— Dr. Marcus Bernard, KSU, Dean of the College of Agriculture, Health, and Natural Resources and Director of Land Grant Programs

KSU partnership to Reclaim & Restore Appalachia Region

Collaborating to Research the Impacts of Mining and Restoration Interventions

KSU and the Appalachian Renewal Project (ARP) first entered into an MOU in 2021 to research Appalachia's reclaimed mine lands and landscape restoration approaches. The agreement made way for KSU students, faculty, scientists, research, and outreach staff to visit properties owned or managed by ARP in Eastern Kentucky to collect data on vegetation, soil, and water. This data is utilized for the long-term study of soil, water quality, and land management practices of abandoned mine land or reclaimed properties and helps to inform further research on environmental stewardship, biomass prediction, and ecosystems.

"This MOU will further help our KSU graduate students to utilize data for thesis research and create educational opportunities for local high school students to understand interrelationships between people and the environment," stated Dr. Buddhi Gyawali, Professor and Project Director of Longterm ARP. "ARP property will serve as a satellite research station and learning lab for KSU and local communities about changes in soil, vegetation, water quality, and local weather patterns."

The expanded agreement also calls for an increase in recruitment and outreach opportunities in the Eastern Kentucky region to help educate communities about this research and increase awareness of this impactful field of study.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Taking Aquaculture Across the World

Dr. Andrew Ray, chair of the KSU School of Aquaculture and Aquatic Science, traveled to South Korea to implement a Joint Project Agreement grant between the U.S. National Oceanic and Atmospheric Association and the Republic of Korea's Ministry of Oceans and Fisheries (MOF). The Joint Project Agreement is intended to foster aquaculture research and collaboration. As part of the agreement, Dr. Ray and his South Korean counterpart, Dr. Bae Sun-Hye, will travel to each partnering country to visit aquaculture facilities, researchers, and government officials to help broaden perspectives and enhance aquaculture research potential within their respective countries. The grant also includes some research funds to facilitate a research project each year.

While in South Korea, Dr. Ray visited Raon Bada, an advanced Olive Flounder farm that uses recirculating aquaculture systems (RAS) technologies to produce about 40 metric tons of flounder per year. South Korea produces about 50,000 tons of Olive Flounder per year total, but like other aquaculture industries, production has been slowed by diseases. Because of this, some farmers have started to adopt RAS technology where several types of filters are used to facilitate a clean environment for the fish and allow water to be reused rather than discharged.

This visit represents one of many international, professional relationships that Dr. Ray maintains. His work at KSU is well-received all over the world and is recognized by the scientific community for advancing sustainable aquaculture.

Sharing Research in Aquaculture

Jill Fisk, Research Associate of Aquaculture Production, and Sagun Chhetri, Graduate Research Assistant, traveled to Copenhagen, Denmark, to present research at the AQUA 2024 conference hosted by the World Aquaculture Society and European Aquaculture Society. This world-renowned conference is held every six years and highlights the latest aquaculture research and innovation.

Ms. Fisk made two oral presentations. The first was titled "Effluent Nutrient Analysis of Aerobic and Anaerobic Sludge Mineralization From Clearwater and Hybrid Brackish-water RAS." This project exhibited mineral analysis of aquaculture effluent over time in an effort to pinpoint targeted macro and micronutrient availability for plant uptake in brackish water aquaponics research being conducted in the saltwater research lab. Key differences in mineralization between anaerobic and aerobic systems were emphasized to align with plant nutrient requirements and to enhance sustainability via nutrient recovery in RAS.

Ms. Fisk's second presentation was titled "The Effects of Horizontal Substrate and Filtration Strategy on Pacific White Shrimp (Litopenaeus vannamei): Production and water Quality in RAS" and reported results from KSU graduate student Gyanu Rana's thesis research project on horizontal substrate in shrimp production systems.

Results of the trial reported treatments with horizontal substrate had significantly higher growth metrics compared to treatments with no substrate; and the substrate itself colonized nitrifying bacteria that improved water quality in treatments with substrate by providing enhanced biofiltration. These findings can help shrimp farmers to minimize the cost of production by growing larger shrimp in less time while maintaining the water quality necessary for intensive RAS shrimp production.

Ms. Chhetri's oral presentation was titled "The Effects of Stocking Density on the Growth Performance and Stress Response of Olive Flounder Paralichthys olivaceus in RAS" and represented the results of her thesis research project that was conducted on a new species for KSU's School of Aquaculture and the saltwater research lab. Results of the study showed flounder production metrices were significantly higher in the low stocking density and feed conversion ratio was significantly higher in the high stocking density; however, olive flounder was shown to be a suitable species for intensive RAS production in land-locked locations such as Kentucky.

Aquaculture Farming: Floating Raceway

Ken Semmens and his team members Dawson Armstrong, Tyler McKay, Mark Johannemann, and Andrew Stephanus, all from KSU, constructed and installed a floating raceway system at the farm of Justin and Fatima Jackson in Salvisa, Kentucky, similar to the raceway at KSU's Benson Farm pictured here.

This project will mentor Fatima Jackson as she investigates production of channel catfish to create a unique product targeting an ethnic market.

This project is funded by USDA-NIFA 1890 Capacity Building Grant "Enhancing Design, Management, and Transfer of Floating Raceway Technology for the Small Farm."

Onlookers let out enthusiastic gasps as a total solar eclipse dashed across the sky, astounding millions throughout North America. Among them, 634 both young and old came to bask in the glory of the celestial show at KSU's Harold R. Benson Research and Demonstration Farm. This extraordinary event, known as the "Great North American Eclipse," covered a significant 97% of the sun as seen from Frankfort, giving spectators a near perfect view as the moon passed directly between the Earth and the sun. When the moon blocked the sun, observers were able to catch a rare glimpse of the sun's corona, a shimmering halo of plasma, which is usually hidden by the sun's overpowering brightness.

The once in a lifetime opportunity occurred in April 2024 on a warm afternoon with clear skies.

"Once it started happening, there was this excited buzz, and everyone ran out to the patio to watch; everyone was throwing glasses on. There was a lot of gasps, 'oohs' and 'aahs' and definitely cheering," said Environmental Education and Research Center (EERC) Event and Volunteer Coordinator Kaitlynn Gootee.

Shadows danced as the skies darkened until the total solar eclipse peaked at 3:08 p.m. ET, producing a twilight effect.

In the moments before the climactic event, visitors of the Benson Farm were well prepared to witness the total solar eclipse, all thanks to the many activities about space, the solar system, and more. Some activities included "astronaut food" where participants tried freeze-dried skittles, a pinhole camera making activity to view the eclipse, an eclipse demo that demonstrated what would happen during the eclipse, a telescope to track the eclipse, and a solar system passport to learn about each planet.

The memorable event was a hit, thanks to the collaborative efforts of KSU faculty and staff, especially from the EERC, the Harold R. Benson Research and Demonstration Farm, 4-H Youth Development as well as outside partners such as Paul Sawyier Public Library, Woodford County Conservation District, the Family Scholar House, and volunteer environmental educators across the Commonwealth.

2024 Total Solar Eclipse

"KSU connected the community in an awe-inspiring shared learning experience."

— Nancy C. Cálix, KSU
Civil Rights Compliance Officer,
USDA Programs

4-H Youth Development Summer Apprenticeship Program

In June 2024, KSU hosted its annual, three-week residential camp, the Summer Apprenticeship Program (SAP). About 80 SAP apprentices successfully participated from 60 high schools, from California, Florida, Indiana, Ohio, Tennessee, Texas, and Kentucky. This camp prepared rising junior and senior high school students for college, STEM research, and STEM career pathways through unique experiential learning opportunities.

SAP provided students with college-level instruction through hands-on activities with faculty, scientists, researchers, and technical professionals in addition to fun-filled experiences. Each student was also assigned a mentor who guided them through their project of interest. By engaging students in real world applications of their studies, KSU is helping to cultivate the next generation of leaders in these critical fields. This support helps them navigate the challenges of transitioning from high school to college and provides valuable insight into the demands and rewards of a career in STEM. At the end of the program, students were able to present their projects and demonstrate the knowledge and experiences they gained from their apprenticeships to their parents, peers, and mentors.

"I was always interested in aquaculture. When I came to KSU for SAP, I did not know this would be such an unforgettable experience. My interest in joining the aquaculture field has increased and I made friends for a lifetime. I would highly recommend this program to any student," said SAP apprentice Mariah Busch.

KSU's SAP is a shining example of how educational institutions can play a vital role in shaping the future workforce. By investing in the education and development of young students, KSU enhances individual futures and contributes to the growth and innovation of the wider community.

More in Common

In July 2024, KSU partnered with CHI Saint Joseph Health, the More in Common Alliance, and the Morehouse School of Medicine to offer a summer program focused on STEM and health careers to about 50 middle school, high school, and college students from Fayette and Franklin counties in Kentucky. This weeklong residential academy held at KSU, titled 'More in Common STEM and Health Careers Academy', exposed students to a wide variety of experiential learning opportunities.

More in Common Alliance initiated the academy with the mission to address the underlying causes of inequities in health care, including the lack of representation among care providers. The academy seeks to address this problem by providing an opportunity for students to receive insight on healthcare and STEM career pathways, thereby encouraging diversification within the fields. Students participated in dissections, CPR certification training, drone use in farming, clinical skills simulations, veterinary research, and much more.

"KSU is proud to celebrate this collaborative initiative to foster young minds in the STEM areas," said Dr. Koffi Akakpo, KSU President. "We collectively recognize exposing students early and often in STEM fields can promote opportunities that spur career choices in these fields."

KSU Welcomes the Southern Committee on Agricultural Research, Extension, and Teaching (CARET)

Kentucky State University and the University of Kentucky welcomed representatives and leaders from 1890 and 1862 Land-Grant universities for the 2024 Southern Region Administrative Heads and Council on Agricultural Research, Extension and Teaching Conference (CARET). The three-day conference provided a remarkable opportunity to discuss and showcase the shared mission of land-grant universities: To enhance the quality of life for all people.

This conference took place in July 2024 and incorporated KSU's annual Third Thursday Thing Field Day, displaying KSU's groundbreaking agricultural research and extension activities.

KSU's Third Thursday Thing Field Day featured guided farm tours, hands-on demonstrations, presentations on the Small Farm Grant, aquaculture, livestock, and awpaws, and an impressive array of KSU mobile units and trailers, offering interactive experiences for all participants. In addition, posters highlighting student research were showcased, underscoring the significant contributions of KSU students to agricultural advancements. Over 280 attendees participated in the day's events.

The event provided a unique opportunity to celebrate the University's many innovative research and extension activities, testifying to the deep impact land-grant universities like KSU have on communities throughout the nation.


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