

# THE **m**agazine

Volume 21, No. 2

 College of Agriculture,  
Food and Environment

## **Working Farm, Tiny Livestock**

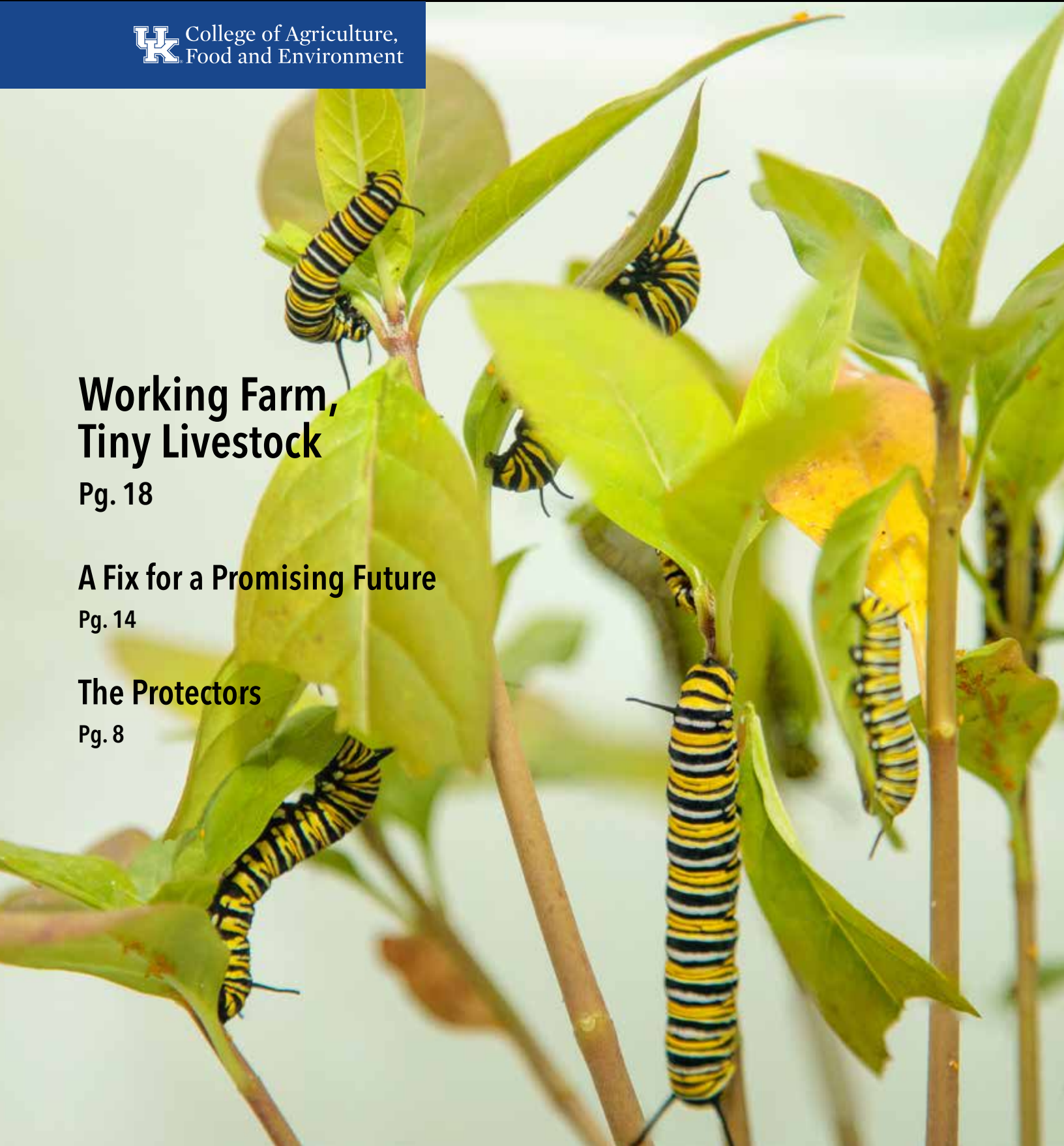
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## **A Fix for a Promising Future**

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# Bang for the Buck

Leaders of land-grant universities are always concerned about what investments to make and what is the best return on investment, commonly known as “ROI.” We know that investment in agricultural research provides at least \$10 back for every dollar invested. We know that extension programs increase local economies and create healthier communities. That “bang for the buck” is something our college thinks about every single day, as we try to add value to investments entrusted to us: funds from county, state, and federal sources as well as tuition.

This fall, we welcomed 492 freshmen into the College of Agriculture, Food and Environment. They joined more than 2,200 undergraduate and graduate students already in our college family who are preparing to make a difference in the world. We strive to give them important experiences inside and outside the classroom. We’re proud of them today, and we know we’ll be proud of them tomorrow. For our students, we hope the “bang for the buck” is priceless.

But these traditional students are not our only students. We can also claim 4 million others. Through Kentucky Cooperative Extension, we provide Kentuckians of all ages access to our visionary research and programming in areas as far-flung as healthy lifestyles, family economics, natural resources, crop and soil science, animal production, and more. These nontraditional students gather in workshops at their local extension office or on university farms. They learn how to increase their crop yields, control pests and diseases, balance their bank accounts, manage their estates, and cook nutritious meals for their families. And through programs such as Extension Master Gardener or Master Food Volunteer, many of our students become volunteer teachers in their own communities.

Most of those programs and workshops are free, and if there is a charge, it’s minimal to cover materials. If you ask me, our college provides the state with a lot of bang for its buck.

This issue of The Ag Magazine looks at some of the many ways the college is taking our expertise and our love of teaching beyond the Lexington campus. In *A Fix for a Promising Future*, writer Katie Pratt describes the path of destruction that substance abuse has carved across Kentucky and the myriad ways Kentucky Cooperative Extension is assisting people in obtaining long-term recovery. This includes our hiring of the first extension specialist in the country dedicated to substance-use prevention and recovery.

In *The Protectors*, Aimee Nielson pulls back the curtain on the often invisible, but vital army of college scientists, lab technicians, veterinarians, inspectors, and specialists at the Veterinary Diagnostic Laboratory and Regulatory Services. These dedicated folks are ready to sound the alarm and spring into action if something threatens the livestock and equine industries. They even protect our pets.

In *Working Farm*, Tiny Livestock, three of our alumni have started a unique enterprise in center city Louisville, a butterfly



farm. Owner Blair Leano-Helvey first turned to a local office of our Kentucky Small Business Development Center to help her draw up a business plan. Today, with her business thriving, the entomology alumna says she still depends on the college to keep her up-to-date on the science. We’re happy to provide the specialists and expertise they need.

Then there’s Kevin Cornett in Clay County, who turned to extension associate Steve Berberich. Steve taught him the agronomics to successfully raise chrysanthemums and helped him get a grant from the Kentucky Horticulture Council.

These are our students. Some are 4-H’ers in elementary school. Some are young adults on the verge of great careers, and some are still learning and active into their 80s. When I think about the number of people the College of Agriculture, Food and Environment reaches on a daily basis, I see that our slogan is 100% accurate. It really does start with us.

Nancy Cox  
Dean, College of Agriculture,  
Food and Environment

## *It starts with us*





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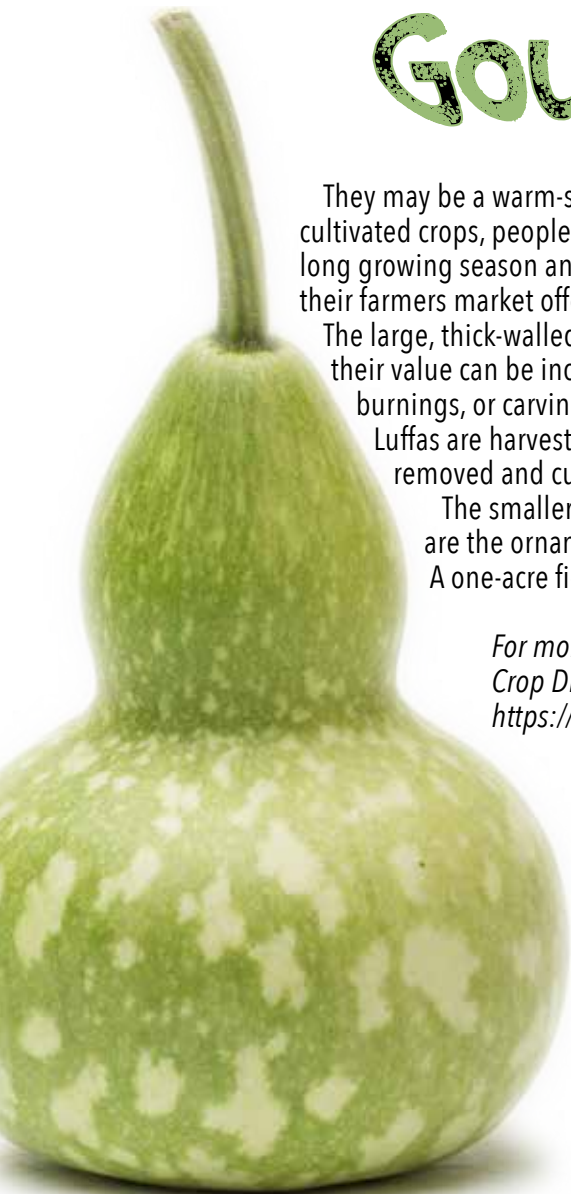
# Gourds Mean Fall

They may be a warm-season crop, but gourds are often identified with autumn. One of the oldest cultivated crops, people have long grown gourds for their utility and beauty. The plant's preference for a long growing season and temperate climate makes it a good crop for Kentucky farmers looking to diversify their farmers market offerings.

The large, thick-walled *Lagenaria* species made ideal utensils and bowls at one time. Today, their value can be increased considerably by enhancing their surfaces with paintings, wood-burnings, or carvings. A grower might expect anywhere from 2,000 to 5,000 gourds per acre. Luffas are harvested after they have completely dried on the vine. Their interiors can then be removed and cut into utilitarian, vegetarian sponges.

The smaller, colorful *Cucurbita pepos* are closely related to pumpkins and squash. These are the ornamental gourds found in groceries and commonly used for fall decorations. A one-acre field could yield 20,000 to 30,000 gourds.

*For more information about growing gourds, check out Center for Crop Diversification Crop Profile CCD-CP-137:  
<https://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/gourds.pdf>.*



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## NEW OPPORTUNITY

Students interested in a career where they help individuals and families improve their financial well-being can now major in consumer economics and family financial counseling within the college.

"With some Americans taking nearly a decade to recover from the Great Recession of 2008 and 54% of Americans currently struggling to minimize their debt, trained personal financial experts are in high demand," said Claudia Heath, director of undergraduate studies for the major. "Students completing this degree will have good prospects for employment upon graduation."

Housed in the Department of Family Sciences, students in the new major will complete course work and three internships related to the personal finance industry. After graduation, these individuals can pursue careers as loan officers, financial counselors, and budget analysts.

— Katie Pratt



DISCOVER  
WHAT  
*inspires*  
YOU



## SPOTLIGHT:

# Akinbode Adedeji

International influences have positioned Akinbode Adedeji, known as “Dr. Bode” to his students, to make an international impact. A food engineer, his research focuses on ensuring everyone in the world has a safe, reliable food supply. Having worked in four countries on three continents, he’s proud to tell people he now lives in the Horse Capital of the World.

**Q: How did you come to UK?**

A: I am originally from southwest Nigeria, but I have spent 10 years in Canada. I got my undergraduate and master’s degrees in Nigeria and my doctorate at McGill University. After graduating, I went back to Nigeria and worked for a year and a half. Then I briefly took a position in France before accepting a position at Kansas State University. From there, I went back to Canada to be a research associate at McGill. I accepted a position at the University of Kentucky in 2014.

**Q: When did you develop your passion for food engineering?**

A: Originally, I wanted to be a chemical engineer, but I didn’t get into that program in Nigeria. I was drafted into the food engineering program, which was the first undergraduate program of its kind in Africa. I decided to stay with food engineering, because I felt like I could make a meaningful impact on humanity using engineering-based solutions.

**Q: Can you tell me about your research at UK?**

A: At UK, my research focuses in three areas. The first one is underutilized grain value-addition, which are grains that have not been fully explored but have potential for food applications. I’m specifically looking at different cultivars of proso millet grown in the United States. My second area is noninvasive methods for food quality assessment and for safety assurance. By using sound sensors and hyperspectral imaging, we can make sure food is actually what manufacturers claim it to be and prevent food fraud from health and religious standpoints. My third area is developing technology to help farmers in developing countries with storing and handling grain after harvest.

**Q: What do you enjoy most about your job?**

A: The most exciting part of my job is mentoring students and international scholars who are visiting. I enjoy seeing students come into my classroom. They may not know a lot about the topic at first, but by the end of the class, they are displaying some level of deep understanding and proficiency in the subject. I also enjoy seeing my students doing well for themselves and making an impact in their careers.



STEVE PATTON



Graduate research assistants Norbert Bokros and Joseph Woomer measure field corn stalk strength.

## STEM Scientists Collaborate to Stem Stalk Lodging

**S**talk lodging, when a stem snaps prior to harvest, is a serious problem in most grain crops, resulting in annual yield losses of approximately 20%. That is a significant number when faced with feeding a rapidly growing global population. An interdisciplinary research consortium (KIC) from the University of Kentucky, the University of Idaho, and Clemson University, led by UK horticulture professor Seth DeBolt, is examining ways to overcome this major barrier to improving grain yield.

The team is unusual in that it not only consists of plant scientists but also engineers and mathematicians. With their diverse skill sets, the researchers are taking a unique approach to studying stalk lodging in corn and sorghum. Funded by a four-year, \$6 million grant from the National Science Foundation, the team combines mathematical modeling with innovative technology to examine the microstructure of large populations of plants. Their goal: to breed stronger plants.

“We’re using portable biomechanical devices developed by Daniel Robertson at the University of Idaho to determine the lodging resistance of multiple corn and sorghum varieties, and then, using engineering techniques, mathematics, and statistics, we should be able to predict why particular varieties are stronger or weaker,” DeBolt said. “We hope to determine both genetic and environmental factors that influence stalk strength.”



DeBolt is an expert on cell walls, which are the key structures in biomechanics. His lab is studying how plant carbohydrates create cell wall structure and strength.

“Our goal with this project is to use the combination of engineering and biology to tackle problems that can help humanity,” he said. “This could be just the beginning. There are a lot of other complex traits associated with yield and resource allocation within the plant that have not yet been touched because of their complexity.”

— Carol Lea Spence



# CAREY BROWN: Seize the Moment

College students are encouraged to not let opportunities pass by. Carey Brown, '01, certainly did not.

A Bourbon County native, Brown fell in love with agriculture growing up on her family's farm. From an early age, she wanted a career in the industry but didn't know what that job might look like or where it would lead.

In her college senior seminar class, Brown, an agricultural economics major, learned of an internship with the newly formed Kentucky Beef Network. She got the position, and it opened doors to a career in agricultural communications.

Brown has been with the Kentucky Cattlemen's Association ever since and is now its publication coordinator. Her duties include managing every aspect of the popular Cow Country News and communications for the association and its 10,600 producers.

"I absolutely loved agricultural economics and a lot of what I do with Cow Country News is on the business side, from making sure the advertising to editorial ratio is in balance, to selling and building ads, to making sure the publication is financially strong," she said.



STEVE PATTON

Her job also allows her to regularly interact with UK extension specialists and agents.

"I didn't realize the scope of what extension agents and specialists do, when I started this job," she said. "We couldn't do what we do at the association without extension agents, because they help us pass on our information. I also learned a lot from

Garry Lacefield and Roy Burris. They were two specialists I could always call if I needed anything."

Throughout her career, Brown has continued to seize every opportunity. While still a new employee, she asked Dave Maples, the association's executive vice president, if she could attend a conference for the Livestock Publications Council. He told her yes but only if she would become its president one day. This past year, she fulfilled her promise as she served as the organization's president.

"Dave really encourages us to dream and get active in professional organizations," Brown said. "A lot of the growth I've made here is due to connections I've made through the council and at Ag Media Summit."

Brown offers internships and serves as a mentor to students. She encourages them not to let opportunities slip away.

"I tell them to not get so set in your major that you don't ever try anything else," she said. "Internships are a great way to get out into the world, to learn about a particular career, and see if it would be something you would enjoy doing."

— Katie Pratt

## Grain and Forage Center of Excellence Opens Princeton Facility

The Grain and Forage Center of Excellence officially opened its new facility in September, with researchers, farmers, and dignitaries on hand for the celebration. "Agriculture is a fundamental component of the Kentucky economy, and the innovation underway at this center advances that work," said UK President Eli Capilouto, who was present for the ribbon-cutting. "It is another way we serve our role as the University for Kentucky and expand the boundaries of what's possible for our state and beyond."



STEVE PATTON



Ryan Sandwick (center) and interns Harrison Knifley, Jordan Hackworth, and Rachel Crosslin discuss their ideas for Harlan.

STEVE PATTON

## STUDENTS HELP REVITALIZE COMMUNITIES

How a community views itself can often be revealed through its built environment.

“One thing I heard a lot in Harlan was, it doesn’t cost anything to sweep your front porch,” said Ryan Sandwick, extension program manager in the Department of Landscape Architecture and the Community and Economic Development Initiative of Kentucky.

That told him a lot about Harlan’s mindset, where he and his student interns would develop economical ways to draw people into the downtown area as part of an Appalachian Regional Commission Downtown Revitalization grant. Projects like this one not only give communities ideas for revitalizing their downtowns, but they serve as real-world classrooms for the students.

The projects fit in nicely with the outreach and education missions of the university.

“The hope was that the students would learn from each other,” Sandwick said. “We organized monthly open houses at the Harlan County Extension office to engage the community in why design and planning are important in downtown revitalization. And that allowed us to learn their values and priorities as a community as well.”

The students, who came from landscape architecture, historic preservation, architecture, and graphic design backgrounds, designed community areas that included a colorful alley gathering spot and a public amphitheater that could be built by volunteers in a short time frame with little money.

“We’re trying to take this incremental approach to a

longer-term goal and make everything as achievable as possible, given the financial realities of the region,” Sandwick said.

### IT’S A WALK IN THE PARK

Nearly four hours NNW of Harlan, the town of Warsaw lies along the Ohio River. In 2016, associate professor Jayoung Koo heard from Sherri Broderick, Gallatin County’s family and consumer sciences extension agent who is a member of Live Well Gallatin County. The group had a small grant to try to make the area a little healthier. According to fellow Live Well Gallatin County member Dianne Coleman, like many small, rural communities, there were few free opportunities for physical activity.

“As a result, we had high levels of chronic disease,”

said Coleman, a community health strategist for Three Rivers District Health Department. “One of our strategies was to provide walking trails in the community. It was great to have a connection with Sherri and, through her, Dr. Koo and her students, to see how walkable Warsaw is.”

Koo and three landscape architecture students, assisted by Broderick and local volunteers, conducted a walkability study of the city’s sidewalks, looking at such things as pavement conditions, shade, road buffers, and connectivity. Then they turned their attention to the city park, a small plot of land bordering the river. They came up with a design for a .33-mile winding route around the park’s perimeter.

“My student interns gained experience working with a real client, while Sherri functioned as a great liaison between her group and us,” Koo said.

Broderick and Coleman applied for and received a \$15,000 grant, with the city and a local business, Nucor Steel Gallatin, providing matches.

“We ended up with a very nice pot of money to expand the limited sidewalk we already had in the park,” said Carolyn Caldwell, Warsaw city clerk and treasurer.

Today, the park boasts new signage, a concrete walking trail, and a new playground. Joggers, walkers, and children have access to a scenic spot where they can engage in physical activities.

“Extension serves as the link between communities and the university, and enabled us to get help for a project that will benefit a lot of people,” Broderick said.

— Carol Lea Spence



# Magnificent Mums, Maximum Profits



Kevin Cornett holds a yellow mum that grew to 38 inches in diameter.  
Photos provided by Kevin Cornett.

Kevin Cornett began growing chrysanthemums to fill a need at the local farmers market in Clay County. On his Maple Crest Farm, his family raises beef cattle, grows vegetables, shows dairy goats and even makes value-added products for the farmers market, so the idea of growing fall flowers didn't seem unreasonable.

"Honestly, what gets us started in a lot of things is the market," Cornett said. "When we realize there's something people want that's not being offered, we feel like we have to do it"

But he had a rough start growing mums.

"The first year, we didn't do so well. We kind of went on our own and researched stuff on the internet," Cornett said "They didn't turn out so pretty."

The second year, he grew about 850 plants.

This past year, Cornett worked with UK extension associate Steve Berberich and upped the ante, growing 5,500 plants on two acres. With Berberich's help, he applied for and received a grant from Kentucky Agricultural Development Board funds through the Kentucky Horticulture Council.

"Steve was already helping my brother with some tomato production and helped us get approved for the grant," he said. "We learned a lot from Steve—what we were doing wrong, what we needed to do instead."

Berberich taught Cornett about row spacing, efficient fertilization, and watering frequency, which was particularly important with this year's late-summer drought.

Berberich also walked Cornett through the stages of plant growth and how to recognize disease before it takes hold.

"It has been very rewarding working with Kevin," Berberich said. "We are grateful for the grant that allowed us to enhance farmer success with diversification."

To Cornett, there's only one thing standing in his way.

"The only limiting factor really is having enough hours in the day to do it all."

— Aimee Nielson



# The PROTECTORS



By Aimee Nielson

Picture an army of University of Kentucky scientists, lab technicians, veterinarians, inspectors, and specialists standing guard, protecting Kentuckians and their livestock from diseases, ready to sound the alarm and spring to quick action if something threatens the livestock or equine industry—even our pets or ourselves. They make sure milk, fertilizer, feed, and seed distributors follow state regulations and product labels are accurate. These are jobs the protectors in the College of Agriculture, Food and Environment take seriously, and for good reason.

STEVE PATTON



# Protecting Farmers and Consumers

The Division of Regulatory Services is responsible for administering four state laws that regulate feed, fertilizer, seed, and raw milk marketing as well as offering seed and soil testing.

"We analyze more than 3,000 feed, 2,500 fertilizer, and 2,000 seed samples per year," said Darrell Johnson, division director. "Feed, fertilizer, and seed businesses have to register with us and send us their labels for approval. We work hard to prevent any false or misleading information on labels. We've also seen an increasing number of pet food samples, close to 40% of what we test."

Johnson sends eight feed inspectors to businesses to pull feed, fertilizer, and seed samples. They bring the samples to the lab and analyze them to make sure they match what the label says.

The thought of inspection and regulation is enough to make anyone nervous, but Jeff Pendleton at Hallway Feeds in Lexington sees it as a blessing and something that brings assurance and understanding for Hallway and its customers.

"Knowing that our Hallway Feeds facility and products are in compliance provides tremendous confidence and assurance to our customers," said Pendleton, Hallway's general manager. "Regulatory Services is crucial in maintaining a level playing field for feed manufacturers and retailers. They provide important oversight to help ensure safe feeds for livestock and companion animals."

Hallway Feeds is the only family owned and operated feed company dedicated to the horse industry. Pendleton said it is challenging to keep up with new and changing feed laws, but having Regulatory Services to interpret all of that has been valuable.

"Regulatory Services has gone well beyond expectations educating the industry about new laws, new methods, and just helping us get through what could have been a very disruptive learning curve," Pendleton said.

## DIVISION OF REGULATORY SERVICES ANALYSIS

**3,000** FEED SAMPLES  
per year

**2,500** FERTILIZER  
SAMPLES  
per year

**2,000** SEED SAMPLES  
per year



STEVE PATTON



STEVE PATTON

## Information is Vital

Regulatory Services goes well beyond feed in how they protect consumers. They are also working directly with the people who pick up milk at dairy farms.

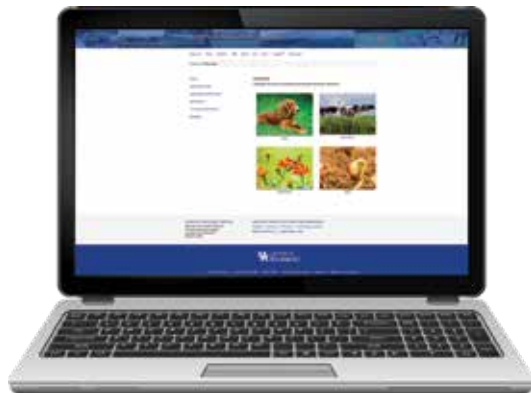
“Farmers are paid on weight and butterfat,” Johnson said. “Our dairy inspector works with raw milk handlers to make sure farmers are being paid correctly for their milk.”

Their skill at analyzing soil samples — they evaluated more than 40,000 last year — allows Regulatory Services to provide extension agents the information they need to make fertilizer recommendations based on precise soil needs.

Johnson, a farmer himself, knows how important it is to have all the information possible when trying to run a business in a volatile industry like livestock production.

“As a farmer, I know you spend a lot of money on agriculture inputs,” he said. “Even if you’re just a cow farmer like me, you spend a lot of money on feed, fertilizer, and seed. It is satisfying to me that our department is here doing this work. Even when they don’t realize it, we are trying to make sure farmers and other consumers get what they pay for and that the product they buy is safe.”

The consumer site at <http://rs.uky.edu/> consumer is organized into four sections: pets,




livestock, gardening, and seeds. The site helps explain what the lab does and helps pet owners and livestock producers read labels on their food and treat packages. Consumers can learn how to report a food incident and even get information about starting their own pet food/treat business. The site also links to current pet food/treat recalls, pet food comparisons, and other informative topics.

## Protect the Animals, Protect the Food Supply

The University of Kentucky Veterinary Diagnostic Laboratory and the Murray State University Breathitt Laboratory are the only entities in the state that can confirm zoonotic diseases — infectious diseases that can spread from animals to humans. VDL director Dr. Craig Carter said that work is important for many reasons, and he feels the weight of their responsibility heavily because animal health impacts food security and human health.





*"Being able to quickly identify disease, warn of its presence, and stop the spread is a very important part of ensuring a safe, stable, and nutritious food supply in the United States"*

– Director Dr. Craig Carter  
Veterinary Diagnostic Laboratory

MATT BARTON

"We are part of a nationwide network of more than 40 labs, the National Animal Health Network," Carter said. "That network is valuable when you think about how quickly impactful diseases can spread. During the highly pathogenic avian flu outbreak in 2014, the network got its first big test. The flu started on the West Coast and moved east and millions of birds were dying or had to be killed to prevent disease spread. At the end of the day it stopped at Kentucky's border. Our partner labs were communicating symptoms, statistics, and more."

The network is a cooperative effort between the American Association of Veterinary Laboratory Diagnosticians and two federal agencies within the U.S. Department of Agriculture: the Animal and Plant Health Inspection Service and the National Institute of Food and Agriculture.

"This network is very cooperative," Carter said. "The network enables labs to test for diseases that pose serious threats to animal health, such as avian influenza epidemics, foot-and-mouth disease, classical swine fever, African Swine Fever, and many others."

Carter said the network is a vital early warning system for emerging disease and foreign animal disease, diseases that can be accidentally or deliberately introduced to the United States from abroad. Without an early warning system, foot-and-mouth disease could easily cost U.S. agriculture more than \$125 billion in decreased revenues for corn and soybeans and more than 150,000 lost jobs over the course of an outbreak.

"Being able to quickly identify disease, warn of its presence, and stop the spread is a very important part of ensuring a safe, stable, and nutritious food supply in the United States," Carter said. "As part of the larger network, we've helped establish a framework for animal health monitoring that provides critical information sharing and an emergency response system that can protect animal agriculture."

## Protecting Human Health

The early detection of animal diseases can also help protect human health. For example, avian influenza virus has the potential for mutating into a strain that can infect people.

As the extension ruminant veterinarian, Dr. Michelle Arnold sees herself as a decoder, a translator, and communicator between the Veterinary Diagnostic Laboratory and veterinarians across Kentucky.

She teaches classes for UK undergraduates, writes articles for trade publications, and fields various phone calls throughout the day regarding animal health.

"I also talk regularly with our Cooperative Extension agents," Arnold said. "They let me know what they are seeing in the field, and sometimes that lets us know what is about to happen."

At one time, there was no plan, no network of labs, or anyone who would protect the population from disease.

"It could just wipe us out, including the food supply," Carter said. "Now we have 59 labs across the United States."

"By keeping a watchful eye on animal disease in Kentucky and elsewhere in the United States, we can also increase consumer confidence in animal agriculture and ensure positive relationships with our global trading partners."

## Training the Next Generation

Even though UK doesn't have a veterinary school, the university has a long-standing partnership with Auburn University, where many UK pre-veterinary alumni go to pursue their doctor of veterinary medicine degree. A new partnership is closer to home at Lincoln Memorial University in Harrogate, Tennessee.

The primary goal of the UK-LMU partnership is to train top veterinary students to become leading research scientists in veterinary medicine and animal health. Students spend a four-week rotation at the Veterinary Diagnostic Laboratory and some have gone on to pursue specializations in pathology, parasitology, immunology, and many other veterinary science paths.

"With many of these students staying in the area to practice after they graduate, we are really training our next generation of VDL clients," Carter said.

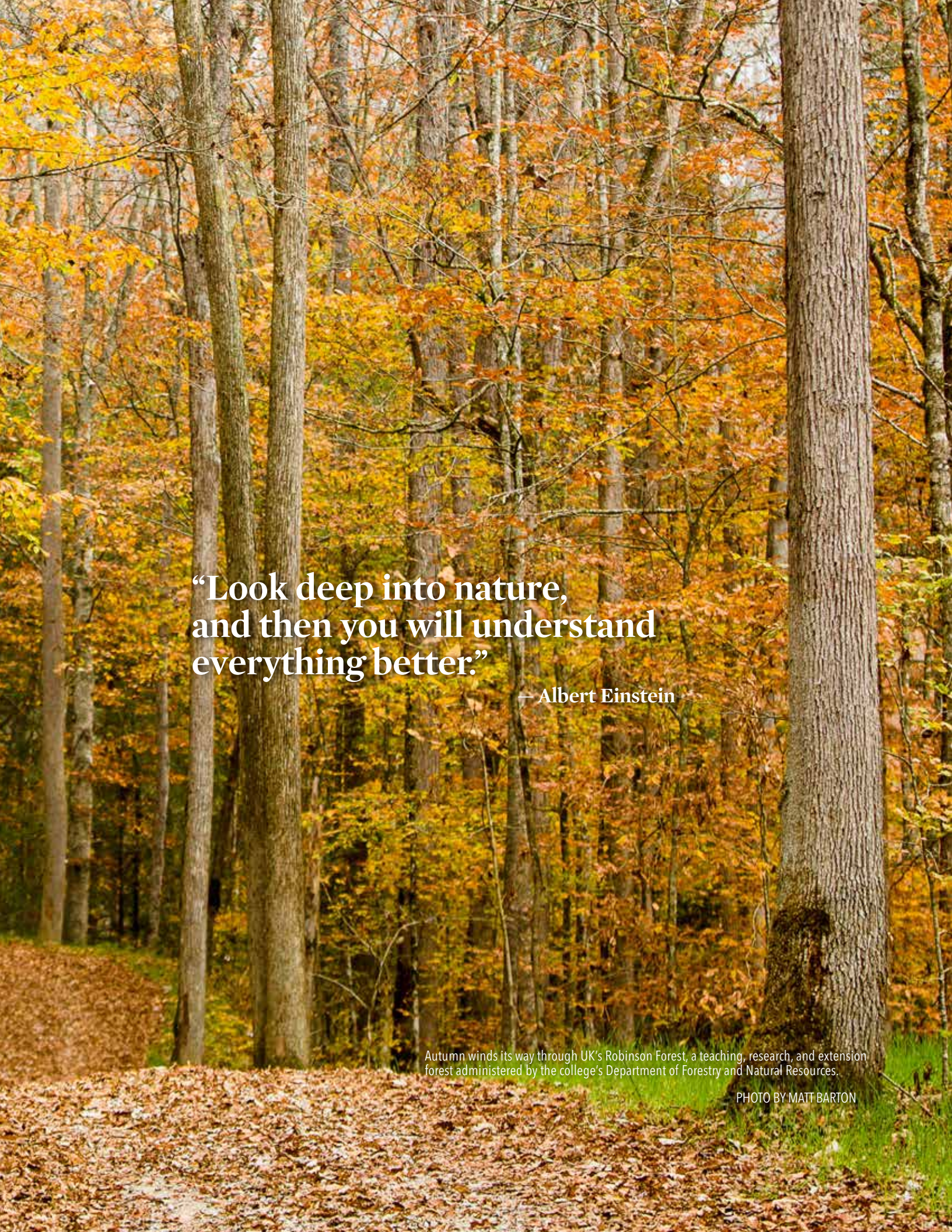
## Joint Mission

The Veterinary Diagnostic Laboratory and the Division of Regulatory Services are tangible examples of ways the College of Agriculture, Food and Environment fulfills its commitment to the land-grant mission. Combining teaching, research, and education, both services protect Kentuckians' health and pocketbooks. ♦









“Look deep into nature,  
and then you will understand  
everything better.”

— Albert Einstein


Autumn winds its way through UK's Robinson Forest, a teaching, research, and extension forest administered by the college's Department of Forestry and Natural Resources.

PHOTO BY MATT BARTON



# A FIX FOR A PROMISING FUTURE

By Katie Pratt



Like an unexpected natural disaster that strikes in the night, substance use has carved a path of destruction across hills and valleys of the commonwealth, destroying lives and tearing apart families.



To say Kentucky has been rocked by the opioid epidemic is an understatement. According to 2018 data from the Kentucky Injury Prevention and Research Center, the state has one of the highest overdose mortality rates per capita in the nation. Kentucky leads the nation in the number of Hepatitis C cases. It also has some of the highest drug-related illnesses, including babies born drug-dependent and adults infected from IV drug use.

As the state looks for ways individuals and families can recover from the effects of opioids, more and more Kentuckians are turning to the University of Kentucky Cooperative Extension Service for help.

Extension is well-positioned to assist people looking for ways to sustain recovery, as many of its programming efforts in financial stability, healthy relationships, and nutrition are educational messages people in recovery need. In January, 2019 UK Family and Consumer Sciences Extension hired Alex Elswick as the nation's first extension specialist dedicated to substance use prevention and recovery. His task is to find ways that extension can leverage and tailor its educational resources better to help Kentuckians recovering from addiction.

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"This position is unique to Kentucky Cooperative Extension and is considered to be a model by other land-grant universities," said Jennifer Hunter, assistant director of Family and Consumer Sciences Extension. "Although this initiative is relatively new, its impact is going to be substantial."

In long-term recovery himself, Elswick understands the hardships and barriers those in recovery face in achieving and maintaining their sobriety.

"People accumulate a lot of problems in addiction," he said. "Financial issues are a big barrier to recovery. They have to rebuild relationships with those they have wronged. Many are unemployed with no degree and no marketable skills. They lack stable housing and reliable transportation. Some have a criminal record. They also have a lot of physical and mental health-related issues."

Elswick, who received his master's degree in family sciences from UK and is working toward his doctoral degree in the same discipline, has studied barriers young adults face when recovering from substance-use disorder and ways to aide in their recovery. He found that the age range from 18 to 25, also known as emerging adults, faces challenges when transitioning from childhood to adulthood.

"Emerging adults struggle to find residential and financial stability, and they struggle with who they are as a person," he said. "The role of their family members and mentors who can serve as role models and advisors may be critically important to providing these adults with the support and guidance they need."

Elswick's research found that losing family relationships or ultimatums from family members often prompt an emerging adult to initially seek treatment. Once the person is in recovery, renewed family support plays an important part in their continued recovery success.

His research found young adults look to their peers in treatment for support and guidance. This spurred another area for study. Elswick is now analyzing how this age group responds to a peer-led telephone service, in which people in recovery call each other to make sure they continue down the right track after they leave a treatment facility. He is also studying using peer mentors with pregnant women and mothers.

## Reaching Those in Need

In addition to his research, Elswick is working with his FCS colleagues, to tailor extension's life skills educational program to meet the needs of those in recovery. He recently worked with Kelly May, senior extension associate for family finance and resource management, to develop a curriculum about financial issues those in recovery face. It is being piloted in Mercer County this fall and will roll out in Boyd, Bourbon, Knox, and Leslie counties through a grant from the U.S. Department of Agriculture's Rural Community Development Initiative.

## Planting Seeds for Healthier Lives

Extension personnel are meeting clients wherever they are on their road to recovery. Through Cooperative Extension partnerships with local recovery centers, gardens have sprouted across the state, providing those in recovery with calmness, solace, and healthy living skills, as they work through their personal storms. Extension installed its first garden at The Healing Place, a women's treatment facility in Louisville in 2017. Since then, and with additional funding from the Supplemental Nutrition Assistance Program-Education, there are now gardens at addiction treatment facilities in 11 counties.

"It's something different to do in a place like this," said Christopher Browning, a client at The Healing Place's male treatment facility in Campbellsville. "It makes us not so sheltered in. We get to get out and do some things that we might enjoy doing on the outside."

While residents at the facilities learn gardening skills, extension agents and SNAP-Ed program assistants teach them about healthy eating, meal planning, budgeting, and even feeding young children.

"Our eight-week class is geared toward trying to have a healthy family and a healthy lifestyle on an economical level," said Angie Freeman, a SNAP-Ed program assistant in Taylor County.

Freeman has offered classes at the treatment facility for a number of years. She has had great success.

"We had so much great feedback from our participants, and Angie agreed to keep doing the program, so we made it a life skills requirement for people once they enter a certain phase," said Matthew Wise, site coordinator for The Healing Place. "Some people have never even

cooked for themselves before, and skills like that are vital for their success in after-care."

Freeman holds a small graduation ceremony for those who complete her class, which is a well-anticipated event by many residents. On the day we interviewed him, Browning received his certificate.

"It's nice to actually complete something," he said. "I have not done so well with that the last few years of my life, but I have actually had the patience and the time to do something productive."

## Life Skills Please

It was the need for life skills education that connected Jereme Rose with Kelly Mackey, Calloway County family and consumer sciences extension agent. Rose is the executive director of Neartown, which runs a treatment facility and two sober living centers in Murray.

"Our clients need to learn about employment skills, like how to fill out an online application, how to develop a resume, how to dress and conduct themselves during an interview, and then about budgeting and how to handle money once their paychecks start coming in," Rose said. "We had been teaching life skills programs ourselves but were really wanting a partner who we could trust to do a good job teaching it."

Mackey is working with Elswick and Rose to develop programs that she can teach at all three of Neartown's facilities in the very near future.

Elswick has also worked with family and consumer sciences extension agents in Scott, Woodford, and Bourbon counties, as they partnered with their local drug courts for the Beyond program. During the program's biweekly meetings, agents educate participants about finances, parenting, cooking and nutrition, health and wellness, and addiction education.





## MILLION GRANT for LIFE SKILLS TRAINING

"Participants come to Beyond in the latter phases of the drug court program, a time when life skills are particularly important," Elswick said.

This fall, Elswick, Hunter, and Alison Davis, director of the Community and Economic Development Initiative of Kentucky, received more than \$1 million from the Substance Abuse and Mental Health Services Administration to provide a new substance use prevention program in southcentral and western Kentucky. The grant gives UK personnel the opportunity to provide more outreach efforts including an opioid addiction education program geared toward workers in health care, extension agents, and community leaders. Other areas the grant will cover include a substance use prevention program geared toward middle school students and arts as a healthy, creative outlet to deal with the anger and sadness caused by substance use addiction. It will also expand the Recovering Your Finances curriculum to additional counties.

"Kentuckians said substance use, and its related effects, was the most significant issue facing the commonwealth today in extension's recent community assessment survey. This grant will help us aggressively address this issue and help set communities on the path to recovery," Davis said.

## Hope for the Future and Their Caregivers

Addiction not only affects those in recovery but their families. Because of the power that substances have over their lives, many people dealing with addiction lose custody of their children to a relative. Roughly, 1 in 10 Kentucky

children are in kinship care. While not all are placed in kinship care due to an addicted parent, many are.

"Many grandparents that attend our county Grandparents As Parents support groups express how alone and isolated they felt, until they came to the group," said David Weisenhorn, senior extension specialist for parent and child adolescence education. "I want them to know they are not alone."

During his presentations, Weisenhorn discusses possible developmental and cognitive delays common to children born with Neonatal Abstinence Syndrome, the effects of neglect, child developmental stages, behavioral issues, and disciplining children of all ages. His goal is to explain normal child development and ways Neonatal Abstinence Syndrome and emotional issues can impact a child's development. Caregivers then know when they may need to seek additional help or when they shouldn't worry so much about a particular behavior or development stage.

"Many caregivers come to these meetings to discuss a child's behavior problems. I offer hope through scientific evidence that shows most of the behavioral problems dissipate with a loving environment and proper nurturing," Weisenhorn said. "I discuss secure attachment and how many of the children are lacking in that area, but those bonds can still be formed through much work."

UK extension's efforts have not gone unnoticed. Elswick is routinely asked to share about his position and UK's ongoing efforts with other institutions, including Penn State University, Virginia Tech, and Iowa State University, so that they too can shine a light on a problem that is affecting individuals and families across the United States. ♦



# Working Farm,

**T**hey flit about in the August heat, orange splashes against pink, purple, and yellow blossoms, landing lightly as a dust mote for a drink and a dusting of pollen. We may admire their beauty and delicacy, but monarch butterflies in late summer are about to embark on an undertaking that would defeat less fragile creatures. At the Idlewild Butterfly Farm and Insectarium, owner Blair Leano-Helvey and her staff make sure their butterflies are up for the task.

In a few weeks, the insects would set off, buffeted by winds, soaked by rains, hunted by mice and other critters, on an epic migration to central Mexico. There, they'll overwinter by the millions in the high elevations of Mexico's oyamel fir forests.

The monarchs that survive the winter begin their reverse migration in March, making their way to Texas, where they lay their eggs and die. While only one generation makes the trip to Mexico, each succeeding generation takes a leg of the journey back to Canada.

Tough enough to make a thousand-mile journey, still, monarch populations are in peril. Because they concentrate in just a few areas, any climate- or human-related disturbance can result in large losses. Deforestation in Mexico threatens them. Climate change and additional habitat loss throughout their North American range jeopardizes them as well.

Despite this dreary prospect, Leano-Helvey is determined—determined to leave a world for her children where pollinators and beneficial insects thrive. She began the butterfly farm as an offshoot of her biocontrol business, Entomology Solutions, which she started in 2009. While at UK, Leano-Helvey said sometimes she was horrified by what she saw in agricultural practices relying on pesticides to control destructive insects. She resolved to change some of those practices, focusing on greenhouses and even homeowners who were seeking a natural way to manage pests, such as thrips, spider mites, aphids, or fleas.

"There are several beneficial mites we use. Most of them are native, so a lot of them will colonize the areas. They're changing the ecosystem for the better in and around greenhouses," she said.

Her business now reaches well beyond Kentucky. Some of the insects she breeds, such as shield bugs, a beneficial stinkbug, get shipped to the West Coast. And she supplies other USDA-approved insectariums around the country with exotic insects for their living collections.

Leano-Helvey got her bachelor's degree in entomology from the College of Agriculture, Food and Environment. While an undergraduate, she worked on a graduate-level project in insect physiology in Douglas Dahlman's lab. Despite that experience, she just couldn't picture herself with a career in academia.

"I didn't think I wanted to go on and do a master's degree or Ph.D. I thought about it, but I always liked running things," said the woman who now runs two businesses.

Looking for something new while in the midst of running Entomological Solutions, Leano-Helvey started raising butterflies to sell at farmers markets. "When you peddle insects, you'd better be creative," she explained. Her market customers enthusiastically bought her entire inventory. That success, and the fact that "My husband was planning to evict all my bugs, because they were flying around the house," led Leano-Helvey to the Small Business Association.

The experts at the Louisville office of CAFE's Kentucky Small Business Development Center helped her assemble a new business plan. She visited other insectariums and butterfly farms around the country and, in 2015, built a containment facility for the company she named Idlewild Butterfly Farm and Insectarium, which she describes as "a working farm with tiny livestock." The name comes from the original name for the steamboat *The Belle of Louisville*.

"We were going to call it Madam's Butterflies, but it didn't quite have the right ring; it sounded more like a brothel," Leano-Helvey laughed. "Though we are a brothel of sorts — a butterfly brothel."



# Tiny Livestock

Written by Carol Lea Spence

Photography by Matt Barton





Leano-Helvey displays one of the many exotic insects she and her staff raise in the insectarium.



A monarch caterpillar

At the time of our August visit, she and her staff were busy producing 1,000 monarchs for release during the Louisville Zoo's annual Flutterfest in September.

It's not easy breeding butterflies. Viruses and bacterial diseases can take their toll, so the staff is very careful to keep the facilities spotless and to quarantine insects the minute they show signs of disease. The monarchs do their best to help though; it turns out they are quite promiscuous. Watermelon is the aphrodisiac of choice when Leano-Helvey is enticing her butterflies to mate.

"If we need them to pair, we give them a little. It's like oysters."

But outside the lab, where watermelon is not on the menu, males, distinguished by a black spot on each hind wing, won't let much get in their way. Leano-Helvey said she sees the wild males mating with confined females through the farm's

flight house netting all the time. There are plenty of wild males, and females, outside her flight house, since she has taken care to plant pollinator-friendly plants around the small, urban property. Berry bushes ring the property, and within its borders bloom nectar-rich plants such as Joe Pye weed, New England aster, purple coneflower, and lantana, as well as the sole food a monarch caterpillar will eat, milkweed. Despite the city's not-to-be ignored presence, where the sounds of traffic and a passing train permeate, where exhaust fumes tinge the air, and buildings are squeezed onto miniscule lots, the space thrums with butterflies. Leano-Helvey said she chose the site because it is not an area where people typically spray chemicals on their lawns. In short, her butterflies would be safe from humans.

Inside her facility, her staff carefully maintains a lab where

they care for, import, and breed tropical insects, which the company sells or trades to other USDA-permitted facilities, zoos, or insectariums. They also use them for their educational programs, such as their Halloween-themed Creepy Things, which gives children and adults the opportunity to get to know creepy-crawlies that they may otherwise fear. On top of getting to view nocturnal insects under infrared lights, speakers such as UK 4-H/youth extension specialist Blake Newton were on hand to talk about such things as medical entomology. "Not for the faint of heart" the Facebook event page proclaimed, which of course brought in lots of curiosity seekers.

And that's what Leano-Helvey hopes to do, because for her, it's all about educating people. School groups routinely tour Idlewild, and Leano-Helvey, her staff, and other entomologists such as Adam



Baker, a graduate research assistant in UK's Department of Entomology, visit schools all over the state, teaching people that they can make a big difference with small actions. Even planting a couple of pots with pollinator-friendly flowers on a patio will make a difference, they tell students, hoping that information will make it home to their parents.

"We talk about why insects are important, how they benefit humans. Most of what goes on in the insect world is unnoticed, because it's at such a small level," She said. "We talk about pollination, we talk about climate change."

**"Butterflies and caterpillars could be the canary in the coalmine – some of the first-line creatures that get hit when something like climate change alters the environment,"**

Idlewild has four employees, two of whom, Rachel Barger and Rachelyn Dobson, are also alumni of the UK Department of Entomology. They also rely on a few contractors to develop programming. Newton

is currently helping them develop next-generation science-standard aligned curricula.

"I may not want to be in academia, but we depend on academia," Leano-Helvey said. "That's what keeps us going and makes sure we're giving out correct information."

During a visit to the facility, Newton explained why Idlewild's work is so important.

"Butterflies and caterpillars could be the canary in the coalmine – some of the first-line creatures that get hit when something like climate change alters the environment. Caterpillars are very particular about what they eat. If their food disappears from a local area, they become extinct from that area," he said. "But when you have a whole area where the climate changes, so plants that used to grow there can't anymore, that means your butterflies can't be there anymore either. We want to find a way to teach kids that."

Leano-Helvey said they do a lot of well-attended workshops. "I think people are looking for nature. When I was a kid, I would spend many summers in southeastern Kentucky where my mom grew up. I had this perception that you had to go to the farm to find insects. But outside, here in urban Louisville, you'll see how many different pollinators and critters are flying around."

Idlewild Butterfly Farm and Insectarium welcomes visitors to tour the facilities or attend one of their workshops. For more information about the farm and insectarium, visit their website at <https://www.idlewildbutterflyfarm.com/>. ♦

Blair Leano-Helvey and Blake Newton examine the nectar producing system of a zinnia in the farm's flight house.





Bryan Brady and Robert Eversole walk the late summer fields at Crooked Row Farms.

Sure, you can grow it, but can you sell it? The local food movement has offered many opportunities for small farmers to succeed; first through farmers markets, then through community-supported agriculture programs, and then, for a few, through wholesale markets. Each requires a different marketing style.

Going the wholesale route requires different skillsets. When Thomas Sargent and Robert Eversole decided to switch from a CSA to a wholesale business plan for their Crooked Row Farms in Fayette County, it meant concentrating on just a few crops rather than 65 and also making sure all the proper certifications were in place to be able to sell to institutions and restaurants. Instead of planting “pretty much everything you see in a seed catalog,” Eversole said, the two focused instead on salad greens

and cherry tomatoes, supplying restaurants and educational institutions, including UK’s Dining Services.

“I think farm to institution is like the sleeping giant of agriculture,” he said.

Lilian Brislen, executive director of The Food Connection, housed in the UK College of Agriculture, Food and Environment, no doubt agrees with him. The Food Connection provides education, outreach, and resources to support farmers like Eversole and local and sustainable food systems. UK is one





of the very few universities in the country set up to not only provide local food to its dining services, but also support the farmers who are supplying it.

“One of the goals of this contract (with Aramark) is not just to get the food onto campus, but to fill those value chains,” Brislen said. “We’re really targeting getting folks into wholesale markets and using our dining commitments to pull their products through the marketplace.”

Part of that work is to guide producers through a system of certifications and regulations. Specialty growers trying to move into wholesale are often stymied by the need to be GAP-audited. GAP, Good Agricultural Practices, is a U.S. Department of Agriculture program that covers food safety issues, such as employee hygiene, fence inspections, and facility and equipment sanitation. Many retailers, restaurants, and institutional dining services, including Aramark, require their suppliers to be GAP-audited.

Bryan Brady, UK extension associate housed in The Food Connection, is an expert on GAP practices. He and Paul Vijayakumar, food safety extension specialist with the college’s Food Systems Innovation Center, train farmers in GAP. Vijayakumar is also the lead trainer on a new Food and Drug Administration regulation, the Food Safety Modernization Act—Produce Safety Rule. GAP is not a government regulation; FSMA is. The FDA requires growers who average more than \$25,000 in annual gross produce sales over the past three years to take that training.

“FSMA is standalone,” Vijaykumar explained. “It meets minimum science-based standards for safety. It’s a federal requirement because of the significant bacterial outbreaks in

produce that (the country) has experienced. It does not guarantee any market openings.”

On the other hand, GAP could open markets, so farmers find it advantageous to go through the training.

“The number one thing that prevents people from accessing wholesale markets is having a third-party food safety audit or GAP audit,” Brady said.

Eversole and Sargent attended UK’s four-hour training, but despite their good intentions, for a while they went no further.

“Our plan was to certify that summer. Fast forward a whole year, and I still hadn’t done anything with GAP,” Eversole said.

Enter Brady, whose job also includes on-farm assistance.

Eversole said Brady made it seem like they could do it. He ran them through the questions they could expect from an auditor and helped them ready their books, Standard Operating Procedures, and logbooks.

“We spent a considerable amount of time just getting ready for the audit and still wanted to postpone it,” Eversole said. “The audit is \$650, so it’s not cheap. You don’t want to have to do it again. Can you imagine if Bryan hadn’t been there to ask these last-minute questions and help prepare us?”

After all the preparation (and stress), when they were audited, they had only one discrepancy on the whole farm. To Eversole, the process ended up being worth it.

“No one has required it yet, aside from Aramark, but I like to think it gives us a shoo-in,” he said. “I think it made a difference when we pitched to Clark County schools and to restaurants. It helps set us apart.”

– Carol Lea Spence

– Photography by Matt Barton

# The College Rocks Chellgren

When it comes to undergraduate academic excellence, look no further than the College of Agriculture, Food and Environment.

Two professors and six students recently received honors from UK's Chellgren Center, which promotes excellence in undergraduate education across the university.

"We are incredibly proud of our undergraduate program, which includes an academic enrichment experience component, such as undergraduate research," said Carmen Agouridis, CAFE associate dean for instruction. "The fact that so many of our people received Chellgren honors speaks to the high quality and impactful research occurring in the college."

Associate professors Tammy Stephenson and Ryan Hargrove were named endowed professors by the center and will serve through 2022. Chellgren professors must maintain an active research program in their discipline, teach courses, and lead a project designed to advance progressive reform of undergraduate education at UK.

"My project will involve undergraduate students with unique skills sets from diverse backgrounds and majors to solve issues related to food insecurity, poverty, social injustice, food waste, and sustainability," said Stephenson, a faculty member and director of undergraduate studies in the Department of Dietetics and Human Nutrition. "Through course work, experiential learning, research, and



Ryan Hargrove, Landscape Architecture, and Tammy Stephenson, Dietetics and Human Nutrition

other high impact practices, students will address a global issue, gain transferable skills, and be involved on campus in a meaningful way."

A faculty member in the Department of Landscape Architecture, Hargrove's project is aimed at producing graduates who are as imaginative as they are skilled in their chosen profession. He will use a program called Muse that fosters innovative thinking and leadership skills, and thus develop students into creative agents of change.

"This area of research is now being recognized as a critical component in the advancement of design thinking needed to meet present and future challenges," he said. "I hope this project elevates students into a position of influence and action and promotes problem-solving as a foundation of higher education."

The Chellgren Student Fellows Program awards high achieving undergraduate students with experiences that elevate them toward greater academic success. Through intellectual enrichment, students gain the skills needed to successfully compete for prestigious national awards and gain admittance into exceptional graduate and professional programs.

CAFE Chellgren Student Fellows for 2018-19 include agricultural economics undergraduate Alex Cochran and agricultural and medical biotechnology students Carly Boone, Cole Blanford, James Campbell, Cheyenne Chandler, and Tristan Donovan.

— Katie Pratt



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Kentucky Extension Homemakers Association members in all 120 counties contributed to this quilt, named Every County Counts, as part of a partnership with the U.S. Census Bureau to promote the 2020 census.