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COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT

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from the dean

An Honor to Serve

It is certainly an honor to be writing for The Ag Magazine in a new role and to represent, serve, and support the College of Agriculture, Food and Environment as dean. I appreciate the contributions of Dean Scott Smith and the learning opportunities he provided, and I look forward to working with the leadership team to serve the college.

Even though I have worked here since 2001 as associate dean. I pledge a fresh look at all of our excellent programs. The review, though still in progress, has reaffirmed the importance of UKAg to Kentucky's producer organizations, our partners in the General Assembly, state agencies, and other universities, in particular our long-standing partnership with Kentucky State University.

We have much to be proud of with respect to our integrated land-grant missions of teaching, research, and extension. We have a productive and dedicated faculty and staff who educate students to prepare for almost every career path. Of UK's 16 colleges, we are in the top four for student numbers. Undergraduate program leaders are constantly improving opportunities for student success, with new advising programs and real-world experiences for all majors. In the end, our students benefit from learning from faculty members who not only boast great scientific minds but have an eye to real-world applications.

We pride ourselves on relevancy of research. Our research programs rank second in the university with respect to external funding, and many of our scientists lead their global peers. as measured by prestigious journal articles and competitive federal funding.

Our extension program is strong and revered nationally for its effectiveness in providing robust support for Kentucky's citizens.

We are excited about several initiatives under way. One is to communicate better what we do and what we contribute to the state. One of our degree programs, Ag Biotech, is the best major at UK for gaining admission to professional schools. Do people know that? And did you know, with 18 majors, our graduates' career tracks can lead almost anywhere?



Another initiative is to completely revamp our budgeting and financial management system. which will allow us to manage our finances more effectively and transparently, in a way that everyone will understand better.

We look forward to better defining the broad clientele of our college; we have a business cluster linked to our agricultural and forestry land base that provides more than a quarter of a million jobs in Kentucky! We plan to refine our understanding of this cluster and increase our services to help them grow the land-based economy.

Last but not least, we will be engaging in strategic planning to coordinate our programs in food and environment, to make sure we are living up to our new name. We will build on our distinguished past and serve future generations as we continue to live up to our slogan, "We Grow Ideas.'

Nancy Cox Dean, College of Agriculture, Food and Environment

#magazinecontents

6 City Slickers: Ag Moves to Town

Urban agriculture is taking root in Kentucky cities. Now city dwellers have the opportunity to connect with their food.

A Century of Outreach

Happy birthday, Cooperative Extension! For 100 years you've made our lives so much better. Here's to the next century!

Service Runs Deep

When a family has been part of most of Cooperative Extension's 100-year history, service is in their genes.

Case by Case: The GMO Question

No matter where you stand on GMOs, one thing can't be denied; genetically modified crops have changed American agricultural production.

Cooperative Extension Service 2013 Annual Report



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NEWS IN BRIEF

Waste Potential **On Target** A Vilsack Visit **Spotlight: Jennifer Hunter** A Stylish Hoop

SHORT ROWS

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short rows



A Road By Any Other Name

A "Canary" Called Hellbender

Of the 35 salamander species that populate Kentucky, one of the most impressive has to be

the two-foot long eastern hellbender. It lives its entire life in water and breathes through its skin. Unfortunately, if oxygen can pass through, toxins can too, so this largest of Kentucky's salamanders relies on clean streams. But silt and chemical runoff from poor timber and mining practices are taking their toll, and the eastern hellbender is declining in its habitat. Why should we care? Salamanders could be the "canary in the mine," said Steven Price, assistant professor of stream and riparian ecology in Forestry. "If water isn't clean enough for a salamander, it probably isn't clean enough for us." In recognition of the educational and conservation efforts taking place at UK's Robinson Forest, as well as its benefits to the people of Eastern Kentucky, the Breathitt County Fiscal Court voted to give State Highway 476 the honorary name of Robinson Forest Highway. The forest, which is managed by the college, is made up of seven tracts totaling 14,800 acres-one of the largest research and educational forests in the eastern United States.

Read more about Robinson Forest at http://www2.ca.uky.edu/forestry/robfor.php

Read more about Kentucky salamanders: http://www2.ca.uky.edu/kywoodlandsmagazine/Vol8_No_2/Salamanders%20of%20KY.pdf

Lovely, but Toxic.

There are stirrings in the garden, even in deepest winter. The hellebore, a perennial, can be counted on to be an early riser, often showing its pale-colored flowers during the Christian season of Lent, which can be quite early. Hence its common name, Lenten Rose. Its delicate pale green or creamy pink single flowers belie its toughness—and something else. Horticulture specialist Rick Durham said its Latin name *Helleborus* means "food that injures." Every part of the plant is poisonous.

Read more about hellebores and other flowers for Kentucky gardens at http://www.uky.edu/Ag/ Horticulture/gardenflowers/hehi.htm Consumers Who Know

They consume fresh veggies and fruit daily. They have an above average knowledge of nutrition. They're mostly female. That is a pretty good picture of patrons of farmers markets drawn from a survey conducted by Kim Webber and Tammy Stephenson of Nutrition and Food Science. When compared to Kentucky adults in general, farmers market patrons are more likely to consume the daily recommended amounts of fruits and vegetables.

Read the full study at http://www.idosi.org/wasj/ wasj23%282%2913/19.pdf

Give Rain the Brush Off

It's not unusual for spring to spring an excess of rain on us. And whereas April showers can bring May flowers, horses that receive a continual soaking can suffer from a multitude of skin problems including rain rot, dew poisoning, and other fungal diseases. Equine extension professor Fernanda Camargo said simple grooming can help prevent such problems Brushing allows air to penetrate the coat and dry the skin.

Read more about caring for horses in the rainy season at http://www2.ca.uky.edu/agc/pubs/asc/asc183/asc183.pdf

Waste Potential

If there's anything Kentucky has in spades, it's horse manure and streams – a fact that started UK bioenvironmental engineer Carmen Agouridis and graduate student David Griffith thinking about whether there is a way to use horse manure to protect the environment, particularly water resources.

The two researchers have been mucking around with an idea that could possibly keep harmful bacteria from groundwater, improve the soil, and create a new industry for Kentucky. What is it? Biochar, a charcoal made from biomass–in this case, horse manure.

"Biochar is a pretty hot area of research right now. I think a lot of people are trying to know more about its potential and limitations," said Agouridis, an assistant professor in Biosystems and Agricultural Engineering.

Made from plant biomass such as corn stover, it can be used as a fuel. Sue Nokes and Leigh Maynard, chairs of BAE and Agricultural Economics respectively, recently partnered with Community Development International on finding methods for creating and using alternative fuels in Haiti, where severe deforestation has resulted in soil erosion, degradation of water quality, and a lack of cooking fuel.



news in brief....

Biochar can also be used as a soil additive. A fine, powdery substance, it can decrease soil density and return nutrients to agricultural lands. But Griffith, who is working on his master's degree, wondered if it could not only be used to increase crop yield, but if it also could act as a filter, capturing bacteria before they end up in the groundwater either through runoff or potentially dangerous openings in the state's widespread karst topography. Karst is formed from water dissolving the limestone bedrock, resulting in caves, pits, and sinkholes that often lead directly to underground water systems.

Agouridis also wondered if it could lead to a new industry, since at the moment, horse owners have to pay people to remove the waste from their properties. Could this end up being another income stream for farmers if they could build their own ovens on their property?

Griffith and Agouridis partnered with Carl Bolster of the U.S. Department of Agriculture's Agricultural Research Service lab in Bowling Green, who had already begun studying it.

Biochar is made in much the same way as charcoal. In an anaerobic process, the manure is contained within a vessel filled not with air, but with an inert gas. This prevents combustion when the heat is ramped up to between 600 and 1,400 degrees F.

"That way, you keep a lot of the nutrients, you keep a lot of the structure, and a lot of the mass stays in the product, so when it comes back out you can sell it," Griffith said.

Griffith is nearing the end of his research. The first part of the project was to characterize the horse muck biochar by running carbon and nitrogen tests and measuring the surface area and the nutrient content. The second part was the soil runoff study, which was done by filling glass columns with soil and biochar, then running bacteria and manure through the top and measuring how much came out the bottom. He will be able to compare his results to studies on other types of biochar, which, of course, will open other avenues of research.

"Eventually we may get to the point where we say, if I'm a farmer, how do I make my own unit to make this?" Agouridis said. "And if you have 100 horses, how would you scale up and build something that might work for that size operation? I think there is great potential for industries springing up around this."

- Carol Lea Spence



n Target A lot goes into building customer allegiance toward one retailer over another:

merchandise, atmosphere, affordability, hours of operation. At least that's what 37 students in Kim Miller-Spillman's Problem-Solving in Merchandising. Apparel and Textiles course found when they considered ways to attract a larger Hispanic customer base for Target.

That scenario was one of many in Target's case study library. For several years, students on campuses around the country have been doing case studies for the retail chain, and in return. Target awards individual scholarships worth \$1,000 to the student team with the best presentation.

Out of the many topics from which to choose, Miller-Spillman, who also teaches a course called Dress and Culture, gravitated toward the Hispanic topic,

"They can learn about culture while they're learning about real world problems," she said. "Here's culture in merchandising in action."

Nine teams participated during fall semester. Seniors Rachel Ricker and Lily Hansen and juniors Halie Starwalt and Jackie Basta were the winning teammates. All teams presented their findings to Rodney Branum, Eric Roby ('96

animal science), Alan Adams, and Joe Eckels. Target executives from Lexington. Louisville, and Cincinnati.

The winning team surveyed members of the Lexington Hispanic community about



their shopping preferences and came to the conclusion that better signage, a welcoming greeter, and fresh food offered in a market atmosphere would attract more Hispanic guests, Jackie Basta, who presented for the team, reminded the executives that 58 percent of people who attend an event end up purchasing a product, so her group suggested that in-store cooking demonstrations, Cinco de Mayo sales promotions, and having a presence at local festivals could all help attract more Latino customers to their stores.

All case studies go to Target headquarters.

"How Target can capture Hispanic guests is one of our top focuses in the company, because the Hispanic population continues to grow in the United States," Branum said. "As we continue to grow our stores, obviously their information is critical to us."

Miller-Spillman's spring semester MAT 547 class will explore similar cases.

"They take from this real world experience, increased problem-solving skills and confidence," she said. "This is the perfect scenario for us."

A Vilsack Visit



UKAg students had a rare opportunity for a Q&A with Secretary of Agriculture Tom Vilsack when he visited the college in January to talk about revitalizing rural economies.

Their questions touched on a variety of topics:

How will the concern about GMOs affect the demand for **more production?** Vilsack responded that the answer lies in diversity. He said we need to expand production with methods that use less water and fewer chemicals, while always being aware of safety concerns. But larger farming operations will be needed to pay for that technology, which could preclude young people from getting into the business. Instead, raising high value-added products, such as organics, could be an entry point into farming.

Will the USDA commit to mine reclamation/ reforestation efforts in Appalachia? Vilsack said the USDA is interested for a multitude of reasons. It is environmentally advisable to restore forests, because they act as carbon sinks and preserve water resources, and reclamation creates new economic opportunities in the form of tourism and recreation.

What role would you like to see agriculture students play to promote agriculture in Kentucky? Vilsack advised them to talk to the policymakers. "You need to understand the power vou have. You're the future of this state."

In his presentation, the secretary emphasized the importance of creating a new rural economy that creates income opportunities through diversification.

"The real challenge is we have to get people living in rural America. We've got to create opportunities in rural America."

To view Secretary Vilsack's entire presentation, visit this story on The Ag Magazine website, http://www2.ca.uky.edu/ agcomm/Magazine/2014/Spring2014/.

Jennifer Hunter

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Former Boyd County 4-H agent Ron Sanderson encouraged Ashland high-schooler Jennifer Hunter to visit the UK College of Agriculture, Food and Environment as a prospective student. With the exception of nine months spent working in industry. Hunter, '00,'03,'10, now an assistant

extension professor in family financial management, has been a part of the college ever since.

Q: How did you become interested in family finance? A: I began my career in Extension working with farm record keeping in UK's Department of Animal Sciences. It gave me insights into not only how people struggle with finances in their business and personal lives, but also the skills and decisions necessary to be financially successful. Most importantly, it showed me there was a need for basic financial management education.

STYLISH HOOP

She is probably best known as one of the top players on the UK women's basketball squad, having transferred from powerhouse University of Connecticut her freshman year. But what you may not know about Samarie Walker is that she is a Merchandising, Apparels, and Textiles major in the School of Human Environmental Sciences.

"My ultimate goal is to be a wardrobe stylist for celebrities," Walker said. "I would like to go on tour with celebs and dress them for their tours and photo shoots. I just love fashion, so I would be happy with anything in that field."

Talk about finding your niche. Walker was a psychology seven McDonald's major at UConn and was going to continue on that path at All-Americans on the UK squad, Walker helped lead UK to a 22-7 regular season record and runner-up in the UK until someone told her about fashion merchandising as a major. Southeastern Conference tournament this year. She led "I absolutely love fashion, so I decided to switch the team in rebounding.

maiors, ASAP."

She said her favorite class is E-tailing, because she shops on-line a lot. If a career in styling doesn't work out, she would like to get into visual merchandising, focusing on a store's décor.

But if the professional ranks come calling after the 6-1 senior from West Carrollton. Ohio graduates in May. Walker said she will definitely have to pursue her dream of plaving basketball at the next level.

- Carol Lea Spence

Q: You've worked in animal sciences and agricultural economics, as a 4-H agent in Madison County and now in family sciences. What have you learned?.

A: Working in the different areas has given me a very good perspective and insight into the culture of each group and how each can relate and work together.

Q: You have three degrees from UK and are employed by the college. What has kept you here?

A: I smile when I hear them say. "Welcome to the College of Ag family," at freshman orientation each year. I remember getting the same welcome when I was a freshman. The people and the environment made UK a place I wanted to stay.

Q: What is exciting about your current job?

A: I decided to get my doctorate for the opportunity to work with people in family financial management and follow my passion. Through my career, I have had the opportunity to learn from several excellent extension specialists. I have seen the difference that they've made in people's lives. Now, I'm excited I have the opportunity to do the same.

Q: You have two kids. That has to be challenging.

Our life at times is definitely a balancing act. I started my doctorate when my son was 6 months old. I can remember rocking him to sleep in my lap at 2 a.m., while I wrote my first class paper. I am very fortunate to have a great support system that includes my husband, kids. parents, friends, and co-workers who help make sure everything gets done.

"My goal after here is to go pro, either the WNBA or overseas. That is definitely my immediate goal." Walker's chances of reaching that goal could well be within her grasp. One of



"She definitely has the size and the game to play professionally," said the UK Hoops head coach, Matthew Mitchell.

Whatever happens, Walker has prepared herself to succeed in life, whether on the basketball court or in the world of fashion.

"Whatever Samarie pursues she will be successful." Mitchell said. "She is a winner and a leader. I have no doubts about her future after basketball."

— Jeff Franklin

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Slickers Ag Moves to Town

By Jeff Franklin Photography by Stephen Patton



(Above) Rebecca Self has built a closed-loop urban agricultural production system at FoodChain in Lexington. It's her hope that others will be inspired by what they see happening there.

Rebecca Self sees a disconnect between urban and rural.

"Food seems the perfect conduit to connect people," the founder of FoodChain said.

So when she visited examples of urban agriculture in Boston, Chicago, Milwaukee, and San Francisco, it was more than just a fact-finding mission. She was looking for those connections. In Milwaukee she visited Growing Power, a national nonprofit organization and land trust that provides safe, affordable, and healthy foods for communities. For more than two decades, Growing Power has been considered a national leader in the Good Food Movement, a grassroots effort for local, organic, humanely-raised, family farm identified food.

The Plant in Chicago is a closed-loop food

production system in a repurposed meatpacking facility where the inputs and outputs from one system are used in the other. It promotes sustainable economic development through education and research.

Observers of urban agriculture trends say Kentucky urbanites are seeking the authenticity in their food purchases that city-dwellers in other parts of the country do.

"Part of this means connections with the source of our food, the farms and the farmers," said Lee Meyer, UK extension professor for sustainable agriculture. "I think urban agriculture helps make these connections. Urban agriculture does supply real food, food that consumers watch from seed to table."

FoodChain: A Resource

IN STREET, SOL

It's no accident that Self's FoodChain has a lot in common with The Plant. Like the Chicago company, FoodChain is a nonprofit with a mission to reconnect people with their food through education and demonstrating new, sustainable methods of food production. FoodChain is located in the old Rainbow Bread factory building at 501 West Sixth St. in Lexington.

Self's company is Kentucky's first indoor, commercially scaled aquaponics system with six, 250-gallon fresh water tanks containing live tilapia that are fed by the spent grain from the brewery that occupies the majority of the building. Co-owned by Rebecca's husband, Ben Self, West Street Brewery is a critical underpinning to the closed-loop system. Herbs and lettuce grow in long rows of planter boxes lit by artificial lights and irrigated by filtered water from the tilapia tanks. All of this takes place under the watchful eye of farm manager Mims Russell, '12 sustainable agriculture. Working at FoodChain through an independent study course in sustainable agriculture led to his being hired full-time as manager after he graduated.

"This is really an economic model. People involved with FoodChain want to show you can grow food in an urban environment and make an impact with a restaurant," said Russell. "We want to show this to other food entrepreneurs to replicate."

The restaurant Russell refers to is Smithtown Seafood, also located on site, where Chef Ouita Michel's cook staff prepares fish, lettuce, and herbs fresh from the "farm."

"Urbanization is a trend that doesn't seem to be turning around," said Russell. "I think it is really important to produce food where the people are. You are never going to supplant the rural producers, but if we can supplement what they produce, it's helpful. What we lose in scale, we make up in our extended growing season."

Russell says FoodChain would eventually like to expand with raised bed gardens on the roof and mushrooms in the basement. Plans also include a kitchen incubator and a certified commercial kitchen with multiple

stations, so other food entrepreneurs can produce a product. Self says FoodChain is really owned by the masses, being a nonprofit, and her wish is that lots of people see their hopes and dreams realized in FoodChain's work.

Seedleaf: Filling the Gaps



What started as a vegetable garden on a small plot of land in 2007 is now a mission committed to nourishing communities through

You can grow food in an urban setting, said Mims Russell, shown here harvesting herbs at FoodChain.



Easier to get alcohol and processed food than anything fresh, local or healthy? Ryan Koch, through his not-for-profit organization Seedleaf. is determined to change that situation in the food deserts in Lexington.

growing, cooking, sharing, and recycling food. Today, Seedleaf in Lexington has grown from that one garden to ten. The biggest is the London Ferrill Community Garden on 3rd St. in Lexington. There are 40 individual 6 x 8 plots at the site that anyone can lease for \$5 dollars. In addition, there are four large community plots that Seedleaf volunteers maintain. It is also one of three urban orchards maintained by Seedleaf, containing a variety of fruit trees and berry bushes.

"We are trying to create these free u-pick spaces to address the nutritional injustices on the north side of Lexington, where it is a lot easier to get alcohol and processed food than anything fresh, or local, or very healthy," said Ryan Koch, founder and executive director of Seedleaf.

UK College of Agriculture, Food and Environment students and graduates volunteer with Seedleaf. Some have done internships, and as part of a class project, students have devoted a Saturday to work in the gardens.

"We value working with community partners like Seedleaf to strengthen community food systems," said Janet Mullins, UK extension specialist in food and nutrition. "In addition to their work in Fayette County, they provide education through school programs and by participating in extension training programs, and helping people increase access to nutritious foods."

Koch said Seedleaf started out of concern for people and what they were eating, and it tries to make more good food available. On land Seedleaf borrows, he said enough food is produced to sell shares in a community supported agriculture program.

"The real growth edge for us is to be good stewards of the seven pieces of land we

own-six the city gave us, and one Habitat for Humanity deeded to us," Koch said. "This will allow us to do some more community and market gardening."

Louisville Grows Too

Urban agriculture has also taken root in the commonwealth's largest city 80 miles to Lexington's west. Since its founding in 2009, Louisville Grows has collaborated with the city to create 14 community gardens. According to executive director Valerie Magnuson, the nonprofit organization works to grow a just and sustainable community through urban agriculture, urban forestry, and environmental education.

"I think it is essential for people's wellbeing to connect with the land and be involved with their food system in urban environments," said Magnuson.

Louisville Grows manages The People's Garden, a five-acre plot in the Shawnee-Portland neighborhood of Louisville's West End, and the Shippingport Memorial Garden in Portland. A portion of both gardens, plus two more plots, will be part of an urban growers cooperative that Louisville Grows is developing to increase its scale of production. Six growers have signed up already to participate. Fresh vegetables grown at The People's Garden site were sold at the Pic Pac grocery store this past year for the first time. Magnuson said the green beans sold out as fast as they could harvest them.

This spring when volunteers from Louisville Grows start putting new plants in their gardens, they will do so from their very own greenhouses. Last year, the mayor's office donated two greenhouses through their LifeZone project. Each greenhouse is 3,000 square feet and was dismantled and moved to The People's Garden site from Indiana. Some of the transplants grown in the greenhouses are going to be sold in the local Habitat for Humanity ReStore.

"Urban agriculture has really taken off," said Wayne Long, Jefferson County agent for agriculture. "We want to make sure that we are poised to help in any way, and I think we are doing a pretty good job with that."

Long said the extension service, which works closely with metro government to manage 11 community gardens, is looking for publicly owned land in Louisville to turn into a demonstration farm with the focus on education and research.

"We think there is a strong need for a demonstration farm," said Long. "We are hearing from a lot of constituents and stakeholders who want the education component of a demonstration farm to show how you can grow things in an urban setting."



At left, Valerie Magnuson works in The People's Garden in Louisville's West End. This year, two greenhouses donated by the Louisville mayor's office, will help them grow seedlings both for the garden and to sell.



Revitalizing the Urban Ecosystem

Business partners Amanda Fuller and Peter Thiong have an approach that could become a model for the future of urban agriculture in Louisville. Together they purchased a vacant lot in the Portland neighborhood from The Land Bank Authority of Louisville, the agency that holds foreclosed vacant property and makes it available to citizens for redevelopment. Fuller and Thiong plan to produce vegetables, fruits, nuts, beans, herbs, and honey for sale locally. "Every public meeting I have sat in, somebody would say, we have all of these vacant lots, why can't we grow food on some of them?" said Amanda Fuller. "Why not? It's because nobody is buying them and growing food on them."

The lot that Fuller and Thiong purchased for the low, low price of \$50 is one-third of an acre. Fuller, with a master's degree in restoration ecology, hopes this will become a model for what to do with vacant property through the Land Bank.

"We need to think about our whole city as an ecosystem that needs its functions put back in place," said Fuller. "We need to think about the trees breathing and cleaning our air and filtering our water and infiltration in the soil. The things we want to do here are all part of that."

Maybe through the work of Fuller and the others we can begin to make that connection between urban and rural that many believe is missing today.

Above, Amanda Fuller breaks ground in a vacant lot in the Portland neighborhood of Louisville. Purchased for \$50 from the Land Bank Authority of Louisville, Fuller and partner Peter Thiong plan to develop a working farm that will add to the health of the urban ecosystem.

UK's Agricultural Special came rumbling 'round the bend in 1912, and more than 70,000 Kentuckians benefited from its arrival. The train, a "university on wheels," made 108 stops and covered 2,453 miles, extending the college's expertise out into the state. Six cars carried exhibits on all facets of agriculture, including fully equipped dairy and domestic science cars and various livestock. Two cars conveyed 30 specialists who lived and dined onboard. This was two years before the Smith-Lever Act of 1914 organized and partially funded the outreach activities of land-grant universities.

1914 - 1950s

A Century of www.utreach

Congress passed the Smith-Lever Act, establishing the Cooperative Extension Service.

UK hires first home demonstration agents, a precursor to today's family and consumer sciences agents. Of the 17 agents hired, five are African-American.

► World War I rages and Junior Agricultural Club Work expands. This 4-H forerunner's popular slogan: "Food will win the war."

The first four Farm Makers Clubs, involving African-American youth, begin.

- Home demonstration clubs are established. By 1925, clubs in Kentucky total
- 377 with more than 4,000 members.
- Rentucky sends its first four delegates to the second national 4-H club camp in Washington, D.C.

Junior Agricultural Club Work name is changed to Junior 4-H Club Work.

Not just for farm youth anymore. Town kids join 4-H for the first time.

Special efforts are made to involve more black youth. The first 4-H Rural Youth Conference is held at Kentucky State College; 60 youth attend.

- Kentucky Homemaker's Federation (forerunner of the Kentucky Extension Homemakers Association) is founded.
- With the Depression at its worst, Extension programming emphasizes diet and food production, preservation, and storage.
- Extension work focuses on the Flood of 937 1937; home demonstration agents organize and direct the feeding of refugees, clothing distribution, and much more.
- 4-H clubs now in all 120 counties

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- To support the war effort, agricultural and home demonstration agents carry out the "live-at-home" campaign where families agree to produce 75 percent of their own food supply.
- "We got the home (demonstration) agent, and then we got an assistant agent, and then we rolled up our sleeves and went to work. We worked as a team and we could
- serve more people.... We were helping people to help themselves."

-Hugh Thomas Hurst Pulaski County extension agent 1944-1977

- The Corn Derby is created to demonstrate to farmers how good soil management, good stands, and the selection of better varieties can improve their yields.
- With an increase in funds under the
- Bankhead-Flannagan Act, effort is taken to "equalize counties by providing a county agricultural agent, a county home demonstration agent, and sufficient clerical service."

"The coal business during (World War II)

- had been booming, but it was beginning to shut down a lot of small mines. We had a
- lot of people looking for some other source of income. One of the things we did was a big push that we put on for developing cash crops.... That was a time of rapidly growing agricultural enterprises."

—James W. Kidwell Whitley County ag. agent, 1947-1961

- Creation of the Kentucky Development Committee, an interagency committee that
- included UK Cooperative Extension.
- "Our main effort was to try to make local communities and small towns attractive as places to live and work, so we could attract industry into those communities.... Our efforts at inter-agency cooperation I think will pay off for some time in the future."

-Charlie Dixon Extension specialist in community development, 1960s "We set up clinics all over the state, working with a particular family to help them improve their home, improve their farm life, and just an all around improvement for their family living. I think we were very successful in this project."

-Gladys Lickert UK extension specialist in home mgmt. and housing, 1955-1970.

- Extension agronomist Shirley
- **%** Phillips establishes UK as a leader in the no-till movement. Today, approximately 90 million U.S. acres are in no-till production.
- Civil Rights Act of 1964 passes, and Kentucky discontin
- practice of separate activities for black and white youth. Kentucky becomes the first state to send a black delegate to the National 4-H Congress.

Congress funds the Expanded Food and Nutrition Education Program to encourage sound nutritional practices among lowincome families.

"EFNEP was originated to help low income families feed their families more adequately.... I've always felt that this was one of the best things we could do to help lowincome people improve their state in life."

-Isobel Crutchfield Christian County home economics agent, 1959-1986

First "mobile classroom" is devel-

oped for EFNEP. It was equipped with a variety of teaching aids and facilities. Three units are built in different areas of Kentucky between 1971 and the early 1990s.



Friends of Kentucky 4-H, Inc. is created, primarily to increase pri-

1960s - 1980s

vate financial support to 4-H and involve community leaders.

"Volunteer leadership is the basis from which we can conduct extension programs."

- —John Conrad Feltner Asst. extension director for 4-H 1970-1978
- The Secretary of Agriculture ap-
- proves expanded bale marketing of burley tobacco after extensive research, development, and promotion by UK extension specialists. Producers, warehouses, and purchasers save millions of dollars of market preparation and handling cost over the years.

The Integrated Resource Manage-

ment (IRM) concept is introduced into Kentucky. In early 1995, a University of Kentucky Beef IRM coordinating committee develops and implements a statewide Beef

IRM extension program.

An economic crisis, especially impacting farmers, results in extension programs focused on stress management and family living.

- Tobacco specialists in Montgomery County conduct the first tobacco transplant float bed trial, at a time
- when conventional transplant production is experiencing significant labor issues, weed control problems, and the gradual loss of a necessary soil fumigant. This initial work revolutionizes tobacco transplant production.

- Schools are able to use the 4-H Workforce Preparation education Workforce Preparation educational materials in classrooms, because it meets the criteria of the Schoolto-Work Act and Welfare to Work legislation.
- **C** UK home economics extension part-
- Volunteer in Clothing Construction Program, designed to train volunteers to teach programs related to sewing.
- M Kentucky Extension adopts a new
- counties and Kentucky's land-grant universities to help people improve their lives through education that focuses on their issues and needs.
- **4**-H clubs are established at Ft. Knox
- effort to make 4-H available on U.S.
- Home economics extension becomes family and consumer sciences extension.

 - prehensive plans to transition from a tobacco-based farm economy to a
 - more diverse one.

In Kentucky, we were well ahead of the game. Kentucky Cooperative Extension has been out in front ever since.

For a century, Kentuckians have improved their crop yields, their health, their know-how, and their businesses by relying on extension's wellinformed, research-backed outreach programs.

If we were to fill up every page of this magazine, there wouldn't be enough space to list all of UK Cooperative Extension's accomplishments. But here's a selection.

990s - 2014

03

50

2005

2007

20

ners with 4-H to launch the Master

mission: to serve as a link between

🚼 and Ft. Campbell, part of a national Army bases around the world.

Agents begin to facilitate county agricultural development councils that are invested in developing com-

Kentucky 4-H core curriculum is adopted.

The Horse Pasture Evaluation Program begins as part of the UK Equine Initiative. To date, the program has performed 125 evaluations representing more than 20,000 farm acres in 19 counties.

A Science, Engineering and Technology Initiative is implemented in Kentucky 4-H.

 The Community and Economic Development Initiative of Kentucky is established. **CEDIK** consolidates and strengthens extension's former Community and Economic Development program, seeking to engage community members and incorporating the interests and cultures of communities in the development process.

> Plate It Up Kentucky Proud is initiated. The project is designed to promote increased consumption of Kentucky fruits and vegetables.

Applied Master Grazer Program is introduced. Livestock producers get handson field experience in grazing concepts, practices, and techniques.

"I didn't go to college; I basically got my college 'degree' through extension." -Todd Clark Fayette County farmer and graduate of the Applied Master Grazer Program

> COOPERATIVE EXTENSION SERVICE



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Service Runs Deep

In 1935, John Ewing, '33, started as an agriculture agent in Hopkinsville then transferred to Grayson County a year later. There he met Vivian Muster, '36, who was the home agent at the time. The two of them fell in love, and together they began a legacy of service that is still going strong today.

Once they were married, they moved to Green County in 1939. Vivian had to resign her position, because spouses couldn't both work in extension. In 1940, they had a son, Jack, who eventually carried on his parents' work back in Grayson County. Jack Ewing says his mother may have resigned her position, but she couldn't just stop doing extension.

"Mother was always involved in some way," he recalled. "She was always helping Dad, and she was still a very active (Extension) Homemaker. She led classes at the office and kept very busy." Ewing smiles as he tells stories of watching his dad, learning what extension deeply involved for more than 75. was all about.

"Growing up, we were always going with Mom and Dad to people's homes and back and forth to the University of Kentucky campus," he said. "It was sort of a missionary mentality that we had in our lifestyle, and that became the focus I had. Ewing knew he wanted to work in agriculture, he just wasn't quite sure where. Like many farm families back then, the Ewings created their own scholarship program. His father told him he needed to raise enough tobacco to pay for college. When he started his freshman year at UK in 1958, tuition was \$35. After graduation, he went to work for International Harvester.

"I really liked the job, but I was running all over the place," he said. "So when Dr. Ragland (John Ragland, former UK extension professor) called me and suggested I might like to work with some people in Kentucky and see things change, I realized I hadn't been fulfilled in what I was doing. Coincidentally, the agriculture agent job was open in Grayson County." Jack Ewing married Shelby County extension home agent Verda Dorn in the early 1970s. She left her position, but as in the previous generation, the entire family continued their involvement in Cooperative Extension. Of extension's 100 years, the Ewing family has been

Times, They Were A-Changing

By Aimee Nielson

Ewing hit the ground running once he started working in Grayson County. One of the first things on his mind was the massive soil erosion in the county.

"When I got here, I knew we needed to start doing some no-till corn," he said. "Some farmers are hard-headed, and they don't like change." He can say that because he is a farmer too. He never asked anyone to try something he wasn't willing to try himself. Many times, he'd start his own variety trials, and neighbors would drive by to see what he was doing. Eventually they would ask questions.

"I got out there on their farms, drove their tractors and showed them how to do it." he added.

At International Harvester, Ewing had helped develop some no-till equipment. He had also worked with his dad who was very active with no-till developers from UK. Because of his background in soil science. Jack Ewing could recognize people's problems early on and help them find ways to turn it around with the help of soil tests and management practices.

"I figure I've done 30,000 soil samples in my time," he said. "You can drive all over this county and see the results of those tests by looking at the fields of farmers who implemented our recommendations. We've got good quality grass growing here now."

During a volatile time when farmers faced moving away from tobacco and finding other ventures that were just as profitable. Jack helped turn farmers on to better forages and

"Most of those guys doubled their cow numbers after tobacco, and that helped them bring in younger members of the family," he said. "But it wasn't all good change. When I got here, we probably had 126 dairies, and now we're down to seven or eight. Hog production took a hard hit in the 1990s, and now we don't have a single farrow-to-finish operation in this county."

Ewing. beans like Alma.



to adding more cattle. In 1971, he said there were probably about 5,000 head of beef cattle in Grayson County. Today there are more than 25.000.

Familiar Faces

The Shartzer family has had a multigenerational relationship with extension and with the Ewings. Alma Shartzer was an Extension Homemaker with Vivian Ewing back in the late 1930s, and her husband Tom often came to John Ewing for advice. Now her son Jerry and grandson Bradley work with Jack

Alma Shartzer is 94 years young, and she still gardens, waters her son's cattle, cans and even cooks lunch for the family nearly every day. Jerry Shartzer said no one can grow lima

"Back then all most of us knew about canning was water baths." Alma said. "But Vivian gave us lessons on the new pressure cooker." Jerry Shartzer said they've gotten quite a bit of help from extension over the years. He is a fifth generation farmer living on his family's homeplace in a house built with plans from Cooperative Extension. Their farm, built on land from a War of 1812 land grant, has many miles of Rough River frontage.

> (Opposite page) Jack Ewing has extension in his blood. Three generations of his family have served Grayson County as agents. In their 75 years of service, they grew close to generations of Grayson families, such as the Shartzers, (this page, I-r) Bradley, Alma, and Jerry Shartzer and Jerry's sister, Jo Escue.

Back in the 1980s, Jack Ewing worked with the Shartzers to establish some of the first poultry houses in Grayson County. Now they use poultry litter to fertilize the crops.

"We've worked with Jack guite a bit," Jerry Shartzer said. "I bet those ladies in the Extension office hate to see me coming with my boxes of samples. But the results of all of those tests took us from running a ton of hav per acre to about three tons per acre, and we've doubled the amount of cattle. Daddy would be amazed if he could see the tons we turn out now, and that we don't buy fertilizer." Jerry and Bradley Shartzer are grateful to have extension ready to help.

"When I run into a stump. I have Jack on speed dial," Jerry said. "You realize how important extension has been to generations of farmers. We can be hard headed, but a good meal and a good talk with the ag agent, and we'll soak up a little bit and admit we're still learning. My dad once said if you know all about farming, it's time for you to quit."

The Next Generation

Out of all his children. Jack Ewing never thought his voungest would be the one to carry the Extension torch. Kindra Ewing Jones didn't think so either.

"We all thought my oldest brother Justin would be the extension agent," she laughed. "I got a bachelor's in biology from Lindsey Wilson College and then went to UK for a master's degree in turf science."

But about a year into her turf science degree, Jones called her dad and told him she thought she was supposed to be an extension agent.

"I saw what my dad did all my life, but there was still so much about it I didn't know," she said. "I needed to know the details, and when I did. I knew I wanted to do it."

Growing up, Jones went along on farm visits with her dad just like Jack Ewing had done with his own father. She works cattle with him at home. Back when tobacco growers were just starting to use float beds. Jack would send his daughter out to farms to show them how to do it. In 2006, Jones noticed the 4-H agent position

was open in Grayson County. After she started the job in 2007, she worried what people would think.

"I was a little worried at first that people would think I got the job because of my dad," she admitted. "But it wasn't like that at all. I proved myself. I feel very fortunate to be working with my dad. We have a very unique relationship." While Jones was in high school, her mom was ill with cancer, so she and her father took care of her until she passed away. Jones said that really created a special bond with her father. Jack Ewing choked up when he talked about working with his daughter.

"She's from the same tree as me, and she has a really strong interest in youth development," he said. "We work well together, and at the office it's a totally professional relationship."

> Jack Ewing's researchbased information has helped Bradley Shartzer and his father go from running a ton of hay per acre to about three tons per acre.





(Above) Jack Ewing says he and his daughter. Kindra Ewing Jones, work well together. "She is from the same tree as me." (Top) Kindra Ewing Jones introduces Grayson County 4-H'ers to the importance of stream health.

nutrition.

Common Threads

It's not uncommon for families to pass extension down from generation to generation. Kentucky has several families with those ties. UK Cooperative Extension Director Jimmy Henning is such a legacy. His father, Ron Henning, was an agent and the state peanut extension specialist in Georgia. Henning said going out with his father allowed him to meet people he now considers

Much of what Jones does to reach youth are not traditional 4-H activities. They still have a sewing club and a cooking club, but they don't have a big livestock program. She organizes three 5K races in the county each year. With in-school programming, they are able to reach nearly 2,000 youth through programs like health and

role models. He knew early on he wanted to work in extension.

"I knew what I wanted to do when I got out of college, before I even picked a major," he said. "I wanted to be extension faculty, and I didn't do anything that didn't get me there." The senior Henning is now retired and living on the family farm in Oklahoma. Although he's not officially working in extension anymore, Jimmy said he's still the go-to-guy.

"Even after all this time, I can still get on the phone with my dad and talk for hours about the philosophy of extension," he said. "That's pretty special. It just creates more things that we have in common the older we get."

Henning went on to explain that it's not always a blood tie that keeps extension running strong through the generations.

"I think it's really a land-grant thing too," he said. "It's fairly prevalent for faculty and staff to reach out and find young people who they want to mentor and bring along in extension. We use the family analogy a lot here in the college. Everyone needs encouragement and a hand up."

Whether it's parents passing extension down to their children, or faculty and staff bringing up someone who wasn't raised in extension, for more than 100 years the Cooperative Extension Service has attracted people for one main purpose—to serve others in a way that makes their lives better. 🛠

Case by Case: The GMO Question By Katie Pratt

Bernard Peterson, his two brothers, and nephew are ninth and 10th generation farmers. They pride themselves on sustainability, innovation, and productivity. In the heart of **Kentucky bourbon** country, Peterson **Farms produces** 14,000 acres of non-GMO soybeans, wheat and canola. and both non-GMO and GMO corn.

GMOs. Genetically modified organisms. The very mention of this technology might cause praise or picketing, eye rolls or enthusiasm, but one thing is certain; GMO crops have changed American agricultural production since they were first introduced in the mid-1990s. Currently eight crops have GMO varieties available: corn (field and sweet), soybeans, canola, papaya, cotton, alfalfa, sugar beets, and squash.

The Petersons transport much of their corn and wheat to area distilleries, many of which now accept GMO crops after years of only using non-GMOs. Their soybeans are sold to international markets. Market demand is the biggest factor in their decision on what to grow.

"Our history of GMO usage follows the requirements the bourbon industry has put on growers over the years," Peterson said. "In the global market, there's quite a demand for non-GMO crops."

For him, the main production differences between the two are weed and insect control.

"The level of management to grow non-GMO crops is a little higher, as they require more attention and they cost more per bushel to produce. But historically, we've thought it was worthwhile to do," Peterson said.

Farming Before GMOs

Before genetically engineered crops became available, producers often needed to make several herbicide



applications to control weeds and regularly scout and treat for insect pests or suffer losses.

"We didn't have any herbicides that basically controlled everything, so we had to mix things together to get the full spectrum of weed control," said Mike Barrett, UKAg weeds scientist. "Typically, we'd use soil-active materials at planting, and oftentimes after the crop was up, we'd come back and apply other herbicides to tackle weeds that weren't controlled."

This system had problems, time being one of them. Producers had to apply pre-emergent herbicides to the soil surface while they were also planting. These herbicides required rainfall to work; if an area didn't receive timely rains, farmers could have a major weed problem. In addition, post-emergence herbicides only had a short window in which they were effective.

Then, just prior to the introduction of GMO crops, populations of weeds developed resistance to commonly used herbicides called ALS inhibitors, which hinder an enzyme critical to weed growth.

The first GMO crops, glyphosateresistant corn and soybeans, came on the market in the mid-1990s. Farmers readily adopted both, because they could plant faster, scout less, use only one herbicide, and control the ALS inhibitor-resistant weeds. According to the National Agricultural Statistics Service's Acreage Reports, national acreage in genetically engineered corn increased from 25 percent in 2000 to 90 percent in 2013. During the same



time frame, genetically engineered soybean acreage jumped from 54 percent to 93 percent.

"Food production is extremely risky," said Chad Lee, UK grain crops specialist. "Farmers are always looking for ways to minimize that risk, and GMOs help us do that."

Weeds resistant to herbicides pose major concerns in the agricultural community. For Peterson, the widely used cropping system in Kentucky that produces three crops in two years by rotating corn, soybeans, and wheat has played a big role in helping him with weed control. He has had very few problems with resistant weeds.

"The chemistry changes every year in our crop rotation, so the chances for chemicalresistant weeds are less. It's not nonexistent, but it is less," he said.

The first glyphosate-resistant weed in Kentucky, marestail, appeared in 2001 in Trigg County. Growers have struggled to control it, and it is now endemic to the state.

In 2010 and 2011, bottomland growers along the Ohio and Mississippi rivers observed glyphosate resistance in two pigweeds, waterhemp and Palmer amaranth. These weeds—sometimes termed "super weeds"—have spread from their river bottom origins to much of Western Kentucky within just a few years. Growers turned to UK specialists for help.

"We have had both weeds for years, but they weren't found in large numbers until they began developing glyphosate resistance," said Jim Martin, UK weeds scientist.

"There are populations of waterhemp in other states that are resistant to four different types of herbicides," Barrett said. "In the past when we had a resistant weed, we were able to adapt and control it, but these seem to be different kinds of animals, because they have this propensity to develop resistance to different types of herbicides by mixing up their genetics pretty auickly."

They also require intensive scouting, as Palmer amaranth has the ability to grow 2 inches in a single day and must be controlled by the time it reaches 3 inches tall.

"Farmers need to diversify their weed management system," Barrett said. "We encourage them to use combinations of herbicides together, rotate the herbicides they use, rotate their crops, use mechanical weed control when appropriate, scout fields, and control a resistant weed before it sets seed."

Some producers have started using tillage as a means of weed control or, in the case of some cotton farmers in the South, deep tillage to bury the weed seed and reduce populations of Palmer amaranth.

"Probably the biggest concern is if we have to move away from reduced tillage systems. We'll lose the soil saving advantages that they give us," Barrett said.

Two Faces of Bt

Soon after developing glyphosatetolerant crops, seed companies began to release corn containing traits from *Bacillus thuringiensis* (Bt), a naturally occurring bacterium in the soil that disrupts the gut of some types of immature insects. Bt is the basis for a variety of natural insecticides that are widely used in crop production, but there is a difference between the insecticide and the GMO crop.

"When sprayed on crops as a natural insecticide, Bt will kill what's there then degrade over time, whereas genetically modified crops are expressing Bt all the time and might be expressing multiple forms of it," said Mark Williams, UK associate professor of horticulture.

Producers using the natural insecticide often spray it more







"Both GMO and non-GMO cropping practices that farmers decide to use based on their marketing scheme, and either one will work."

-Bernard Peterson

than once, and the product has the potential to drift onto other crops.

Many farmers quickly began using the Bt GMO technology, which primarily targets the systems are cultural European corn borer and the corn rootworm, but also controls some insects such as the southwestern corn borer, a major pest in Western Kentucky in the 1990s.

"Prior to Bt corn, both European corn borer and corn rootworm were considered billion dollar pests in the United States, meaning yield losses and treatment costs surpassed \$1 billion for each insect," said Ric Bessin, UK extension entomologist. "Research studies have shown that European corn borer populations have declined since the development of Bt corn."

The GMO technology has helped growers lower the amount of insecticide applications and reduced the amount of scouting for these pests. Studies have shown that Bt corn has little impact on beneficial insects that provide biological control against these pests.

"GMOs are tools that can advance integrated pest management, but also require specific stewardship practices to increase their sustainability and maximize their value to producers." Bessin said. "I think it is a mistake to think that GMOs replace IPM or best management practices."

The Petersons were early adopters of IPM and continue to use the program to control insects. While at times, he may have had to make more herbicide or insecticide applications to his crops. Bernard Peterson credits the program with helping him be judicious with his chemical applications.

"We do not treat every non-GMO crop every year for certain insects and weeds. They are only treated when they get over certain thresholds," he said.

Corn rootworm is beginning to show GMO resistance in states north of Kentucky. Growers are combating these insects by using crops with stacked GMO traits, meaning those that contain more than one insecticide. They are combining these traits in some cases with a soil-applied insecticide.

In addition to resistant insects, Bt corn seed is more expensive than non-Bt seed.

"In Kentucky, the risk for corn rootworm pressure is very low if growers are rotating their crops. European corn borer is here every year, but its populations vary in size annually and are not predictable," Bessin said. "There is a potential for people to save money by selecting GMOs containing insecticides for pests they are concerned about. There is no advantage to planting seed with the Bt gene if these pests are absent, and growers won't recover the added seed costs."

Because GMOs have allowed for fewer chemical applications and reduced scouting. farmers have been able to increase their grain crop acreage.

"It allowed farmers to really manage bigger acreages. Here, we were pretty much already using a no-till system, but in a lot of places it allowed for the adoption of no-till," Barrett said. "Because they didn't have to slow down at planting, they could cover a lot of ground fast with the treatments. If the rain kept them off the fields, they weren't really in trouble."

While Bernard Peterson is unsure what his future usage of GMOs will be, he plans on his farm being around for generations to come.

"Most farmers want to improve the land and make things better than they were," Peterson said. "Both GMO and non-GMO cropping systems are cultural practices that farmers decide to use based on their marketing scheme, and either one will work." 🛠

Cooperative Extension Service Annual Report

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Program Emphasis

(as defined by number of contacts 7,604,420)



Kentucky 4-H – 237,455 participants with 114,000 youth in community clubs, SPIN clubs, and school clubs.



2013 Kentucky Cooperative Extension Service College of Agriculture, Food and Environment

Looking Back, Looking Forward

Milestones are worth celebrating. May 8 is the hundred-year anniversary of the signing of the Smith-Lever Act, the legislation that set up the national Cooperative Extension Service. Coming 52 years after the founding of the land-grant university system, it was an acknowledgement that translating relevant research into practical action required a structured system to build trust and educate.

The centennial is a time to celebrate our significant accomplishments in agriculture, natural resources, family and consumer science, 4-H youth development, and community and economic development. Each year, UK extension professionals make more than 7 million contacts and conduct innumerable classes and workshops to improve the lives of Kentuckians.

It is also a time to reflect on the values that got us to this hundredth year, and to envision what extension might look like in the future. In 2012, extension's Creating Our Future task force identified three core values: our research base, our countybased programming, and marketing. I am happy to say that those core values are fully supported by the college and by Dean Nancy Cox.

and give us several insights into our ability to produce meaningful change



Extension provides practical education to help people, businesses, and communities build a better future.

The Cooperative Extension Service

Improves environmental quality by educating Kentuckians about methods to help preserve natural resources. A total of 15,534 individuals adopted extensionrecommended practices that insure safe water. More than 7,000 reported an increase in knowledge, opinions, skills, or aspirations related to climate change.

Assists Kentuckians in attaining sustainability of agricultural and economic development systems that are globally competitive. As a result of extension-related programming, a total of 12,696 residents reported an increased awareness of sustainable agriculture practices. Of those participants, approximately two-thirds (8,513) implemented best practices.

Cooperative Extension Service Annual Report

These core values are true to our past future. Our research base determines our in Kentucky's farms, families, kids, and communities. The emphasis on strong county programs means that we have to make the investment to build relationships and to develop programs and solutions that are directly relevant to our clientele.

This critically important interaction driven by our county councils and robust discussions, replicated hundreds of times each year, identifies needs, evaluates programs and provides needed feedback for the future direction for problemsolving research at the university and especially in the College of Agriculture, Food and Environment.

Looking forward, Cooperative Extension's role in the college and the university is important and needed now, just as it was 100 years ago. The products, the methods and the people may change, but not our mission to make a difference. Happy Centennial, Cooperative Extension!

-Jimmy C. Henning

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EXTENDING KNOWLEDG **CHANGING LIVES**

> Works to assist producers in discovering opportunities to sustain the viability of family farms. In 2013, more than 8,600 farmers reported an increase in profits as a result of adopting one or more practices recommended by extension.

Agriculture and the Environment

Cooperative Extension Service Annual Report

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Extension Builds Strong Bodies

The health of the commonwealth depends on the health of its people. UK Cooperative Extension, with a multitude of research-based programs and passionate agents, is determined to make a healthy difference in Kentucky's future. Across the state, agents are giving their constituents the tools to build strong bodies, inside and out, physically and mentally.

The Beauty of Exercise

The natural beauty of the Daniel Boone National Forest fills McCreary County, yet many county residents don't spend a lot of time, if any, exploring the natural beauty from the more than 200 miles of local hiking trails. So extension agent Greg Whitis, who serves in the capacity of both ag and natural resources and 4-H youth development, started a hiking program in 2006 in conjunction with the local middle school. The intent in introducing the students to sensory-rich nature was to encourage the kids to be more physically active, as well as help to stimulate the neurons that create concepts and ideas in their developing brains. Today, the program has expanded to include adults and young people. In 2013, 88 people, both locals and visitors from six

other states, participated in the program. Whitis led an average of 22 people on 11 separate hikes of about 5 miles each. The results? Everyone involved reported that they are now in better physical condition since starting the hiking program, and 79 percent reported they have increased the time they spend outdoors due to the program.

SPARK the Fun

Out west in Todd County, Lee Ann McCuiston might be considered a drill sergeant—if the kids weren't enjoying themselves so much. McCuiston, 4-H youth development agent, partners with the 21st Century Learning Center director and the Youth Service Center coordinator in Todd County to provide circuit training for students every Thursday after school. They stretch and go through a series of strength-training exercises known as circuits. That is followed by a nutrition lesson. Rounding out the 50-minute sessions are fun activities pulled from extension's SPARK curriculum. SPARK stands for Sports, Play, and Active Recreation for Kids. It's an opportunity for the youngsters to build strength and endurance while making some favorable changes in body composition. Does it

work? The students report they are eating better and they're exercising at home. When it comes to motivation, sometimes all it takes is a spark.

Wellness on the Job

A major transportation company approached Floyd County family and consumer sciences agent Theresa Scott to start a health and wellness program for its employees. The original focus was on weight loss and management, and for that Scott relied on the curriculum from the successful extension program, Weight: The Reality Series. But as she and her summer intern, now Magoffin County FCS agent Andrea Johnson, worked with participants one-on-one over six months, they began to tailor the program to meet participants' individual needs. For people with diabetes and other health problems she pulled from extension's diabetes curriculum and numerous publications. The length of the program helped make any behavior changes permanent. Scott is satisfied. "They really made a lot of changes that will help their health," she said.

UK Cooperative Extension isn't taking Kentucky's reputation for poor health standing still.

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Extension Means Business

Entrepreneurs mean business and business means a strong economy. That's why UK Cooperative Extension focuses many of its resources on growing successful entrepreneurs from the ground up.

Farmers are Entrepreneurs

Farming might not be the first thing that comes to mind when people think of traditional entrepreneurial endeavors, but agriculture and natural resources agents know better. In the Buffalo Trace counties of Bracken, Fleming, Lewis, Mason, and Robertson, ANR agents saw more women taking on farm management roles. David Appleman in Bracken County, Tad Campbell in Mason County, former agent Jeff Smith in Fleming County, and Philip Knopka in Lewis County coordinated their efforts and began offering women-only workshops and tours, bringing in female presenters whenever they could. The 20 to 50 women participants from all five Buffalo Trace counties have learned things such as tractor maintenance, weed control, hay quality, and finances. They also visited area farms and agribusinesses to learn different options for their own operations—all in an atmosphere conducive to asking questions.

For beginning farmers and those who are thinking about getting into farmingmale or female-KyFarmStart offers a two-year, whole-farm management education program through local extension offices. The first KyFarmStart class began in 2010 in four locations: Western Kentucky, Somerset, northern Bluegrass and Central Kentucky. Today the program boasts more than 375 graduates from 40 counties.

Impactful Coaching

The Kentucky Entrepreneurial Coaches Institute has made a big impact on the state in the nine years it's been in existence. The program trains coachesmany of whom are extension agents-in 41 tobacco-dependent counties in eastern and southern Kentucky. In Butler County, agriculture and natural resources agent Greg Drake II, 4-H youth development agent Lloyd Saylor, and two volunteer leaders are graduates of KECI. The four people, working together as a team, have coached 20 businesses using their vast resource of extension materials. Together with the Butler County Community Advisory Committee, the Mammoth Cave Resource Conservation and Development Council, Morgantown city

The Cooperative Extension Service

Promoted physical activity through the implementation of 551 environmental and recreational resources (walking trails, bike paths, etc.).

Reached over 154,090 children and youth through extension programs that encourage the consumption of healthy foods. Over 61,000 reported selecting and eating healthier food options.

Increased the knowledge, opinions, skills, or aspirations of 133,794 individuals regarding lifestyle changes that improve personal health. A total of 53,752, or 40 percent, made lifestyle changes such as dieting and exercising for the purpose of improving their health. More than 35,000 reported making changes through healthy home practices and managing stressors.

Offered \$15,000 in grant funds to help support health coalitions that aim to improve access to healthcare for rural Kentuckians.

Healthy Living

The Cooperative Extension Service

Engaged 237,455 youth participants this year, with 114,000 consistently participating in community clubs, project clubs, and school clubs.

Emphasized the importance of building and strengthening relationships, with 17,477 individuals reporting changes in knowledge and skills related to parenting or personal connections.

Offered opportunities for Kentucky through the Managing in Tough Times initiative. Nearly 20,000 Kentuckians countries.

council, and the Butler County Fiscal Court, they created the Morgantown/ Butler County small business incubator program. The program offers new business owners support that includes coaching and assistance with costs associated with opening a business. So far, three new businesses have been helped by the incubator program.

The Sooner, the Better

Get them early and teach them young. That could very well be the goal behind the 4-H Means Business Club and the Be the E(ntrepreneur) program. In Nelson County, seven youth-owned businesses have developed after 4-H youth development agent Danielle Hutchins started a Micro Business Alliance Youth Entrepreneur Club. She uses Be the E curriculum, partners with local businesses, and arranges for presentations from local experts. After developing business plans and sales opportunities in both the local and state arenas, club members have reported more than \$3,500 in income.

Studies have shown that small businesses are responsible for the creation of most of the new jobs in the country. More jobs strengthen the economy. That's why Cooperative Extension means business.

residents to experience economic recovery became more aware of ways to manage and address current economic events facing their families, farming operations, and businesses as result of participating in this program. Last year, the program's website had visitors from 47 states and 26

Assisted 20,993 young people in gaining confidence through the speeches and demonstrations program. While 20,762 reported making consistent improvements in public speaking, 4,489 successfully used these communications skills to become leaders in 4-H or other organizations.

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2013 Kentucky Cooperative Extension Service College of Agriculture, Food and Environment

Important Lessons

Our schools want fresh foods for their students. Kentuckians in general want access to fresh affordable foods. Many children don't even know where their food comes from. And farmers need to open up more local markets for their products. Extension's work with farm to school programs provides an answer to each of those issues.

Grow It, Kentucky!

Where some saw 10 acres of idle farmland next to the Owsley County elementary and high schools, a group of UK students saw the opportunity to start a farm-to-school project. They invited Owsley County extension and other local agencies to join them in Homegrown Kentucky. The program's mission was to teach students about where food comes from and how it is grown, to provide fresh, nutritional food for the school cafeteria, and to create a community garden for the 15 families who were interested in participating. Agriculture and natural resources agent Paul Sizemore held a mandatory workshop to teach the basics of growing and marketing

vegetables to students and adults who signed up for the project.

From that first growing season came approximately 4,000 pounds of vegetables. The school cafeteria used 80 percent of the harvest. Students sold the rest at the farmers market, earning income for next year's supplies. The 2014 garden is on track to be even bigger, with more students and nearly twice the families eagerly looking forward to participating.

Let's Salsa!

In Boone County, people affectionately call agriculture and natural resources agent Jerry Brown's farm-to-school gardening program The Salsa Project. It's a good name, considering that todate \$40,000 worth of salsa has been grown, processed, and sold. In a oneacre field located on extension property, students in the Boone County Summer Bridge program and adult volunteers painstakingly cared for 1,200 tomato plants and 800 pepper plants. The experience taught the young people the ins and outs of food production, from land selection and preparation, through soil testing, fertilizers, plasticulture, drip irrigation, weeding, and harvest, on to food processing and marketing. The money they earned will go back into this coming year's garden as well as fund the bridge program. But more importantly, the lessons they learned will stay with them throughout their lives.

Cooperate to Grow!

Amanda Sears, horticulture agent in Madison County, recognized that the farm-to-school program in her county needed to be updated due to changes in state and federal regulations, so she held an open forum for producers who were interested in selling their produce to the schools. Out of that meeting grew an idea: Why compete with each other? If farmers could place their bids as one, they could all profit. A grower cooperative was formed. Last year, seven growers presented bids to the Madison County school board. They continue to meet regularly to set prices by checking auction and wholesale dealer prices.

Farm-to-school— another of Kentucky Cooperative Extension's important lessons.

WE GROW... tomorrow's leaders

"I could sit here all day telling you what I think 4-H can do for youth."

And Terence Clemons knows. A former 4-H'er himself, he is passionate about his work as the 4-H youth development agent in Bath County. "4-H empowers kids to shoot for their dreams, to be someone who stands for something and who gives back to the community."

In Kentucky, there are nearly 240,000 youth involved in 4-H-young people who master skills through positive relationships with adult mentors and who have lots of opportunities to practice service and to see themselves as valuable participants in their communities. Led by skilled and enthusiastic extension agents and volunteers, 4-H'ers are on the road to rewarding futures. Kentucky will grow stronger because of them.

UK Cooperative Extension: Extending knowledge. Changing lives.

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College of Agriculture, Food and Environment

The Cooperative Extension Service

Engaged 426,537 volunteers in the planning, implementation and evaluation of meaningful programs across the commonwealth. This, in turn, has contributed 1,087,076 volunteer hours.

Generated/leveraged over \$10 million in grants and resources for counties throughout Kentucky. Provided 15,905 youth with opportunities to impact their community through service projects. A total of 702 held leadership and/or advisory positions on community boards last year. Educated clientele about tourism/ agritourism. A total of 3,764 people reported an increase in their knowledge of tourism, which resulted in an increase in income for 178 individuals.

Leadership and Economic Opportunities



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Change Service Requested



Despite a hard winter, spring cannot be denied. A redbud blooms in the Bluegrass.