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ON THE COVER: An unnamed county agent (with hat and tie) visits with clients in this photo from the 1940s. This year, the Cooperative Extension Service celebrated the centennial of its founding.
On May 8, 1914, President Woodrow Wilson signed a Congressional act to create, in his words, “one of the most significant and far-reaching measures for the education of adults ever adopted by the government.” The law, known as the Smith-Lever Act, created a national agricultural extension service — an action that would help transform farming in America and rural Arkansas. In 2014, while some of our methods have changed, our core mission remains the same — to continue helping our neighbors improve how they live for this generation and the ones to come.

The Arkansas Biosciences Institute and the Arkansas Food Innovation plant are just two of the ways the University of Arkansas System Division of Agriculture is accomplishing that mission. The Arkansas Biosciences Institute uses settlement funds from a lawsuit against tobacco companies to invest in the health of Arkansas’ citizens — research from the program addresses how agriculture and the food system can contribute to our health. Meanwhile, Arkansas Food Innovation helps turn culinary ideas into commercial realities. With a certified manufacturing facility, and expertise in labeling and marketing, AFI offers an affordable option to new entrepreneurs interested in starting food businesses.

The Arkansas Variety Testing Program, designed to provide growers with the most accurate and unbiased information about the performance of public and private crop varieties as quickly as possible, is another way we’re improving the lives — and livelihoods — of Arkansans. Growers trust Division recommendations based on results of the variety testing, and if the record yields of the last few years are any indication, the recommendations are working! Matt Miles, who grew a record-breaking 107.63 bushels of soybeans per acre in 2013, credits the Division in part for his success. “The Cooperative Extension Service is a major player not only in the 100-bushel results, but in almost every aspect of my farming operation,” Miles said.

Whether you’re interested in farming best practices, the latest on food safety or information on starting a new business, all of our best recommendations are now available — and easy to find — at the new Cooperative Extension website: www.uaex.edu. Featuring improved navigation, a better search appliance and responsive design, the revamped site makes it simple to find the answers you need.

At the Division of Agriculture, we look forward to delivering practical knowledge backed by leading-edge research for the next 100 years!
Gills named 2013 Arkansas Farm Family of the Year

A forward-looking family from Desha County has been named the Arkansas Farm Family of the Year. The Gill family, Andy and Shannon, along with their son Andrew and daughter Madeline, have a 3,200-acre corn and soybean operation at McGehee.

“They are a well-deserving family,” said Wes Kirkpatrick, Desha County extension staff chair for the University of Arkansas System Division of Agriculture. “They not only represented Desha County but also the entire state of Arkansas well.”

The Gills have worked with the Division of Agriculture, participating in crop verification and variety trials, and have supported university activities for years, Kirkpatrick said.

Andy Gill grew up working on the farm for his father, and uncle Doyle Sims, who helped him rent 265 acres to get started on his own. Over time, he added acres to his operation. Gill improved farm efficiency by placing drop pipes for drainage and installing three tailwater recovery systems to capture surface water for irrigation. He also takes part in USDA conservation programs.

“They understand what it means to protect the environment and the natural resources used in growing their crops,” said Andy Guffey, coordinator of the Arkansas Farm Family of the Year program. “This father-son team is a prime model of a hard-working, successful farm family.”

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Public Policy Center tackles tough public water issues

The tension between landowner rights and the need to protect a public water supply is one that is increasingly played out around Arkansas and the rest of the country as populations expand and water resources dwindle. For nearly six months, the Public Policy Center of the University of Arkansas System Division of Agriculture facilitated a process to create a task force to review the Lake Maumelle Watershed Zoning Ordinance.

“Our task was to keep the stakeholder discussions civil and focused,” said Tom Riley, center director. Keeping in mind all the various views and uses of Lake Maumelle and its watershed, “their overall focus was to make the existing ordinance a better, more broadly accepted product.” At time of publication, the recommendations for a revised ordinance were under review by the Pulaski County Quorum Court.

Another of the center’s tasks is developing and disseminating fact sheets about ballot issues. Each fact sheet is produced and reviewed by experts from the Cooperative Extension Service and the UALR Bowen Law School to ensure they accurately represent the pros and cons of each issue. The first ballot issue fact sheets, created for the 2012 election cycle, were cited by media outlets and others as unbiased sources of information for voters.
The University of Arkansas System Division of Agriculture has released *Soils of Arkansas*, a 136-page book with maps, photos and commentary based on 50 years of soil surveys across the state. The Division published the book through a cooperative agreement with the Natural Resources Conservation Service, an agency of the U.S. Department of Agriculture.

“This publication is meant to fill some of the knowledge gaps regarding soil by highlighting the soil and other resources of Arkansas,” said Kristofer Brye, one of the book’s four editors. Brye is professor of applied soil physics and pedology in the Division’s Department of Crop, Soil and Environmental Sciences.

The book’s other editors are Edgar Mersiovsky, a senior regional soil scientist with the NRCS in Little Rock; Luis Hernandez, NRCS soil survey regional director for several northeastern states, and Larry B. Ward, a retired soil correlation specialist with NRCS and a registered professional soil classifier in Arkansas.

“There are numerous prominent industries in Arkansas that heavily rely on the soil resources in the state, namely production agriculture, timber and tourism,” Brye said. *Soils of Arkansas* was conceived to provide a wide audience — from policy makers to natural resource planners to educators to students to the citizens of Arkansas and even to visiting tourists — with a basic exposure to Arkansas’ soil resources.”

Much of the book includes information about each of the state’s 11 Major Land Resource Areas, geographic areas comprised of similar geologic patterns as determined by NRCS. Photos of soil series from each of the areas depict characteristics explained in accompanying soil profile descriptions.

Copies of the book can be obtained by contacting Brye at khyre@uark.edu or (479) 575-5742, or Mersiovsky at edgar.mersiovsky@ar.usda.gov or (501) 301-3163. ■
Arkansas farmers can’t be blamed if they seemed optimistic going into the 2014 growing season, having set records in five crops in 2013 according to the National Agricultural Statistics Service. The final production estimates for Arkansas state average yields — all new records — show corn at 187 bushels per acre, sorghum at 102 bushels per acre, rice at 168 bushels per acre, soybeans at 43.5 bushels per acre and cotton at 1,149 pounds per acre.

It’s the second straight year for record state average yields in corn, rice and soybeans for Arkansas. While excellent weather contributed to these records, University of Arkansas System Division of Agriculture research and extension programs have provided many critical tools such as new varieties, soil fertility, best management practices and pest management guidelines that allow growers to really take advantage of a “good year” and maximize yields. These tools help our growers produce normal yields in “bad” years, assuring sustainability of production.

And for soybeans, 2013 was more than just a record. It was a landmark year.

In August, a Dumas soybean grower became the first Arkansas farmer to break the 100-bushel per acre mark — and it all came down to a fraction of a bushel.

“It was really, really close,” Nelson Crow said. Crow’s yield from his 5.433-acre block was certified at 100.82 bushels per acre.

By comparison, the statewide average yield in 2012 was 43 bushels per acre. That average yield has steadily climbed since 2000, when the average yield for Arkansas was 25.5 bushels per acre.
Record Yields

CORN: 187 BUSHELS PER ACRE

SORGHUM: 102 BUSHELS PER ACRE

RICE: 168 BUSHELS PER ACRE

SOYBEANS: 43.5 BUSHELS PER ACRE

COTTON: 1,149 POUNDS PER ACRE

Three different soybean fields produced over a landmark 100- BUSHELS PER ACRE

The Cooperative Extension Service is a major player in almost every aspect of my farming operation.

— Matt Miles, Desha County 107.63 bu/a soybean grower

UPWARD TREND

For years, achieving 100 bushels per acre seemed like landing on the moon. About five years ago, the Arkansas Soybean Association asked the Arkansas Soybean Promotion Board to fund an incentive program that has become the Race for 100, said Lanny Ashlock, a former extension soybean agronomist who is now a project manager for the Arkansas Soybean Promotion Board. The producer that reaches 100 bushels per acre could win a $50,000 prize, but if there are multiple producers with 100-plus bushels, the amount would be divided among them.

Jeremy Ross, extension soybean agronomist for the Division of Agriculture, said he was surprised the magic yield number hadn’t been achieved before. “We’ve been close the last several years. We’ve had yields in the upper 80s and upper 90s. The potential was there and the stars lined up just right — the right environmental conditions, planted in the right field at the right time.”

Hitting the 100-bushel landmark was part of a larger trend in the past two decades that swept in many factors. “Fifteen to 20 years ago, soybeans were kind of a stepchild,” Ross said. Since then, weaker cotton and rice prices, stronger bean prices and improved bean genetics encouraged growers to commit to more intensive management for soybeans and improved yields.

‘A PERFECT YEAR’

“It’s been a perfect year for soybeans. I figured the 100-bushels would be broken this year. I didn’t know it would be me,” Crow said.

Two weeks after Crow, a McGehee farming family shattered the mark with 107.63 bushels per acre.

Matt and Sherri Kay Miles’
THREE WINNERS — From left, Matt Miles, Nelson Crow and Eddie Tackett pose with Lanny Ashlock after fielding questions from fellow producers on achieving the goal of 100 bushels per acre in Arkansas. They were part of the program at the Tri-State Soybean Forum in Dumas on Jan. 3. The three were named winners in the Race for 100.

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yield was verified by an all-extension service team of Wes Kirkpatrick, Desha County extension staff chair; Les Walz, Cleveland County extension staff chair; and James Mahan, Arkansas County extension agent for the Division of Agriculture.

After Nelson Crow’s yield was verified Aug. 30, Kirkpatrick said he had a feeling there were more fields with big numbers waiting to be cut.

“I’m not really surprised. When we were at the field watching the grain go into the combine and then going from the combine in to the grain trailer … we were pretty sure we were going to hit it,” he said.

Then came the Miles weigh-in at an elevator at Jerome.

“Everyone was on pins and needles at the elevator,” Kirkpatrick said. Miles, who had to stay at the farm to finish cutting the crop, “called every 15 minutes wondering what it was. He was so nervous. He couldn’t stand it.”

Miles said later that he didn’t get to the record alone.

“The Cooperative Extension Service is a major player not only in the 100-bushel results, but in almost every aspect of my farming operation,” he said.

Eddie Tackett of Pope County became the third to break the barrier and the first outside of southeastern Arkansas.

“This little field has got 204-bushel rice, 275-bushel corn and now it’s been in the soybean yield contest every year,” Tackett said. “We’re blessed with some good dirt up there.”

100-BUSHEL FEVER

Gus Wilson, Chicot County extension staff chair for the Division of Agriculture, has been involved in verifying more than a dozen fields in his and neighboring counties — with more to come.

“It’s just wild,” he said back in September, adding that “we’ve got people who aren’t even in the contest who want us to come out and verify just for the bragging rights.”

“We’ve got a lot of growers who have been working hard for this goal for some time,” Ashlock said. “We knew you had to have the right production environment for this to happen. It happened this year and it paid off for these growers.”

2014 ESTIMATES

According to NASS, Arkansas farmers planned to plant 3.35 million acres for 2014, compared to 3.26 million in 2013. Cotton, rice and sorghum growers also said they planned to plant more acres:

• Cotton – The estimate for 2014 is 340,000 acres, up from last year’s 310,000.
• Rice – The estimates for rice clocked in at 1.521 million acres, up from 1.076 million acres in 2013.
• Sorghum – The estimate for Arkansas was 140,000 acres, up from 130,000 in 2013.

Corn, a hot crop in 2012 and 2013, was seeing an estimated acreage decline to 600,000 acres, compared with the 855,000 harvested in 2013. ■
Delivering practical knowledge backed by leading-edge research for more than 100 years!

BY MARY HIGHTOWER

One-hundred years ago, America was still three years away from entering The Great War; Ty Cobb was hitting .368 and Charlie Chaplin’s first movie, “Making a Living,” was released.

At the time, Arkansas was home to about 1.5 million people, most of them involved in farming.

“Like most of the United States, agriculture was a part of everyday life, whether it was subsistence farming or farming to sell commodities to a growing nation,” said Tony Windham, associate vice president-extension for the University of Arkansas System Division of Agriculture.

1914 was an important year for agriculture in the United States. That year, the Smith-Lever Act went into effect, creating an educational force that would change agriculture forever. The idea behind extension was simple. Agents would collect the latest research on farming and household issues and teach these innovations to their neighbors.

“Simply put, ‘extension’ means ‘reaching out’,” said Martha Ray Sartor, assistant director-county operations. “Along with teaching and research — land-grant institutions extend their resources, solving public needs with college or university resources through non-formal, non-credit programs.”

Although Arkansas had been assigned its first extension agent nine years earlier, Smith-Lever would lead to bigger things for Arkansas. State government became involved. The University of Arkansas joined the effort and the Cooperative Extension Service as we know it was born.

“Having the ability to transfer research discoveries to the people who could use them was a key moment in our history,” Windham said. “It provided the ability to raise the level of farm production from near subsistence to a level where it could support a nation that was growing in population, economy and technology.”

President Wilson called the creation of the Cooperative Extension Service “one of the most significant and far-reaching measures for the education of adults ever adopted by the government.”
Seaman Knapp, the “Father of Extension,” is hired to teach good agricultural practices in 1902. The first extension agent, J.A. Evans, is assigned to Arkansas in 1905. The first corn club — the forerunner of modern day 4-H — was organized in White County in 1908. The Extension Homemakers Council was established in 1912 to teach farm women across the state techniques for food safety, mattress making and clothing construction. The Smith-Lever Act is signed in 1914, creating the Cooperative Extension Service to “diffuse among the people useful and practical information.” Extension agents and faculty helped organize Marketing Cooperatives to help farmers sell their crops during the 1920s. Home demonstration club members showed thousands how to can and preserve food during the Depression. Extension agents helped the Rural Electrification Administration bring electric power to rural Arkansas during the 1930s. Extension played a vital role during both World Wars by selling war bonds and encouraging Victory Gardens to help produce more food. Agents aid post-WWII veterans with integrating new labor-saving machinery on the farm throughout the 1950s. Extension develops County Councils to promote community and economic development during the 1960s. Extension Homemakers Council teams with Arkansas first lady Betty Bumpers to promote childhood immunization in Arkansas. Master Gardeners is established in 1988. Extension work moves into the Digital Age to bring cutting edge technology to agriculture with online tools and GPS technology as early as 1990.

The result was a steady rise in the standard of living across the state. Extension work in rural America helped make possible the American agricultural revolution, which dramatically increased farm productivity:

- In 1945, it took up to 14 labor hours to produce 100 bushels of corn on two acres of land.
- By 1987, it took just under three labor hours to produce that same 100 bushels of corn on just over one acre.
- In 2002, that same 100 bushels of corn were produced on less than one acre.

That increase in productivity has allowed fewer farmers to produce more food.

Fewer than 2 percent of Americans farm for a living today, and only 17 percent of Americans now live in rural areas. Yet, the extension service still plays an important role in American life — rural, urban and suburban. “With its unprecedented reach — with an office in or near most of the nation’s approximately 3,000 counties — extension agents help farmers grow crops, homeowners plan and maintain their homes, and children learn skills to become tomorrow’s leaders,” Sartor said.
Research to fight childhood obesity, unlock the power of tree oils to fight staph infections and create biosensors to detect *E. coli* by University of Arkansas System Division of Agriculture scientists is flourishing thanks in part to a lawsuit over tobacco.

The support for these studies and others comes from revenue that the state of Arkansas has been receiving since 2000 when voters approved the Tobacco Settlement Proceeds Act. The federal government’s 1998 settlement of the lawsuit against the tobacco industry resulted in funds being made available to each state. Arkansas decided to spend part of its share on research into health-related issues.
The legislation designed to make that happen resulted in establishment of the Arkansas Biosciences Institute, a consortium of research institutions including the Division of Agriculture. The other members are the University of Arkansas, Fayetteville; the University of Arkansas for Medical Sciences; Arkansas State University and Arkansas Children’s Hospital Research Institute.

“The Division of Agriculture is pleased to be part of the Arkansas Biosciences Institute,” said Mark Cochran, UA System vice president for agriculture. “It provides seed funding for many of our research programs that can be leveraged with additional extramural grants to pursue a wide array of topics addressing the role of how agriculture and the food system can contribute to the health of the citizens of the state. It also provides an opportunity for our scientists to collaborate with colleagues from the other partnering institutions.”

ABI, now in its thirteenth year, follows a team approach among its partner institutions. “ABI is an investment in Arkansas’ future and will pay dividends forever,” said Nathan McKinney, assistant director of the Division’s Arkansas Agricultural Experiment Station who represents the Division to ABI as an institutional director. “Few states have used their tobacco settlement funds as wisely as Arkansas.”

The Division of Agriculture uses ABI for researchers to seek the proof of a concept or to gather preliminary data. From this starting point for their research, investigators can seek future funding from longer-term sources and for larger amounts.

During the 2012-13 fiscal year, the Division of Agriculture received nearly $1.6 million from ABI to support 17 research projects. The projects include work in the disciplines of food science, poultry science and biological and agricultural engineering. Several of the projects also receive support from other federal agencies, commodity organizations and private agencies.

“Our scientists leverage their ABI resources to attract competitive extramural federal grants and contracts from agencies such as the National Institutes of Health, the National Science Foundation and the U.S. Department of Agriculture,” said Robert McGehee, ABI director and dean of the UAMS Graduate School.

The Division of Agriculture’s ABI-supported projects include interdisciplinary efforts that aim to fulfill ABI’s mandate to conduct agricultural research with medical

**Consortium of Research**

**Fighting for health**
implications. The Division's projects seek to capture ideas with commercial potential, McKinney said.

One such project includes a study of trees, which might not seem unusual until one learns that it's part of a food safety investigation.

The project, led by Steven Ricke, director of the Division's Center for Food Safety, is attempting to identify naturally occurring compounds that can fight foodborne bacteria. Tree oils have long been recognized as having antiseptic activity and have been used in folk and alternative medicine. The researchers in this project are isolating specific essential oils from pine needle extracts to test their effectiveness against *Staphylococcus aureus*. The Center for Food Safety researchers are collaborating with partners at Arkansas State University and the Division's Arkansas Forest Resources Center.

“Given the widespread distribution and tremendous importance of the pine tree to the state of Arkansas, it seems only fitting that a team of Arkansas scientists is using a byproduct of the pine tree to address a national health issue,” McGehee said.

McGehee added that Division ABI projects also serve as examples of work that advances health and medicine through partnerships with other ABI institutions. One project that focuses on a topic of current public interest seeks to prevent obesity among children in at-risk environments. Led by agricultural economists Rodolfo Nayga and Michael Thomsen in collaboration with Judy Weber, professor of pediatrics at the Arkansas Children's Hospital Research Institute, this project assesses factors that place children at risk for obesity and social marketing messages about food. The project is also developing programming for Head Start and early elementary classrooms. With the support from ABI, the project has been able to leverage significant extramural funding awards from the U.S. Department of Agriculture.

Another project, led by Yanbin Li of the biological and agricultural engineering and poultry science faculties, enhances food safety by exploring how biosensors can rapidly detect *E. coli* O157:H7 in foods with better speed and sensitivity than current methods.

Poultry scientist Byung-Whi Kong is working on an ABI-supported genome sequencing project for selected chicken lines. The genetics of experimental chicken lines can serve as models for genetic and physiological diseases in humans. The research also provides insight into the chickens' level of resistance of ascites, a disease that causes an accumulation of fluid in chickens' abdomens.

The support from ABI opens doors for research projects looking to go to the next level. “With most of the research projects I help with, I get thanks,” McKinney said. “With ABI projects, I get hugs.”
Arkansas Is Our Campus

The core mission of the University of Arkansas System Division of Agriculture is to strengthen Arkansas’ most vital industry. It does so through research by the Arkansas Agricultural Experiment Station and education programs of the Cooperative Extension Service.

We also help families and communities build economic and interpersonal strengths. Through 4-H, we help Arkansas youth grow the qualities they need to succeed as adults and citizens.

We are where you are. You’ll find us in all 75 Arkansas counties. You’ll also find us on five university campuses, at five research and extension centers and at eight research stations. Wherever you look in Arkansas, you’ll find the University of Arkansas System Division of Agriculture.

To learn more about our research and extension offices across the state, download this comprehensive guide and directory.

http://bit.ly/1ILQ0ao
Arkansas Food Innovation slices and dices a path for new businesses:

**A Way to Grow**

BY DAVE EDMARK

There’s a place in Fayetteville where nonprofits, entrepreneurs and the local foods movement all connect: Arkansas Food Innovation in the Food Science Department of the University of Arkansas System Division of Agriculture.

Arkansas Food Innovation represents an evolution of a facility that was built as a pilot processing plant used by faculty to pursue food research projects and to train students on the latest industry methods.

Now the plant has another function. With the rise of foodie culture and a growing trend in Arkansas toward businesses specializing in local foods, the Food Science Department saw an opportunity to help entrepreneurs launch their ideas. Using a fee-based system, the center not only makes the pilot plant available to new businesses for commercial processing but also offers packaging and labeling services in a highly regulated field.

Processing a product is costly and requires strict adherence to federal and state regulations. Access to the appropriate facilities may be more than an entrepreneur can afford in the early stages of operations.

“Depending on the type of product and if the product will be sold commercially, making those products in your home is not legal. You would have to go to a certified location for production,” said Jean-François Meullenet, head of the Food Science Department. “Typically, that could be a restaurant, but restaurant kitchens are being used full time. Getting small-scale operations to manufacture products is not easy for entrepreneurs. The idea behind Arkansas Food Innovation was to help the small-sized farms and entrepreneurs.”

Meullenet recalled attending meetings with local small farmers who said they didn’t have a place to process products to be sold commercially. For a few decades, the department’s facilities have been available to industry for small-scale processing. But until recently, nothing produced at its plant could be sold because the federal Food and Drug Administration had not approved the plant as a food manufacturing facility. So, the department modified the plant to conform to FDA requirements then obtained FDA approval and a certificate from the state Health Department.

**On-site expertise**

Businesses that use Arkansas Food Innovation provide their own labor or they can hire food science students on an hourly basis to help with processing. Mike Davis, the pilot plant manager, is on site to provide expertise. Equipment in the plant enables client businesses to heat products, sterilize bottles, slice and dice large quantities of vegetables, blend ingredients, produce dough, dehydrate fruits and vegetables, process products in metal cans, pasteurize juices and perform other tasks.

The plant also has a labeling machine and has the software to produce the FDA-mandated nutritional label. “For a fee, the company provides a recipe, and we produce a...
A.B. Merritt (top left) mixes ingredients for Bernice’s Hummus, a product she and business partner Denise Rohr have developed with the help of Arkansas Food Innovation since April 2013. Their product is available in Fayetteville at Ozark Natural Foods and Marvin’s IGA.

A volunteer (above) with Feed Fayetteville, a local anti-hunger organization, processes produce donated from the city’s farmers’ market. Before the organization began working with AFI, it was collecting more donated produce than it could safely distribute to the local food pantries.

Ross Barber (below) bottles and labels simple syrup (pictured left) from Pink House Alchemy, a local startup that specializes in simple syrups for use in cocktails and coffees.
customized nutrition label,” Meullenet said. “The equipment would be difficult for people to get and a labeling machine like this is quite expensive.”

“Approximately 25 percent of all manufacturing in Arkansas is food processing, hosting many name-brand products,” said Steve Seideman, an extension food processing specialist in the Food Science Department. “With the recent downturn in the economy coupled with the popularity of farmers’ markets and the concept of local foods, many people are interested in developing food processing companies. Although the Division of Agriculture has always helped individuals with marketing their food ideas, the recent escalation in interest coupled with Arkansas Food Innovation has brought out the success of many local entrepreneurs.”

Benefits for nonprofits

Nonprofit organizations can also use the center’s services and facilities. Feed Fayetteville, a local anti-hunger organization, obtained donated produce from the city’s farmers’ market and brought it to AFI. The university then spends the following week processing the produce into food for distribution.

“We’ve produced items like fruit leathers for Feed Fayetteville,” Meullenet explained. “We’ve also dehydrated products and made products with kale.” Products made for Feed Fayetteville have included kale chips, veggie chips, applesauce, blackberry vinaigrette, pepper relish and pesto. The center also processed a veggie chili for Feed Fayetteville to sell as a fund raiser.

Before Feed Fayetteville began working with AFI, it was collecting more donated produce than it could safely distribute to the local food pantries, said executive director Adrienne Shaunfield. The kitchens it used weren’t FDA certified. She said that when she learned about Arkansas Food Innovation, “it was the perfect solution for us to be able to provide locally grown foods to those in need.” Efforts such as Feed Fayetteville’s Canning Hunger program to preserve locally grown food for hunger relief would benefit from the new association with the center.

Arkansas Food Innovation was the perfect solution for us to be able to provide locally grown foods to those in need.

—Adrienne Shaunfield, Feed Fayetteville

“Plans were put into place to begin this partnership last spring once the farmers’ market season began,” Shaunfield said. “We taste-tested products with local Boy Scout troops and Head Start children to narrow down our product line. Through the support of the Arkansas Community Foundation’s Future Fund, we are now able to purchase produce from the farmers rather than it being donated.”
The Fayetteville School District has also used the center’s services. School personnel bought 3,400 pounds of tomatoes from the local farmers’ market and delivered them to the university, where AFI staff and volunteers processed them into 221 gallons of tomato sauce packaged into 100-ounce boilable plastic bags to be frozen until time to use.

**Small Business**

Several commercial businesses have begun using the center, which Meullenet described as an incubator from which they will graduate and move onto the next level. One recent success story is Oh Baby Foods, founded by Fran Free of Fayetteville, a graduate of the UA Dale Bumpers College of Agricultural, Food and Life Sciences. The center assisted her in making prototype samples of her products and pilot testing of her recipes. Today, Oh Baby is a national brand processed in California and sold at retail by Whole Foods.

A Fayetteville business in its early stages, Pink House Alchemy, came to Arkansas Food Innovation after its owners learned that its products would need to be manufactured in an approved facility before being sold. Pink House Alchemy specializes in simple syrups for use in cocktails and coffees.

Emily Lawson, who owns the startup business, said her group needed to get a system in place to grow their wholesale business when Free told them about her involvement with Arkansas Food Innovation. “I don’t know where we would be without the university kitchen right now,” Lawson said. “It’s been an unbelievable resource for us to use an FDA-certified kitchen. Having a team to help you get it right is invaluable.”

Pink House Alchemy (identified on its product labels as pH Alchemy) uses the pilot processing plant kitchen on Wednesday and Thursday mornings. It’s been a natural fit for the company, which began by producing syrups for Arsaga’s, a Fayetteville coffee house, and selling them at the farmers’ market. Lawson said the time came to change, grow and market to other coffee houses.

“We had kitchen space at a restaurant and at our house, but we were still learning what to do and we needed space,” she said. “They [Arkansas Food Innovation] were able to take us to the next step. We had a conversation about where we saw the business going and how much volume we could produce.”

After about six months using the university facilities and doubling its work output, Pink House Alchemy is looking toward the next phase in pursuing a wholesale business with heavier volume. “We don’t want to stay a small entity,” Lawson said. “We have natural growth patterns that we’re following. Being a cottage industry, we have to grow with what we’re producing. We haven’t taken out big loans, we’re trying to let it grow organically.”

Pink House Alchemy’s future plans call for getting financing for marketing and pushing sales toward national distribution. Its story is what the Arkansas Food Innovation staff hopes to see duplicated among its client businesses. Meullenet noted that its services extend only to food processing-related issues. The clients need to obtain their marketing and financial advice elsewhere, but some clients create business plans through the entrepreneurship program at the UA Sam M. Walton College of Business, which has referred some of its clients to AFI.

“The whole idea is to foster the creation of new businesses in the area,” he said. “We’re trying to provide an example for the state.”

**SUCCESS STORY** — Fran Free of Fayetteville made prototype samples of her product, Oh Baby Foods, and pilot tested her recipes with the center’s assistance. Today, Oh Baby is a national brand sold at retail by Whole Foods.
Find what you want to know faster and from any device on the newly launched University of Arkansas Cooperative Extension Service site, [www.uaex.edu](http://www.uaex.edu).

The revamped site debuted on Feb. 26 and was launched publicly on March 19, its announcement supported by a multimedia “Welcome Home” advertising campaign — an invitation to an online open house.

The redesign marks the first renovation of the site since 2006. The Cooperative Extension Service first went online in 1995.

The URL sees millions of visits each month by clients seeking information from extension’s four core areas: agriculture, community and economic development, family and consumer science, and 4-H/youth development. In 2013, the site had more than 48 million hits.

“Wednesday’s launch was the culmination of months of research that included working with our clients to ensure that our online presence met their needs,” said Tony Windham, associate vice president-agriculture-extension for the University of Arkansas System Division of Agriculture.

The site features improved navigation to the most heavily trafficked areas, as well as a better search appliance for faster, deeper discoveries. Its responsive design allows it to be read on desktops, laptops, tablets or phones. The site will also enable users to connect to extension social media channels including Twitter, Facebook, YouTube, Google Plus, Flickr and LinkedIn. The site also retains old favorites such as Plant of the Week and various other plant libraries.

The effort to remake the site was spearheaded by Kyleen Prewett, extension’s associate director for Finance and Administration. Working in partnership with Prewett were Sam Boyster, extension’s director of IT, and Karen Ballard, director of extension’s Program and Staff Development department.

Within a month of its launch, the site saw 64,770 new visitors, and 76.9 percent came back in the first few weeks.
“Our goal was to create a presence that enabled our customers, clients and stakeholders to not only gain access to our know-how and online services faster, but also gain access no matter what device they’re using,” Prewett said.

“We applaud Kyleen, Karen, Sam and the scores of other extension faculty and staff who had a hand in updating the look and feel, as well as the most-used material on the site,” Windham said. “Their efforts helped pare our sprawling 12,000-page site to a lean, info-rich 950 pages — not including our newly organized encyclopedic content.”

Within a month of its launch, the site saw 64,770 new visitors, and 51,602 of those visitors — 76.9 percent — came back in the first few weeks.

“The most interesting thing is comparing the new site to the same period a month earlier,” said Amy Cole, principal, digital services. “New visits increased more than 50 percent and overall, visits increased nearly 100 percent.”

The number of unique visitors since the hard launch increased more than 169 percent from the previous month. Visitors are also spending more time on the site. For example, the number of users who spent between three and 10 minutes at the site was 10,365, up from 3,757 the month prior.

Users like what they’ve seen. Comments include: “Your new website looks great! Very user-friendly,” and “… much cleaner and user-friendly.”

In its first month, mobile users latched on to the responsive design. While desktop computers were the primary means of accessing www.uaex.edu at 80.84 percent of visits, mobile phone users were second with 10.67 percent, followed by tablet users at 8.49 percent.

When it comes down to what devices are being used most to view the site, Google Analytics shows that 38 percent are using an iPad, while nearly 36 percent are using iPhones. While fewer in number, Galaxy Centura users spent the most time on the site, averaging three minutes and 18 seconds.

The launch is just the start. Employees in every extension office and department have the keys to the site, to provide the content that matches the needs of their clients and programs. □
When planning his crops for the coming year, Joe Christian of Jonesboro turns to two reliable sources of information — his own years of experience and the University of Arkansas System Division of Agriculture.

Christian grows about 1,300 acres of rice, 800 acres of soybeans and smaller fields of corn and wheat. When it’s time to choose seed for the coming planting season, Christian relies on his own experience. “I know what will grow in my fields,” he said.

But he knows things change — climate, pests and new seed products. So to be certain he’ll get the best possible harvest, he turns to Division recommendations based on results of the Arkansas Variety Testing Program.

“I just know they’ve been studied here in Arkansas, in the area I farm on and the soils that I plant in,” Christian said. “I know it’s been done over and over again and I just trust it.”

Don Dombek, program coordinator, said the goal of the Division’s variety testing is to provide growers with the most accurate and unbiased information about the performance of public and private crop varieties.

To give farmers the information they need to make informed decisions, test results are published as quickly as possible by email and later in print and web publications. “Seed companies offer discounts for booking seed early, so many farmers want to make decisions in the fall,” Dombek said. “We aim to get information to them as soon the results are in.”

Variety testing is conducted for six crops. Dombek administers testing for soybeans, grain sorghum and corn, though he insists program associate Richard Bond does most of the work. Rice extension agronomist Jarrod Hardke runs the rice variety tests, assistant professor Esten Mason administers the wheat tests and Fred Bourland, director of the Northeast Research and Extension Center, conducts the cotton variety tests.

Dombek said the testing programs include varieties and breeding lines from the Division of Agriculture’s breeding programs and those of collaborating public programs in other states. Commercial seed companies submit varieties for a fee, he said.

“We’d like to test everything that’s available in Arkansas,” Dombek said, “but companies decide which varieties they wish to enter.”

The testing results are also of value to the Division’s breeding programs. Hardke said results from the Variety
Trusted Results

Testing Program may determine whether a breeding line is discontinued or progresses toward becoming a new variety.

The ratio of private to public varieties and lines varies in each program. Hardke said the majority of material tested in the rice program comes from the Division’s rice breeding program. But Mason said about 80 percent of the wheat in his variety testing work comes from private seed and breeding programs.

Bourland, who also heads the cotton breeding program, said the proportion of private to public lines in the cotton tests is similar to the wheat tests.

“About 80 to 90 percent of cotton lines in our cotton variety test are from private sources,” Bourland said. “Most of them are transgenic lines, and more than 95 percent of our cotton acreage is now planted to transgenic varieties.”

All the program directors said yield was the key performance characteristic screened for the tests. Other characteristics measured include disease and pest resistance, shattering and lodging, time to maturity and processing quality.

Division researchers from other programs participate in the variety testing, Dombek said.

For example, Dombek said, extension plant pathologist Terry Kirkpatrick rates soybean varieties and breeding lines for disease resistance or susceptibility. Hardke said the division’s Rice Processing Program tests milling yield and grain quality.

“We’re allied with a lot of other scientists who contribute to the screening,” Dombek said.

Because Arkansas’ wide variety of soils is a factor in variety performance, Dombek said, variety testing is conducted on all Division research and extension centers and research stations around the state. The program relies on Division employees of those stations and centers who do most of the groundwork.

“Those guys work long hours and on weekends, in all kinds of weather to get our tests planted and harvested and everything in between,” Dombek said.

To cover the widest possible variations in growing conditions, varieties are also tested in plots on cooperating farms.

For Christian, the testing program pays off in his fields. He said he has used commercial hybrid seed, but more and more he looks to public varieties.

“I look for Arkansas and other public varieties that have been in the Variety Testing Program,” Christian said. “I trust them.”
Q: What is the value of germplasm lines in cotton?

A: Germplasm lines are the building blocks of varieties. If we can share these building blocks, we can build improved varieties. In December, we released three cotton germplasm lines — Arkot 0305, Arkot 0306 and Arkot 0316 — for use by other public and private cotton breeding programs. They have high yields and improved fiber quality. Improvements in yield in these lines have been accompanied by increased fiber density — the number of fibers per unit area of seed coat. Improved yield associated with higher fiber density should provide better crop consistency in the face of climate variability. The three breeding lines are considered short-season, early maturing genotypes. They are resistant to common cotton diseases, including bacterial blight, fusarium wilt and Verticillium wilt. They also show at least moderate resistance to tarnished plant bug.

Public breeders have access to most of the material in the Division of Agriculture breeding program before it is released because advanced germplasm lines are submitted to the Regional Breeders Testing Network. All public cotton breeders participate in the program and can use any material put into it. Genetically modified commercial varieties dominate the cotton industry, leaving little demand for conventional varieties. But the traits developed in conventional public breeding programs create genetic diversity that is useful to the commercial breeding programs.

We’re developing novel approaches to improve cotton traits like fiber density. Once released as germplasm, the genetic material may be used by commercial and public breeders to develop varieties with growth characteristics that benefit Arkansas growers. We’re breeding things that are specifically adapted for Arkansas. Commercial breeders do not necessarily do that. But the material we develop here adds traits to the germplasm pool that favor Arkansas growing conditions. Our industry benefits from the broader variety of genetic material that comes out of public breeding programs.

– Fred M. Bourland

STORMWATER RUNOFF

Q: What simple and low-cost actions can I take to reduce stormwater runoff in my yard?

A: During a 1-inch rain event, 1,000 square feet of roof area generates 623 gallons of stormwater. Any measure that can reduce the volume and speed of these stormwater flows, spread it out across a larger area or allow it to soak into the ground helps minimize runoff in your yard.

Low-cost options can be as simple as redirecting gutter downspouts onto turf instead of the paved path across your driveway to the nearest storm drain inlet. You can also collect rainfall from roofs in rain barrels for later use or direct the water to a rain garden with deep-rooted native plants that attract birds and butterflies. Other ideas include increasing the use of permeable surfaces like gravel, mulch or porous pavers for driveways, walkways and patios to enhance infiltration. If your property is sloped, installing terraces and groundcover can slow runoff and minimize erosion. Since these measures encourage stormwater to gradually soak into the soil, they help reduce flooding. In addition, pollutants can be filtered out naturally before entering streams or lakes.

– Katie Teague

REPLACEMENT HEIFERS

Q: What methods of growth promotion should beef producers use to encourage development of replacement heifers?

A: Replacement heifers should reach puberty at an early age to assure high conception rates in their first breeding season. Weight is a major factor affecting age at puberty, and as a result, heifers fail to reach puberty until significant weight gains are made. Adequate gains
and skeletal development are necessary to optimize replacement heifer development. Various growth-promoting implants used in suckling calves are available to increase gain; however, few are recommended for replacement heifers due to the possible detrimental effects on fertility and subsequent productivity. With the U.S. cattle herd the lowest since 1952, a more aggressive expansion of replacement heifer retention is necessary. The largest proportion of the cost of replacement heifer development is the cost of retaining the calf. Beef producers may want to consider adding value to low-weight heifers to retain replacements.

Low-weight replacement beef heifers treated with trenbolone acetate plus estradiol had greater body weight change, and consequently enhanced average daily gain. Heifers implanted with zeranol at the start of grazing were more likely to have an immature reproductive tract after 106 days when compared with control or trenbolone acetate-implanted heifers. It would appear that growth-promoting implants that enhance weight gain may be detrimental to reproductive tract development. Strategic use of implants that increase heifer growth without jeopardizing fertility could be economically advantageous to beef producers. Producers should always read and follow implant label directions.

– Charles Rosenkrans

TORNADO RELIEF

Q: After a tragedy such as the Mayflower and Vilonia tornadoes, people open their hearts to the victims. Why does giving to others make us feel better?

A: People who give their time, money, support and assistance are more likely to be happy with their lives overall. Research supports this, but the real proof is in observing people who help their neighbors — they are generally satisfied and suffer less depression. Everyone has or will need help in his or her life. Understanding that giving to others is its own reward will elevate not only your mood but also your general well-being too.

Sometimes, what people really need is someone who will listen and offer support, not advice. Helping others can make a real difference for them and can make us happier in the process.

– James Marshall
Arkansas 4-H One Day of Service

In One Day of Service, hundreds of youth and adults poured their heads, hearts and hands into a commitment to helping their communities.

In October, “we had our second One Day of Service, which is an opportunity to show on a statewide level the kind of impact 4-H clubs can have on our communities,” said Noah Washburn, 4-H Youth Development program director. “And even though these are the kinds of service projects our youth are involved in all year, the depth and breadth of our efforts really shine during One Day of Service.”

During the latest One Day of Service, 45 groups from 34 counties took part, including more than 2,300 youth. More than 238 4-H volunteer leaders and 259 adults not affiliated with 4-H were part of the effort.

All told, volunteers put in more than 3,200 hours of work into One Day of Service and they:

- Collected nearly 1.5 tons of food.
- Assembled 2,119 care packets, valued at more than $42,000.
- Cleaned 18 miles of road.
- Gathered 1,480 pounds of trash.

We’re proud of this effort by our 4-H’ers, volunteers and their friends and family,” Washburn said. “This is the kind of project that really brings home heart, head, hands and health — the quality that the four Hs stands for.”

Lyell Thompson, 1924-2014

Lyell Thompson, who helped lead integration at the University of Arkansas campus and local social facilities in the 1950s and 60s, is being remembered for his compassion and excellence in teaching. Thompson died March 10, 2014, at his home. He was 89.

A World War II veteran, he earned three battle stars and a Purple Heart in the Battle of the Bulge. He joined the faculty of the University of Arkansas College of Agriculture in 1958 and was awarded the Gamma Sigma Delta Outstanding Teacher Award in 1983. He was the major adviser for about 30 master’s and doctoral candidates. His research in soil fertility focused on trace element nutrition. His research led to boron, molybdenum and zinc recommendations for Arkansas crops.

Thompson was active in the civil rights movement of the 1950s and 1960s, and he served on the Arkansas Council on Human Relations during that time period. Along with persuading the Fayetteville community and businesses to open the swimming pool, the theaters and restaurants to African American residents, Thompson provided his home to black students who were not allowed to live in residence halls prior to integration of the dormitories.

An article by Martha Davis in 2000 in the Journal of Natural Resources and Life Science Education described Thompson as being a magnet for all students regardless of their race or origin. She wrote: “His humanitarian perception and his capacity to act in the interest of another human being appear infinite.”

LONGTIME SERVANT — Lyell Thompson, who joined the faculty in 1958, was active for decades in service to the university and the community.
U of A Division of Ag dedicates boardroom to Welch

The University of Arkansas System Division of Agriculture has honored a long-time advocate of agriculture, dedicating a boardroom to Ewell “Pete” Welch, former executive vice president of Arkansas Farm Bureau.

The high-tech meeting room is located in the renovated annex of the University of Arkansas Cooperative Extension Service building on South University in Little Rock.

“We certainly wanted, in the Division of Agriculture, to express our appreciation to Ewell Welch and all of the things that he has contributed, not only to our organization, but really, to the state of Arkansas and to agriculture within the state,” said Mark Cochran, University of Arkansas Vice President for Agriculture. “Ewell has been a tireless supporter of all of our programs.”

Welch and wife, Deanna, stood beside a plaque with Welch’s image that will be hung in the conference room. The plaque reads: “In recognition for years of service to the Division of Agriculture, Cooperative Extension Service, 4-H and Arkansas Agriculture.”

“I’m very humbled and honored to be recognized in this way,” Welch said. “As I’ve said before in my career at Farm Bureau, to be given the freedom and the opportunity extensively to work with the folks within the U of A Division of Ag and really, it’s been one of the highlights of my career.”

Welch Honored — Ewell Welch, retired executive vice president at Arkansas Farm Bureau, has been honored for his contributions to agriculture and the U of A System Division of Agriculture with a boardroom named for him. From left, Welch, Deanna Welch and Mark Cochran, head of the University of Arkansas System Division of Agriculture.

His first job out of school was with the Arkansas Farm Bureau, which hired Welch to be part of its poultry division. He began work there in December 1977, and Welch never looked back, serving at Farm Bureau for 36 years.

Local foods highlighted

An “Arkansas Grown” branding program has been launched by the state to help consumers identify locally grown food, Arkansas Agriculture Secretary Butch Calhoun told the Ozark Food Processors Association convention on April 9.

“This program is going to grow,” Calhoun said during his address to the OFPA’s 108th Annual Convention and Exposition in Springdale with the theme of “Farm to Fork: Going Local.” Calhoun said the branding is being used by producers, retailers and restaurants statewide. Starting in May the program will be featured both in a mobile app and a state food and farm guide to be published.

The program’s website at arkansasgrown.org provides details on how Arkansas residents may list their marketing information there and enable potential buyers to locate producers in the state. It also has a form so producers may apply to use the Arkansas Grown branding logo. The department also publishes an annual magazine, Arkansas Grown, that highlights local producers’ efforts.

Calhoun said Arkansas agriculture is poised to help meet world agricultural demands in coming decades as global population increases. The state’s climate, water, infrastructure, research efforts and producers are all assets. “The program has been featured since May in both in a mobile app and a state farm and food guide.”

Arkansas Grown logo is popping up in more places as consumers seek out locally grown or developed food.
Program technician David Moseley, left, and soybean breeder Pengyin Chen peel edamame soybeans for display during an edamame field day at the Vegetable Research Station near Kibler Sept. 24. Division of Agriculture scientists presented their research in support of Arkansas’ fledgling edamame industry during the field day, including Chen’s breeding program to develop improved vegetable soybean varieties and efforts to acquire certification for pest, weed and disease control products.

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