

University of Arkansas at Pine Bluff School of Agriculture, Fisheries and Human Sciences



Innovative Solutions for Diverse Audiences

SAFHS 2019-2020 Annual Report

SAFHS Dean/Director's Message

In looking to the year ahead, we at the University of Arkansas at Pine Bluff (UAPB) School of Agriculture, Fisheries and Human Sciences (SAFHS) reflect on our recent successes and, most importantly, our values and mission. SAFHS is comprised of students, educators and professionals from diverse backgrounds with the common goal of providing educational access to all through research and Extension. UAPB's heritage as an 1890 land-grant university keeps us determined to find innovative solutions to better the lives of people in Arkansas, across the nation and around the world.

This 2020 report highlights some of the School's recent successes. The Small Farm Program developed a workshop series to provide training to individuals interested in becoming farmers or agricultural entrepreneurs. To combat food insecurity, the Supplemental Nutrition Assistance Program Education (SNAP-Ed) taught seniors living in a low-income housing apartment complex in Pine Bluff how to prepare healthy meals and snacks.

Specialists at the UAPB Fish Health Inspection Laboratory in Lonoke, Arkansas, conducted vital fish health certifications, allowing Arkansas producers to safely ship millions of dollars' worth of fish. And scientists in the Department of Agriculture conducted several food safety research and Extension projects to improve the performance and productivity of food production operations across the U.S. Details on these and other programs are presented throughout the report.

The success of recent research and Extension projects, the addition of new faculty in the School and reports of new challenges facing communities all inspire us to action. We expect 2020 to be a landmark year and plan to bring positivity and creativity to serve diverse communities both close to home and globally.



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1873

School of Agriculture, Fisheries and Human Sciences



Dr. Doze Y. Butler

***“We are what
we repeatedly do.
Excellence, then, is not
an act, but a habit.”***

– Aristotle

Research Advances National Food Safety

Although foodborne illnesses are preventable, they represent a serious and costly threat to Americans. According to the Office of Disease Prevention and Health Promotion, 48 million Americans fall ill due to foodborne illnesses annually, leading to 128,000 hospitalizations and 3,000 deaths. Illnesses occur after germs or chemical contaminants enter food items at some point from farm to table. Detecting food hazards can be a major challenge. More research is needed to improve the safety of food products and reduce the incidence of foodborne infections.

Food safety research and Extension activities at UAPB focus on a few main areas. Researchers use conventional microbiology and advanced molecular techniques to track potential sources for microbial contamination in farm operations and irrigation water. They also investigate specific foodborne strains from different sources through sequencing studies of microbes' whole genomes and plasmids. The university is expanding its microbiome research – a five-year project commenced in March 2019 to improve the gut microbial diversity in small ruminants by using natural supplements and probiotics (good bacteria) to control the distribution of bad microbes in the animals' manure.

UAPB research contributes timely, scientific-based data to improve the performance and productivity of food production operations. The research project on small ruminants will help minimize the prevalence of pathogenic bacteria in animal manure, limiting the chances of contamination in agricultural environments and food chains. This research helps mitigate antimicrobial resistance in the overall farm-to-fork continuum, allowing consumers to buy a diverse range of safe products with reduced risk of contracting illnesses. As the field requires more skilled workers and qualified scientists, UAPB faculty work to recruit and train more minority students for fulfilling careers in food safety.



150 Participants Complete Caregiver Training, Learn How to Handle Crisis Situations

One in six working Americans assists with the care of an elderly or disabled family member, relative or friend. Once a loved one becomes ill and can no longer speak on their own behalf, the burden of making difficult decisions falls either on a family member or caretaker. Many caregivers lack the knowledge and information necessary to navigate end-of-life care directives. Making the decision to resuscitate and sustain life can seem overwhelming, especially if a caregiver is not aware of the person's wishes. The transition from life to death can also be fraught with financial obligations such as monthly bills, hospital bills, property and real estate taxes, debt and funeral expenses. Caregivers need to know the importance of planning and communication in effectively dealing with crisis situations.

The UAPB 1890 Cooperative Extension Program developed an educational course on caregiving for individuals in Jefferson and Grant counties. Lectures focused on the importance of planning for the future in terms of palliative and self-care. Participants received information vital to caregivers during the periods prior to, during and after the death of a loved one. The sessions were interactive, and participants were able to share their stories and ask Extension associates for advice.

About 150 individuals from Jefferson and Grant counties completed the caregiving training. Participants learned how to prepare a living will and durable power of attorney. They also acquired resources on resolving finances after death and preparing funeral arrangements. The training emphasized the importance of having difficult conversations prior to experiencing a crisis, which reduces the guilt associated with making hard decisions.



Forestry Program Keeps Family Land Sustainable and Profitable

In 1920 African Americans owned 15.6 million acres of farmland across the U.S., but that acreage has drastically declined over the last century to only 2 million acres for reasons including voluntary sales, emigration from the South, lack of access to credit and capital and foreclosures. Current landowners face challenges when their land becomes heir property and is inherited by a group of individuals. This type of property leaves families without the clear titles that allow for active management of the land, thereby limiting any economic returns.

The UAPB Small Farm Program started the “Keeping it in the Family” (KIITF) Sustainable Forestry and Land Retention Program in 2016 to educate African-American forest landowners in Arkansas about properly managing forestland and applying conservation practices to improve the land’s sustainability and value. The project grew to encompass a total of 18 counties across the state. Services include outreach meetings, one-on-one site visits and forestry management assistance, and cost-share assistance in implementing conservation practices. Legal services were also provided to help landowners obtain clear titles and address other land tenure concerns.

In fiscal year 2018, the KIITF Program provided forest management and heir property education to over 900 Arkansas landowners. KIITF personnel conducted 11 public meetings and 78 individual site visits. They developed forest management plans for 16 individuals and connected them with Arkansas Forestry Commission and Natural Resources Conservation Services (NRCS) representatives, as well as private foresters, contractors and loggers. Twelve landowners received help with estate planning and writing wills and trusts. The program helped allot around \$90,000 of NRCS Environmental Quality Incentive Program funds to implement conservation practices.

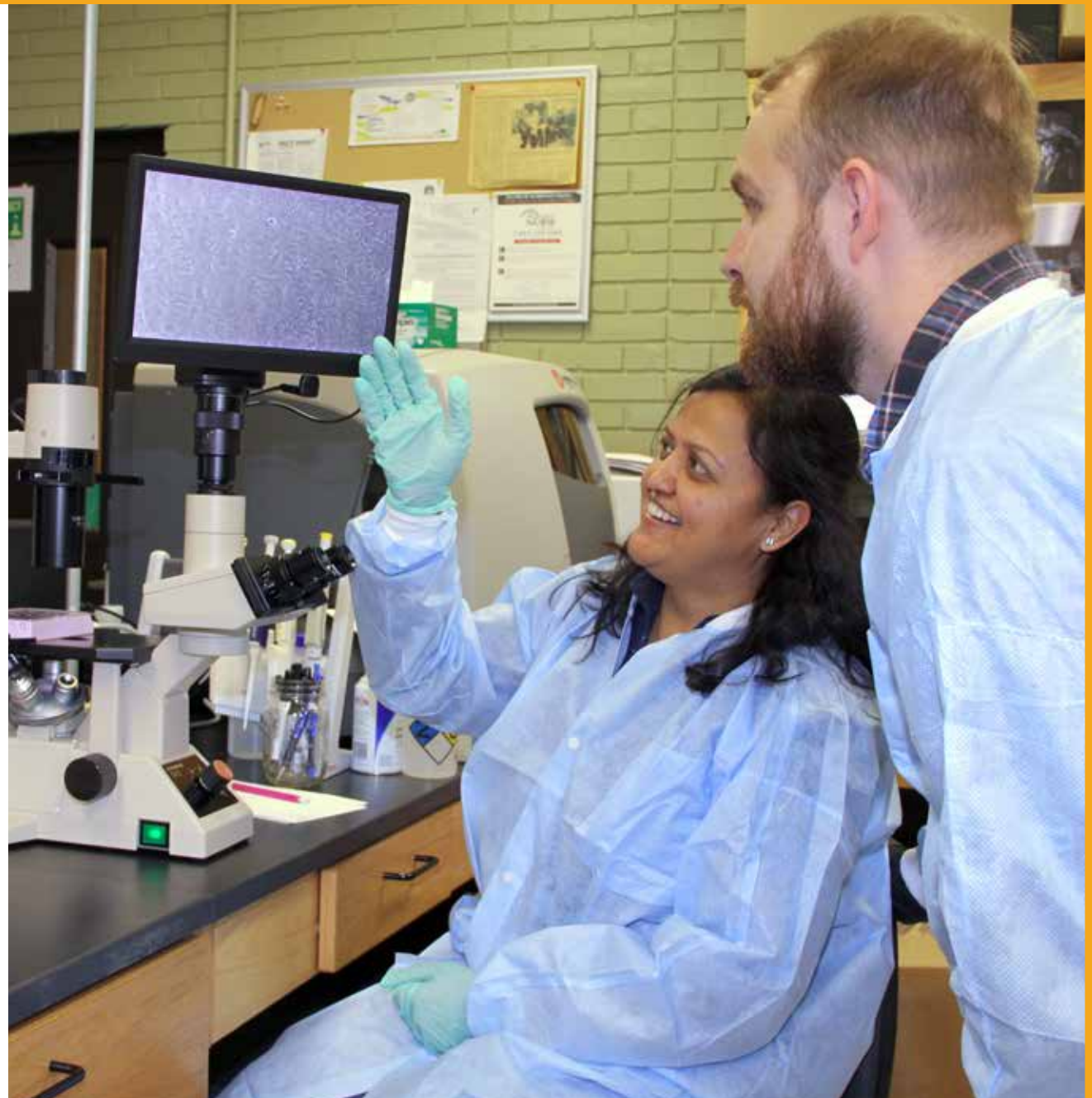


Lonoke Laboratory Helps Producers Ship Millions of Dollars' Worth of Fish

Healthy fish used as foodfish, baitfish or for stocking waters for recreational fishing ensures the safety of seafood for human consumption and prevents the spread of diseases to other aquatic systems. Because they are raised in aquatic environments, detection of diseases in farm-raised fish is not as readily visible as in other terrestrial livestock species. Farms are required to have biosecurity practices in place that prevent the spread of disease. Instances of disease in farm-raised fish can cause huge financial losses and even closure for fish farms.

The UAPB Fish Health Inspection Laboratory in Lonoke, Arkansas is one of seven facilities nationwide approved by the Animal and Plant Health Inspection Service to conduct diagnostic testing that enables producers to obtain health certification for the export of aquaculture species to other states and countries. During routine health inspections, specialists test each fish species a producer sells for fish pathogens (viruses, bacteria and parasites) identified by the World Organization for Animal Health. The lab also analyzes water quality, identifies aquatic weeds and conducts inspections for the Arkansas Baitfish Certification Program, fish disease diagnostics and fish health checks.

In 2018, personnel at the Lonoke lab conducted 331 disease diagnostic cases, 92 water quality/aquatic weed cases and 105 health certifications for interstate or international transport of live fish. Technical assistance was provided to clientele through more than 65 farm visits and 175 phone consultations. Over the course of the year, 20,081 fish were sampled and certified for the baitfish certification program, allowing Arkansas producers to safely ship millions of dollars of fish.



UAPB Bolsters Arkansas Sweetpotato Production

Sweetpotatoes are susceptible to viruses and natural mutations that accumulate with each planting cycle. Viral accumulation can ultimately affect the yield and quality of sweetpotato roots. In Beauregard sweetpotatoes – a widely-grown commercial variety in Arkansas – naturally-occurring viruses can reduce yield by 30 to 40 percent, as well as cause changes in skin color and shape that reduce quality and marketability of the crop. Availability and cost of high-quality, virus-indexed planting materials is a significant constraint in the production of sweetpotatoes in state. Growers have been purchasing second-generation seed potatoes from commercial producers or state-supported programs outside of Arkansas. This ultimately translates to a high cost of production, compromised quality of planting materials and delayed time of planting due to shipping challenges.

The UAPB Sweetpotato Foundation Seed Program is helping farmers in Arkansas alleviate these problems by providing virus-indexed planting materials produced at UAPB. First, UAPB researchers multiplied preferred cultivars such as Beauregard and Orleans under controlled conditions and tested the plants for viruses. Then they sold healthy generation one sweetpotato slips (planting materials) and seed potatoes to local farmers at a subsidized rate.

In 2018, seven small-scale producers received 950 pounds of seed potatoes from UAPB. With access to quality planting materials within the state, these farmers reduced their transportation costs and raised their crops on time, thus capitalizing on premium early season prices. After receiving 150,000 virus-indexed slips, one producer cultivated 18 acres for generation-one seed production. Now he can sell these new slips to other farmers in the region, who, in turn, will plant the sweetpotatoes that will be served on American dinner tables.



4-H Program Instills Healthy Habits in 900 Local Youth

Youth in Jefferson County, Arkansas exhibit high rates of obesity, juvenile diabetes, acid reflux and other health-related issues that are exacerbated by a sedentary lifestyle. Childhood obesity can lead to health implications that are usually only seen in adults – type 2 diabetes, high blood pressure, high cholesterol and heart disease. The problems unhealthy youth face commonly persist into adulthood. Adult obesity puts individuals at risk of stroke, heart and liver disease, dementia and certain types of cancer.

The UAPB 4-H Program implemented a healthy habits curriculum in several after-school and summer programs around Pine Bluff, Arkansas. The program was funded by a grant from the Walmart Foundation and the National 4-H Council. Youth were taught to incorporate more fruits and vegetables, whole grains and water in their diets. 4-H staff and volunteers emphasized the importance of staying physically active and taught participants a number of fun ways to exercise.

Over 900 youth participated in the healthy habits program. Hands-on activities imparted skills such as how to read nutrition facts labels and how to make healthy and thrifty purchases at the grocery store. During cooking sessions, they learned how to follow recipes for a variety of nutritious snacks. Program graduates received a cookbook with healthy recipes to use at home with their families. One of the summer programs culminated with a field trip to the UAPB Lonoke Farm, where participants learned about gardening and farming and were able to go fishing. Many fished for the first time.



Biochar: A Value-Added Solution to Agricultural Waste

Agricultural waste can be a nuisance for producers and lead to environmental degradation. Refuse, including livestock manure and crop residues and by-products, can introduce pesticides, antibiotics and other chemicals into the soil and water systems. These pollutants can harm the environment and threaten human health if in drinking water. Solutions are urgently needed to address agricultural waste management. Scientists and producers are currently investigating the potential of converting waste into value-added products that positively affect the environment.

Researchers at UAPB and the University of Florida have partnered to study the potential of biochar – a charcoal made from biomass and agricultural waste – to reduce the ecological risks associated with agricultural waste. The product is increasingly being used throughout the nation as a sustainable soil additive to improve crop yields. The study focused on the optimization of biochar production, its ability to reduce the leaching of antibiotics into ground water and its effect on soil. Researchers aimed to gain insight into the physical, chemical and biological processes that control interactions between antibiotics and biochar and their impact on agricultural ecosystems.

Biochar as a value-added product can be an innovative way to make agricultural waste profitable and better ensure food productivity in the long run. As a soil additive, biochar increases soil health and fertility and improves ground water by ensuring nutrients and chemicals are not leached off the field. Its environmental benefits include waste reduction, ecotoxicity control, water quality protection and carbon sequestration. Project data will be used to determine agricultural best management practices for the use of biochar.



Fishing Team Attracts New Anglers, Adds Nearly \$50,000 to Economy

Approximately 35.8 million individuals 16 years of age or older fished in the U.S. in 2016, with expenditures totaling \$46.1 billion. One of the keys to maintaining this healthy industry is the recruitment and retention of youth anglers. It is also important that young anglers have enough opportunities to fish. In a UAPB survey of college students who fish competitively, 30 percent of those who responded said they would fish less often without access to affordable tournaments. Fewer fishing trips means less money being generated for local economies and could even result in fewer fishing license sales in Arkansas due to reduced participation in the sport.

Since its creation in 2011, the UAPB Fishing Team has hosted youth fishing activities to encourage the continued growth and stability of fishing in Arkansas. Every year, the team hosts the Arkansas Collegiate Series (ACS), which is open to anglers from higher education institutions in Arkansas and neighboring states. The series consists of three single-day tournaments and a two-day championship in the fall. By hosting the series, UAPB aims to provide a stable tournament circuit that satisfies the majority of those who participate.

The 2018 ACS attracted 120 students from Arkansas, Missouri, Mississippi and Texas institutions. Tournament participation increased 40 percent from the previous year. The net economic gain was between \$38,000 and \$51,000. The state of Arkansas gained \$46 to \$60 for every dollar invested in the program by the UAPB Aquaculture and Fisheries Department. Ninety percent of the tournament participants who were surveyed reported they had a positive opinion of the series.



New Farmers Academy Attracts and Trains 22 New and Beginning Farmers

Farmers and ranchers are aging. The average age of Arkansas farmers is 58. This means that a large percentage of the state's farmers will be leaving the farm in 10 or more years and will need to be replaced. By the time this generation of farmers retires, their children will have already established non-farm careers and are not likely to come back to manage the family farm. Consequently, new and beginning farmers are needed to replace those retiring.

To help foster a new generation of farmers, the Small Farm Program at UAPB instituted the New Farmers Academy. The program's purpose was to provide farm training to individuals interested in becoming farmers or agricultural entrepreneurs. Ideal candidates were those new to agriculture, those wishing to transition into agriculture from another field, or those looking for a post-retirement opportunity. Seven training workshops were conducted over a seven-month period to educate and train new farmers.

Twenty-two beginning farmers completed the training course. Participants received information on a variety of U.S. Department of Agriculture conservation and cost-sharing programs. They learned how to select land suitable for farming, determine the average price for farm and pastureland, and use enterprise budgets to determine production cost and estimated returns. Program curricula featured hands-on activities, including sprayer and planter calibrations, soil sampling and testing, and planting. Demonstrations were provided on laying plastic mulch and drip tape, equipment usage and safety, and raising transplants in greenhouses. The 22 graduates can now use their certificate of course completion to satisfy the managerial ability requirements needed to receive a U.S. Department of Agriculture Farm Service Agency operating loan.



UAPB Collaborates with Colombian University in Aquaculture Exchange Program

The processing of fish into food products is an important part of the U.S. seafood industry. In 2017, the domestic production of edible processed seafood products was \$11 billion. When seeking employment opportunities, graduates of aquaculture/fisheries benefit from experience with the processing of fish into value-added products. The UAPB Department of Aquaculture/Fisheries currently lacks a program that includes the processing of fish into food products.

In 2018, the UAPB Office of International Programs and Studies (OIPS) organized an international exchange program with the Centro de Formación Agroindustrial La Angostura (La Angostura) in Campoalegre, Department of Huila, Colombia. While UAPB does not have a program in value-added products for seafood, La Angostura lacks a program in fish disease diagnostics. The goal of the exchange program was to educate students and faculty from both universities in these respective areas.

In the summer of 2018, four UAPB aquaculture/fisheries students and three faculty and staff learned about value-added fish product development and food safety. They visited a tilapia processing plant and participated in value-added workshops where they learned a variety of processing techniques. The hands-on training students received will help prepare them for careers in the industry. In October 2018, five students and two faculty members from La Angostura took part in a two-week training program on fish disease diagnosis at the UAPB Aquaculture/Fisheries Center of Excellence. The participants engaged in hands-on training activities about water quality, fish anatomy and the diagnosis of parasites, bacteria and viruses in fish. The project highlights how international exchange programs strengthen knowledge and skills, enabling faculty, Extension staff and students to enhance workforce readiness in a strategic sector of the global economy.



Sweetpotato Leaves: America's Next Big Leafy Green?

American consumers are becoming more conscious of caloric and nutritional intake. In the agricultural sector, expanded research and production are necessary to meet the high demand for low-calorie, nutritive leafy vegetables. Small producers in Arkansas could benefit from bringing different types of nutritious leafy vegetables to the market. Therefore, it is imperative that researchers determine types of leafy greens that can be grown in Lower Mississippi Delta conditions and that will satisfy the specific tastes of consumers nationwide.

As an 1890 land-grant institution, UAPB has a commitment to provide resources and opportunities for the state's limited-resource farmers. University faculty determined the potential of sweetpotato leaves as a vegetable product in the commercial market because of their delicate flavor and high nutritive value. A project was started to develop and distribute sweetpotato plant varieties to limited-resource farmers, who could increase their revenue by bringing the sweetpotato leaves to market. Researchers studied different varieties of sweetpotatoes to determine the lines that would ensure the right size and amount of leaves per plant, as well as desired Vitamin C, antioxidant, soluble solid, sugar and protein contents.

This ongoing project helps prove the potential of sweetpotato leaves as a viable crop for producers and product for health-conscious consumers. Thanks to UAPB research, Arkansas farmers will have access to the best plant genotypes to grow. The university's effort to establish genotypes that ensure a healthy and tasty final product could bolster research and production across the state and nation. The project's next phase is to compare the leaves of chosen sweetpotato lines with other commercial leafy vegetables such as spinach and kale.



“Cooking Matters” Program Teaches Seniors How to Prepare Nutritious Meals

Senior citizens are a demographic particularly vulnerable to food insecurity. Their challenges include the inability to afford food, decreased mobility, sedentary lifestyles, lack of transportation and limited shopping and cooking ability. Seniors can suffer major illnesses due to malnutrition stemming from lack of access to healthy food. According to the AARP, food insecurity costs older adults in the U.S. an estimated \$130 billion annually in additional health care expenses.

The UAPB 1890 Cooperative Extension Supplemental Nutrition Assistance Program Education (SNAP-Ed) conducted a six-week “Cooking Matters” program with 20 senior residents at the St. John Alexander Tower low-income housing apartment complex in Pine Bluff, Arkansas. The program centered around building the residents’ self-efficacy in regard to making better food choices when shopping. Curricula focused on the preparation of healthy meals and snacks at home. Program administrators explained how participants could get the most out of their food budget. They also taught how to spot added sugar and sodium in foods by reading labels.

By the end of the course, participants knew how to select nutritious, low-cost products while shopping and how to prepare meals for themselves and their families. They learned the value of reading nutritional labels instead of merely looking at product packaging, buying food with less added sugars and sodium and increasing water consumption throughout the day. Thanks to hands-on cooking sessions, they had the recipes and skills to recreate a variety of healthy dishes at home. Participants reported that participating in the cooking demonstrations was fun and engaging.

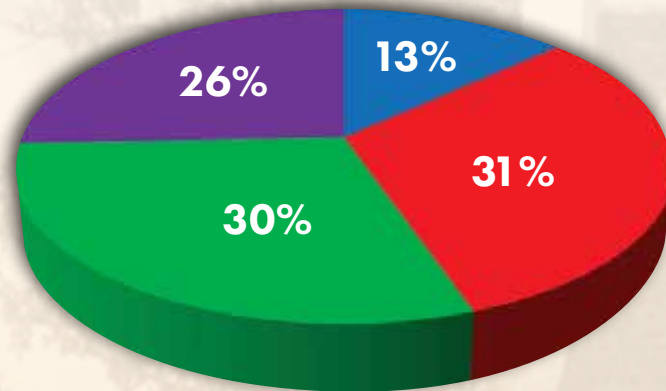




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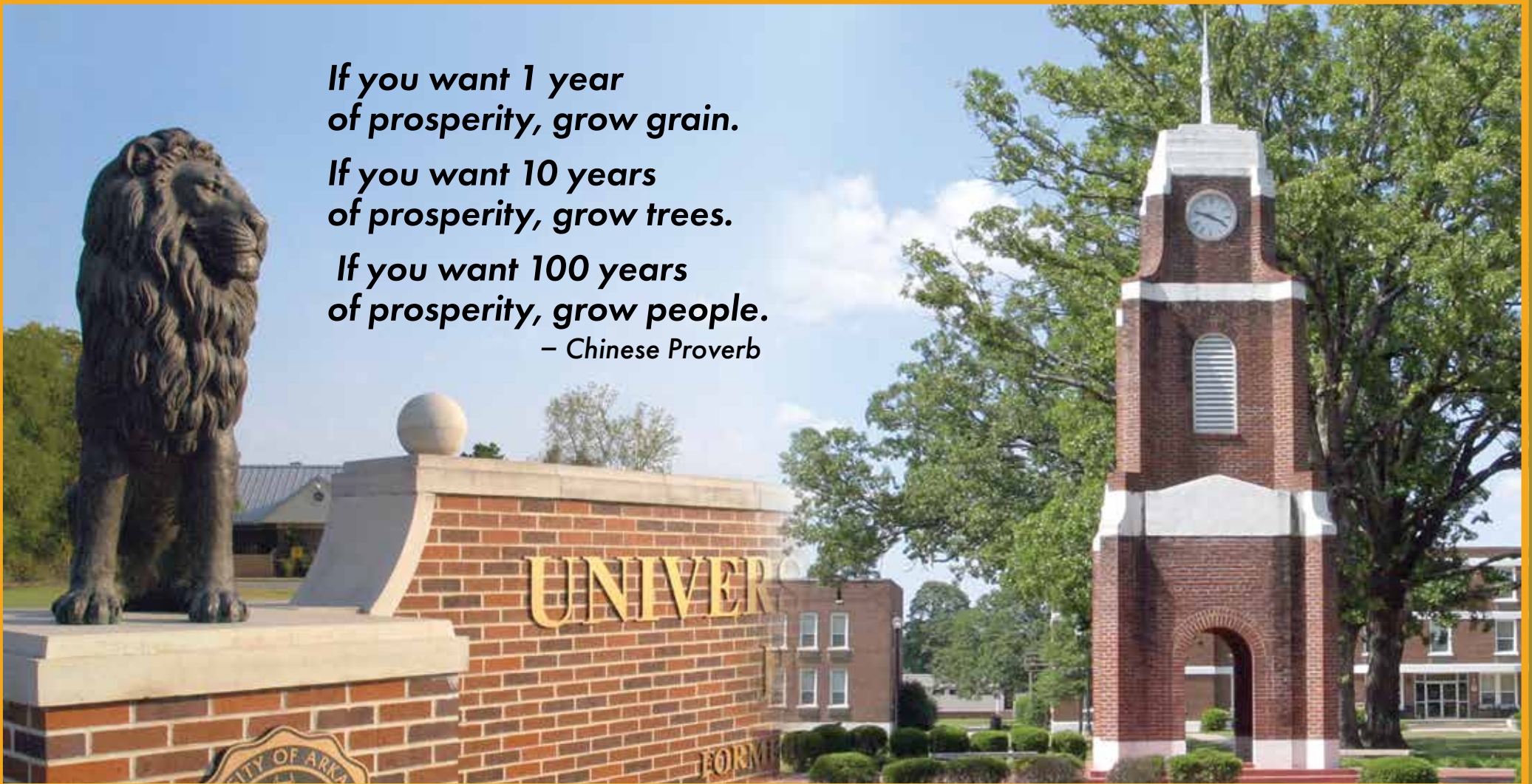
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- UAPB E&G Support
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- Competitive Grants and Contracts
- State Funds

\$ 1,960,310	UAPB Educational and General (E&G) Support
\$ 4,379,660	NIFA:USDA Formula Funds (1890 Research and Extension)
\$ 3,767,023	Competitive Grants and Contracts
\$ 4,608,287	State Match Funds
\$14,715,280	

***If you want 1 year
of prosperity, grow grain.
If you want 10 years
of prosperity, grow trees.
If you want 100 years
of prosperity, grow people.
– Chinese Proverb***



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