

University of Arkansas System Division of Agriculture Combined Research and Extension Plan of Work 2021-2025

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I. Plan Overview

1. Executive Summary

University of Arkansas System Division of Agriculture (Division of Agriculture) faculty, staff and facilities are located on seven university campuses, four Research and Extension Centers, six Research Stations, two Extension Centers, and in all 75 counties. Unlike many states today, the Division of Agriculture remains committed to this statewide infrastructure with a presence in all 75 Arkansas counties, ensuring that Researchers and Extension educators are readily available to address the science and business of agriculture and the broader needs of families and the communities we serve.

Consistent with the land grant mission, the Division of Agriculture Research and Extension faculty have a long history of providing leadership in the development and dissemination of innovative practices and emerging technology. Division researchers conduct basic and applied research for Arkansas producers, businesses, communities, and families. County agents and specialists strive to provide the best science-based recommendations available. Although stakeholders are exposed to multiple sources and copious amounts of information and data, the Division of Agriculture remains a reliable source of impartial and science-based recommendations, independent of financial or philosophical interests.

During 2021, the Division will continue to deliver timely and responsive distance education webinars and resources addressing emerging issues through the National Agricultural Law Center. Previous issues covered included: Agriculture and COVID-19, Supreme Court cases on water rights, immigration laws for agricultural businesses, 2018 Farm Bill, and H-2A Temporary Ag Guest Worker Program. Extension educational programming for Arkansas clientele will also be available 24/7/365 through web-based instruction at the Extension online course website <http://courses.uaex.edu>. The Division's course catalog is ever expanding with topics that include Master Gardener training, backyard poultry, and the Soybean Science Challenge.

The focus of work conducted by the Division of Agriculture continues to be guided annually by grass-roots, community-based input from a diverse range of Arkansas citizens; mainly through the use of County Extension Councils and other local advisory groups. The Division of Agriculture formally engaged a large pool of stakeholders (including individual clientele, producers, schools, partner agencies and organizations, state government officials, community leaders, underserved groups, and legislators) in the design and development of the 2017-2023 Strategic Plan. Based on broad stakeholder feedback, the Division identified five areas to focus our efforts:

- Agricultural and Forestry Production and Processing
- Access to Safe and Nutritious Food
- Strengthening Arkansas Families
- Building Communities and Strengthening Economies
- Natural Resource Conservation and Management

These five emphasis areas help to provide strategic local guidance for Division Research and Extension programs and help to support integrated research/extension efforts that align with the NIFA Science Emphasis Areas.

2021-2025 Arkansas Extension and Research Critical Issue Highlights

Agricultural and Forestry Production and Processing

A critical need in Arkansas, and nationwide, is to ensure farm and forest enterprises are profitable and sustainable to meet the demands for safe food, fiber, and fuel. The agricultural industry must contend with more regulations, higher input costs, declining commodity prices, climate extremes, and global trade policies. The Division of Agriculture research and educational programs will focus on increasing productivity in a humane and sustainable manner while decreasing costs through efficient use of resources. Plant systems emphasize economics, environment, genetics and breeding, weeds, disease, pest management, safe handling and storage, food processing, cultural practices, and soil fertility. Animal systems emphasize genetics, reproduction, economics, nutrition, waste management, physiology, environmental stress, health, and wellbeing. Common to both plant and animal systems is the appropriate use of new products and technology.

Access to Safe and Nutritious Foods

Food safety will always be important and creates a constant need for good information. Researchers are working with the poultry and many industries on new solutions as well as updated educational programs in food safety. Growers of fresh fruits and vegetables have increasingly been challenged by food safety concerns and the myriad of new management practices and The Produce Safety Rule now in effect. Extension is providing access to the required education to these growers throughout the state. Extension helps people from many backgrounds to understand how to make wise nutritional choices and to stretch food dollars by cooking for themselves, utilize a wider variety of foods, and promote a healthier lifestyle with physical activity for all ages. The Division of Agriculture will strengthen food systems through research and innovation. The long-term growth of the food industry in Arkansas is dependent upon the industry's ability to innovate, to respond to consumers' taste and expectations, to employ a quality workforce and to minimize environmental impacts and the use of natural resources while maintaining economic viability.

Strengthening Arkansas Families

It is critical that 4-H convey to the public that all youth have value. Striving to reach a diverse population is key to developing curriculum, offering recognition, and teaching strong leadership skills to represent our state's current demographics. It is also critical to address challenges that affect families, consumers, and the communities in which they live. The work of the Division of Agriculture focuses on areas such as 4-H clubs, camps, parenting, leadership, family relationships, stress management, and financial resource management, thereby improving quality of life for all Arkansans.

Building Communities and Strengthening Economies

Changes in the economy, technology and population are transforming how Arkansans live and work. There is a critical need for businesses to understand their changing economic environment and effectively employ tools and resources. At the same time, the labor force requires enhanced skills and training to succeed in today's global economy. At a time when many rural areas are losing population, communities must take a proactive approach to create a high quality of life and place if they want to survive. Effective and inclusive leaders working with engaged citizens are key to this effort. To address these critical needs, programs focus on four areas: economic viability and sustainability; entrepreneurship in evolving economies; leadership and civic engagement; and quality of life and place.

Natural Resource Conservation and Management

Arkansas faces critical natural resource issues including groundwater decline in Eastern Arkansas from irrigation, water

quality concerns from animal manures, sediment loss from cropland and urban stormwater. We all share concerns for soil health, air quality, protection of ecosystem services of forests and wildlife habitat, but agriculture is under scrutiny to reduce impact on natural resources. We focus on unbiased Research and science-based Extension efforts to balance conservation of natural resources. Programs, such as Arkansas Discovery Farms and the Center for Agricultural and Rural Sustainability, will collaborate with farmers, landowners, and industry to deliver innovative, sustainable programs to ensure proper conservation and management of natural resources.

2. FTE Estimates

Year	1862 Extension	1862 Research
2021	370.0	440.0
2022	370.0	440.0
2023	370.0	440.0
2024	370.0	440.0
2025	370.0	440.0

II. Merit / Peer Review Process

Programs go through a three-tiered review process - stakeholder program identification and review; administrative approval and review; and external review.

Stakeholder program identification and review involves formal and informal means for all program areas. Public comment extension and research programs is obtained from local meetings, community groups, commodity boards, legislative committees and issue forums. Public meetings, field days and production meetings also provide input from under-served or under-represented individuals, groups or organizations.

For Cooperative Extension, county councils meet during summer months (each year) to provide input and/or review of program implementation, redirection, or new needs. Members of these groups were invited to participate in field days, special tours, workshops and conferences for the duration of the program. All reviews of research and extension programs include a stakeholder member or members of the community or industry most influenced by the program area. Open public forums are held to address specific issues of importance to the stakeholder community or industry.

Planned program areas for research and extension were administratively reviewed and approved by the Arkansas Director of the Agricultural Experiment Station and/or Director of Cooperative Extension Service, as appropriate, within the context of the Division of Agriculture's Strategic Plan and the specific needs identified by stakeholder groups. Smith-Lever, Hatch, McIntire-Stennis, Animal Health and regional projects are administratively reviewed and approved by the subject matter department head and the director of the Experiment Station and/or Extension Service. All research projects are reviewed by three outside scientists prior to submission to the respective subject matter department head and the experiment station.

External merit reviews are conducted as part of the Division of Agriculture's on-going program review process. The reviews are by department, or program area across departments. Reviews are scheduled on a 9-10 year cycle and conducted concurrently for research, extension and instruction. All reviews are conducted by a team of recognized outside research, extension and teaching professionals balanced to reflect programmatic needs and diversity. All reviews include one or more stakeholders. The actual review process involves a period of self-study, followed by program assessment and bench marking. The review team evaluates effectiveness relative to the stated mission and goals of the department or program as well as the needs of stakeholders. Following the outside review teams' written evaluation, the department or program prepares a response to the review. The Division of Agriculture and University administration then meet with the department or program faculty one more time to develop a plan for implementing changes. In 2019, the Division of Agriculture initiated a mid-term internal review for departments, which tracks the progress of the department toward meeting the external review team's recommendations and the department's plan for implementing changes.

III. Stakeholder Input

1. Actions to Seek

The University of Arkansas System Division of Agriculture utilizes both formal and informal mechanisms for ensuring the planned programs address areas of strategic importance to the state.

Each Division of Agriculture planned program is based on the needs identified in a series of electronically delivered surveys with current and potential stakeholders representing the diversity of the population in the regions and state. Single issue and county level meetings are held as needed to address emerging issues and to craft additional program responses if needed to promptly address the problem.

All stakeholder groups provide meaningful suggestions for programmatic improvements.

2. Methods to Identify

In 2020, the University of Arkansas Division of Agriculture sought, and continues to seek, input from diverse stakeholder groups. Stakeholders serve on county councils, advisory committees, and boards that advise and oversee the work of the Division. Individuals and stakeholder groups were identified by Arkansas Experiment Station faculty and administrators and by asking county Extension staffs to identify individuals in their local communities who were representative of one or more of the following fifteen stakeholder categories: county services (e.g., DHS, Food Bank or Pantry); financial sector (e.g., banks, agricultural lending, investments); faith-based sector (e.g., church, youth minister); education (public, private, vocational); commercial sector (e.g., chambers of commerce, industry); health (e.g., hospital, public health, doctor); agricultural production; agricultural businesses; county Extension council; 4-H program (e.g., leader, teen, alumni, foundation); government official (e.g., county, city); Extension homemaker; natural resources (e.g., wildlife, forestry, conservation); media (e.g., radio, newspaper, television); and youth services (e.g., community center, youth organizations). In addition to these criteria, Extension agents were also asked to identify individuals within the fifteen categories who were representative of the gender, racial, ethnic, and socioeconomic demographic make-up of the counties.

3. Methods to Collect

During the summer of 2019 and in the upcoming summer of 2020, Division of Agriculture Extension faculty met with county council members and program sub-committees to identify local needs for the program planning year beginning October first. County profiles developed by state faculty were utilized to examine the diversity of needs and to understand the changing demographics within each county. Stakeholder developed materials, such as the Farm Bureau policy development process was used to identify research needs. Several priority-setting activities were scheduled during 2019 and 2020 with specific commodity and stakeholder groups to seek input on the research planning process.

Division of Agriculture stakeholders participate in establishing annual Cooperative Extension program priorities for each of the 75 counties in Arkansas. During the statewide listening sessions in support of the Division of Agriculture five-year strategic plan, policy makers and key community and state organizational leaders considered critical and emerging needs within our state, and the role of the Division in addressing those needs. This group voiced their concerns about population changes across the state and challenges facing communities in a competitive economy. We heard comments concerning the different issues Arkansans must struggle with every day, including maintaining a competitive edge in agriculture and childhood health and obesity.

In addition to the standard methods of obtaining stakeholder input described above, in 2017, the University of Arkansas System Division of Agriculture updated its strategic plan. The 2017-2023 strategic plan for the Division included input from internal and external stakeholders statewide. Internal and external stakeholders participated in these processes. Specific surveys were conducted with individuals representing underserved or under-represented groups, women in agriculture and small farm operation producers.

4. How Considered

Division of Agriculture Research and Extension faculty and scientists met with administration to discuss stakeholder needs solicited at meetings throughout the year. Identified needs will be integrated into the Extension and Research planning process to ensure program relevance. Several departments and many of our institutes and centers maintain external advisory boards that provide direct feedback to the unit on the specific research or educational program. Stakeholder representatives served on most policy-setting groups or program reviews to ensure that the public has a voice in the decision-making process and in program evaluation. Special meetings were held as needed to address major issues impacting any stakeholder group. Stakeholder input remains vital to ensuring program relevance, and each year programs are adjusted to address identified needs.

The following emphasis areas were identified for 2017-2023:

- Agricultural and Forestry Production and Processing
- Access to Safe and Nutritious Food
- Strengthening Arkansas Families
- Building Communities and Strengthening Economies
- Natural Resource Conservation and Management

The Division of Agriculture's 2017-2023 Strategic Plan outlines the specific objectives for each area and is based on what we learned from our stakeholders.

IV. Critical Issues

1 UADA- Agricultural & Forestry Production & Processing

Description:

A critical need in Arkansas, and nationwide, is to ensure farm and forest enterprises are profitable and sustainable to meet the demands for safe food, fiber, and fuel. The agricultural industry must contend with more regulations, higher input costs, declining commodity prices, climate extremes, and global trade policies. The Division of Agriculture research and educational programs will focus on increasing productivity in a humane and sustainable manner while decreasing costs through efficient use of resources.

Division scientists continue to develop new, and refine, existing plant production and processing systems, that are then disseminated to producers through Extension programs. Plant system efforts will continue to emphasize economics, environment, genetics and breeding, weeds, disease, pest management, safe handling and storage, food processing, cultural practices, and soil fertility.

Animal systems emphasize genetics, reproduction, economics, nutrition, waste management, physiology, environmental stress, health, and wellbeing. Common to both plant and animal systems is the appropriate use of new products and technology.

The Division of Agriculture also works to support the needs of economics side of agriculture, as there is great potential for market growth through the development and adaption of novel and innovative products and technology.

Term: Long

Science Emphasis Areas

Agroclimate Science
Bioeconomy, Bioenergy, and Bioproducts
Environmental Systems
Food Safety
Sustainable Agricultural Production Systems

2 UADA- Access to Safe and Nutritious Food

Description:

Food safety will always be important and creates a constant need for good information. The Division continues to work with the poultry and many industries on new solutions as well as updated educational programs in food safety. Growers of fresh fruits and vegetables have increasingly been challenged by food safety concerns and the myriad of new management practices and regulations now in effect. Extension is providing access to the required education to these growers throughout the state.

In the area of nutrition, Extension helps people from many backgrounds to understand how to make wise

nutritional choices and to stretch food dollars by cooking for themselves, utilize a wider variety of foods, and promote a healthier lifestyle with physical activity for all ages. Division scientists conduct research to improve existing and develop new processing technologies to ensure we continue to have healthy, high-quality foods.

The Division of Agriculture will strengthen food systems through research and innovation. The long-term growth of the food industry in Arkansas is dependent upon the industry's ability to innovate, to respond to consumers' taste and expectations, to employ a quality workforce and to minimize environmental impacts and the use of natural resources while maintaining economic viability.

Term: Long

Science Emphasis Areas

Family & Consumer Sciences
Food Safety
Human Nutrition
Youth Development

3 UADA- Strengthening Arkansas Families

Description:

Arkansans are facing many serious challenges to health and wellbeing, including high rates of obesity, poverty and family instability. The Division is committed to helping Arkansans develop and transition through life stages by offering programs for children and youth, young adults, families, adults, and senior adults.

The Division of Agriculture strives to give youth in the state the tools and skills need to increase their resiliency and overall well-being and that is being done through youth development programming, primarily delivered through the Arkansas 4-H Program. The 4-H program has a presence in all 75 counties and conducts programs in the areas of leadership and civic engagement, agriculture and STEM, and healthy living.

It is also critical to address challenges that affect families, consumers, and the communities in which they live. The Family and Consumer Sciences program offers Extension programming focusing on parenting, leadership, family relationships, stress management, and financial resource management, thereby improving quality of life for all Arkansans.

The Division of Agriculture is continually working to identify and investigate current and emerging needs of families and youth that will then inform Division programs into the future. A large emphasis is on utilizing and exploring the impacts of policy, systems, and environmental interventions (PSEs), which has continued to be shown as an effective component to create sustained change.

Term: Long

Science Emphasis Areas

Education and Multicultural Alliances
Family & Consumer Sciences
Youth Development

4 UADA- Building Communities and Strengthening Economies

Description:

Changes in the economy, technology, and population continue to transform how Arkansans live and work. There is a critical need for businesses to understand their changing economic environment and effectively employ tools and resources. At the same time, the labor force requires enhanced skills and training to succeed in today's global economy. Many rural areas are losing population, which means communities must take a proactive

approach to create a high quality of life and place if they want to survive. To address these critical needs, Division efforts focus on four areas: economic viability and sustainability; entrepreneurship in evolving economies; leadership and civic engagement; and quality of life and place.

Economic development research and extension programs enable communities and regions to identify and implement innovative economic and workforce development strategies. Entrepreneurship and business development programs assist in the development of value added and local food systems, risk management, pursuit of new market opportunities such as government contracts, and development of new businesses, products, and services. Science, technology, and workforce skill development programs are also available to youth and adults.

Leadership development and Public Policy Center programs help Arkansans broaden their understanding of issues and opportunities facing our state and strengthen their ability to make a difference. Local government programs provide community members and local officials with resources to plan the provision of infrastructure and services in the changing economic

Term: Long

Science Emphasis Areas

Education and Multicultural Alliances
Family & Consumer Sciences
Sustainable Agricultural Production Systems
Youth Development

5 UADA- Natural Resource Conservation and Management

Description:

Arkansas is rich in natural resources, but each region of the state faces unique challenges to protect the natural resources for future generations. For example, in the Mississippi Delta region of Eastern Arkansas, groundwater decline due to decades of increased crop irrigation is a major concern, as is sediment loss from cropland. Water quality and soil nutrient loading from animal manure applications is a critical issue in the Ouachita and Ozarks regions.

Division scientists work collaboratively to define and promote the best science-based practices for natural resource conservation. The Division utilizes the Discovery Farms program to monitoring the impact of farming practices on private, working farms on water use, water quality and soil health. The Crop Research Verification Trials enrolls fields for on-farm demonstration of science-based recommendations which lead to profitable and sustainable crop production. The Center for Agricultural and Rural Sustainability (CARS) encourages collaboration among scientists, farmers, landowners, and industry to deliver sustainable programs for conservation and management of natural resources along the supply chain. The Arkansas Forest Resources Center develops and delivers programs that enhance and ensure the sustainability of forest-based natural resources in Arkansas.

In the area of nutrient management, the Division's soil testing laboratory analyzes samples to ensure farmers and landowners receive appropriate fertilizer recommendations. Manure testing service continues to provide manure and poultry litter analysis needed for nutrient management plans by livestock and poultry producers. The Division delivers an online training program to provide the necessary training to certify nutrient management planners and nutrient applicators.

Term: Long

Science Emphasis Areas

Agroclimate Science
Bioeconomy, Bioenergy, and Bioproducts
Environmental Systems
Sustainable Agricultural Production Systems