

# University of Arizona Combined Research and Extension Plan of Work 2022-2026

**Status: NIFA Review**

## **I. Plan Overview**

### **1. Executive Summary**

Like all organizations around the world, Arizona Cooperative Extension will be dealing with the impacts of COVID-19 for many years to come. The pandemic has forced us to re-think how we deliver our programming, content, and other offerings to our stakeholders across the state. Fortunately, we're already skilled in delivering and communicating science and bringing it to bear on practical problems. We're also an organization that has been responsive to changing environments and adapting to challenges. We anticipate many challenges in addressing our critical areas of helping to build sustainable, profitable, and competitive food and fiber systems; natural resource conservation; health, safety, and economic security; quality youth engagement and programming; and preparation of future solutions.

Many challenges shape the future of Arizona agriculture. Over the next decade, Arizona agriculture will be challenged by international competition, environmental regulation, changes in technologies and the food and fiber production chain, and increased risk - this changing landscape offers new research and Extension opportunities. We expect these challenges to be met through both individual management decisions and the actions by government, land grant colleges, and grass roots groups of agricultural producers. National, state and county budgets are a challenge which impacts the ability of the Arizona Cooperative Extension to meet stakeholders needs, and limited funding and diminishing grant opportunities are problematic but not impossible to overcome. In spite of the problems, it is important to note that the direct, induced and ripple effects of Arizona Agriculture provide overall impact of nearly 9 billion dollars into our rapidly growing state.

Arizona farmers have been and continue to be early adopters of new technologies, including laser leveling, drip irrigation, transgenic cottons, insect growth regulators (IGRs), and others. Informed, innovative farm managers, as well as price and yield incentives, helped spur this early, widespread adoptions. Thus progressive farm management attitude and practices already in place will help assure the use and diffusion of new technologies in the next decade.

Technology is currently available to address many natural resource problems. To minimize adverse impacts on soil and water resources, ranchers will continue to conduct rangeland monitoring and adjust their livestock grazing systems. Specific methods are being developed to effectively demonstrate the benefits of instituting environmentally sound natural resource management programs. Arizona Cooperative Extension is becoming a leader in this arena. The social, environmental and economic benefits from these new practices need to be quantified and compared to the costs of not implementing these programs.

New developments in precision implements, communication, and computer technology promise to change some farming and ranching activities. For example, data from precision implements will be analyzed and shared through on-line tools, permitting improved interaction between farmers and various other players in the food and fiber production system. GPS and GIS will be an important part of precision farming. Our relationship with NASA will build on the GPS and GIS activities and its practical application at the local level. Agribusinesses will be more closely linked by these technologies and provide inputs tailored to individual field and feedlot needs.

Farms will continue to use more biotechnology, especially for managing pests. Bt and Roundup Ready cotton provide good examples of ways that biotechnology will help meet the challenge of long-run price declines and environmental challenges. For many years, the UA cotton management team has worked closely with growers in implementing the use of insect growth regulators and Bt cotton in their fields. Because of this program, there has been a 60% decline in pesticide spraying, resulting in a reduction of 1.6 million pounds of pesticides used. This has saved 142 million dollars and reduced damage by 11%.

Collective actions will also affect farming in the next decade, perhaps even more so than in the past. At the federal level, economic policies seem on track to foster low interest rates, a crucial factor for capital-intensive agriculture, and a growing economy. Higher incomes will encourage demand for value-added and specialty agricultural products. Research

and extension activities at the federal and state levels will provide information to reduce producer risk. At off-campus locations, the College of Agriculture and Life Sciences will use new computer and communications-based technologies to increase and make scientific information more accessible to farm and agribusiness managers and employees.

Although it shows ups and downs, most of Arizona agriculture has prospered over the last ten to fifteen years by successfully meeting the challenges of declining real commodity prices, increasing input prices, serious pest problems, drought, and increasing government regulations. This capacity to meet challenges bodes well for the future.

We speculate that ten years from now, Arizona agriculture will have about the same number of very large farms producing most of the state's agricultural production, the dairy sector will continue to expand, ranching may decline somewhat, and cropped acreage will be at about its present level, although the acreage of individual crops may change over the years. Native American agriculture will likely increase with the availability of affordable water. More noticeable changes will occur in production technologies, the degree of vertical integration, and increased interaction with the international market.

Our family and youth programs will also experience change. In this era of federal deregulation and block grants to states, Arizonans have both the opportunity and the responsibility to cope with the gap in children's health care coverage, the tragedies of child abuse and neglect, the struggles of parents without job skills, and chronic diseases such as obesity and diabetes. There is clear evidence that community effort can help prevent teenagers from having babies, committing crimes, and dropping out of school. Healthier people are better able to contribute to a robust economy.

Fortunately, we have the tools we need to face these challenges. The risk indicators confirm that focused attention, money, and uninterrupted effort over time will produce good results. As a result of increased federal and state investment, more children now have access to quality preschool, and more parents are getting help in paying for child care.

Health issues remain a challenge. We have a long way to go to reach the point where every Arizona child has the opportunity to succeed. The rate of reports of child abuse and neglect needing investigation grew about 30% in the past 10 years. The rate of child deaths due to abuse or neglect nearly doubled during that time. And perhaps the most alarming statistic is the 25% jump in the percentage of Arizona children living in foster care. These are the most vulnerable children in our communities, growing up without the security of a stable family. The challenge of our program is to provide unique research-based university outreach efforts in partnership with local and state government as well as non-governmental organizations to address these crises conditions.

**2. FTE Estimates**

Year	1862 Extension	1862 Research
2022	250.0	400.0
2023	250.0	400.0
2024	250.0	400.0
2025	250.0	400.0
2026	250.0	400.0

**II. Merit / Peer Review Process**

Arizona Cooperative Extension will utilize a multi-pronged approach to the merit and scientific peer review processes. These include updated software to facilitate the workflows, meeting with internal and external university panels, an improved onboarding process for new faculty/staff, and overall better communications. Our goal is to streamline the process and ensure consistency across the state with general expectations and criteria. This has been an issue in previous years under previous administration and we're still seeing impacts. But as many of the more-senior faculty age out of the system, we are shifting our focus to the newer personnel and getting them acclimated to our updated processes.

As for our merit process, much of that continues to be dependent on the activities of the college and the university - not to mention our continued funding. Because we're on a separate line item on the state budget, being able to provide merit packages is highly dependent on us securing that state and federal funding every year. Once those are secure, we have to work within the guidelines of the college and university as well as faculty advisory councils to ensure our process is adopted and equitable. We do this in two ways: 1. we solicit names from our leaders on who in their departments they feel should be considered for merit and, 2. we run salary analyses to determine who should be considered for merit. Once we have names, we present to other Extension leaders and make decisions.

Utilizing newer technology platforms is one of the ways we will deliver on this. It's been done with disconnected forms and spreadsheets in the past, but updated platforms will allow us to drive consistency. Many of our publications go through a very thorough vetting from peer reviewers. The current software is limited and only allows for solid data entry. But in order to be able to facilitate better communication and quicker responses, we're incorporating a second platform. This will help with the after-submission processes to track reviews, approvals, printing, and publishing documents. We hope to expedite the process so that our faculty can have their work out to the public faster, especially during times of immediate need – such as pandemics where scientific information is sought out from the state.

### **III. Stakeholder Input**

#### **1. Actions to Seek**

This plan will continue the long-standing integration between research and extension with appropriate input from stakeholders and below are some of the actions planned:

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey specifically with non-traditional individuals

#### **2. Methods to Identify**

We will use the following methods to identify groups and individuals to collect input:

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

#### **3. Methods to Collect**

Below are a few methods we plan to use for collecting stakeholder input:

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Survey of the general public
- Meeting specifically with non-traditional groups

- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public
- Other (Real-time assessment of programs and offerings)

**4. How Considered**

Stakeholder input is used by Cooperative Extension as well as the Arizona Experiment Stations for determination of priorities and establishment of programs. Here are a few ways we plan to use and incorporate the feedback:

- In the Budget Process
  - To Identify Emerging Issues
  - Redirect Extension Programs
  - Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
  - To Set Priorities

**IV. Critical Issues**

**1 A sustainable, profitable and competitive food and fiber system in Arizona**

**Description:**

Livestock production - to help livestock producers:

- Prevent potential threats by developing an early warning system to detect 1) new emerging diseases, 2) the resurgence of well-known diseases, and 3) the introduction of foreign animal diseases into the United States.
- Design management systems that fit an extensive range environment, including livestock production; genetics; nutrition; reproduction; economics; and grazing management.

Crop production - to help growers:

- Increase water use efficiency in irrigated crops.
- Use best management practices to enhance sustainable production of plants used for food, fiber, livestock feed, industrial products, and for environmental, aesthetic, recreational, conservation and ornamental purposes.

Urban horticulture - to help homeowners and landscape managers:

- Increase water use efficiency in home and commercial landscapes.
- Employ best management practices in the selection, installation, care and production of plants used for food, conservation, recreational and ornamental purposes.

**Term:** Long

**Science Emphasis Areas**

- Agroclimate Science
- Bioeconomy, Bioenergy, and Bioproducts
- Education and Multicultural Alliances
- Environmental Systems
- Food Safety
- Sustainable Agricultural Production Systems

**2 Enhance natural resource conservation and management**

**Description:**

Increase public awareness and understanding of water quality and quantity, watershed values, riparian areas, climate science and geospatial tools. Work with natural resource managers to improve management of rangeland and forest resources on a sustainable basis using best management practices.

**Term:** Intermediate

**Science Emphasis Areas**

Agroclimate Science  
Education and Multicultural Alliances  
Environmental Systems  
Family & Consumer Sciences  
Food Safety  
Sustainable Agricultural Production Systems  
Youth Development

**3 Improve the health, safety, and economic security of Arizona communities**

**Description:**

Provide training to help Arizona residents acquire the knowledge, skills, attitudes and behaviors necessary for self-sufficient, healthy lifestyles. Equip youth and adults with work and life skills to help them acquire and keep jobs in today's workforce.

**Term:** Intermediate

**Science Emphasis Areas**

Agroclimate Science  
Bioeconomy, Bioenergy, and Bioproducts  
Education and Multicultural Alliances  
Environmental Systems  
Family & Consumer Sciences  
Food Safety  
Human Nutrition  
Youth Development

**4 Arizona Youth focus and preparation**

**Description:**

Prepare Arizona youth to be productive citizens, equipped with the knowledge, skills, and attitudes needed for life-long learning and a positive future. Engage youth as participants and decision-makers in programs, organizations, and communities of 4-H and beyond. Promote the Arizona 4-H Youth Development program among diverse communities in Arizona.

**Term:** Long

**Science Emphasis Areas**

Education and Multicultural Alliances  
Environmental Systems  
Family & Consumer Sciences  
Youth Development

## **5 Prepare Arizonans for solutions of the future**

### **Description:**

Work with university specialists on innovative approaches to current problems as well as problems which we can't anticipate yet. Facilitate training and programming to introduce our communities, especially our youth, to help prepare them for jobs that don't even exist yet.

**Term:** Long

### **Science Emphasis Areas**

Bioeconomy, Bioenergy, and Bioproducts

Education and Multicultural Alliances

Environmental Systems

Family & Consumer Sciences

Sustainable Agricultural Production Systems

Youth Development