

# 2021 AFRI New Investigator Webinar Series Handout

Thank you for your interest in the USDA National Institute of Food and Agriculture FY 2021 [Agriculture and Food Research Initiative](#) (AFRI) program and associated webinar series for New Investigators that was held March 1-4, 2021. This document includes the information from the PowerPoint slides of all 8 presentations, as well as two additions that may be helpful to New Investigators, “Anatomy of an AFRI Request for Applications” and “Useful Links.” Please use the table of contents to navigate the document (or use the bookmarks function in Adobe Acrobat). You can find the [recordings of the webinar series](#) on our website.

Anatomy of an AFRI Request for Applications.....	1
AFRI New Investigator Overview .....	4
Overview of AFRI Food Safety, Nutrition and Health Program Area .....	9
Overview of AFRI Agriculture Economics and Rural Communities Program Area .....	16
Overview of AFRI Animal Health and Production and Animal Products Program Area .....	21
Overview of AFRI Education and Workforce Development Program Area .....	28
Overview of AFRI Agriculture Systems and Technology Program Area .....	34
Overview of AFRI Plant Health and Production and Plant Products Program Area .....	40
Overview of AFRI Bioenergy, Natural Resources, and Environment Program Area .....	50
Useful Links .....	56

## Anatomy of an AFRI Request for Applications

If you’re new to applying for NIFA grants under the Agriculture and Food Research Initiative (AFRI), it may be helpful to understand the structure of our Requests for Applications (RFAs). All AFRI RFAs have a standard document structure and sometimes include links to important resources on the NIFA website which should be reviewed by prospective applicants. While all parts of the RFA are important, some specific sections are highlighted below that will be particularly helpful in selecting what program area priority(ies) you might be interested in and useful in preparing an application.

- **Cover Page**  
For two-year RFAs, the cover page will mention when you should check back on the NIFA website or Grants.gov for the updated copy for the second year. If there has been a modification to the RFA for whatever reason, those changes will be listed on this page as well.
- **Executive Summary**  
Found at the beginning of all AFRI RFAs right after the cover page, the executive

summary will have some general information which includes the estimated funding available for the entire RFA, a table of deadlines, and some bullet points that list major changes compared to the previous year's RFA.

- **Part I, C. Program Area Descriptions**

Each of the program area priorities listed in this section will have vital information that will help you determine if the program area priority is appropriate for your project. At the beginning of the description are some basics including the program code needed for your application to get to the right place, maximum project periods, maximum budget(s), requested project & grant types, and specific deadlines for applications/letters of intent (at a minimum, all conference grants require LOIs). This is where you can see if the program accepts seed grants under the "Requested Grant Type" (please note that seed grants have a different maximum budget than standard grants, see AFRI Grant Types below). There are also NIFA contacts listed for each program area priority if you have questions on fit to program. Below the basic information are details on what subject matter is covered in the program along with any special emphasis topics. The last section of each program area priority description is additional Information that may include items such as information on other related programs that may be a better fit for certain topics, partnership opportunities with increased maximum budget (offered in select programs), specifics about requested topics, and other information relevant to an application.

- **Part II, C Project Types and Grant Types**

This section of the RFA has links to two documents:

- **AFRI Project Types** – This document describes the four types of projects that AFRI allows, 1) Research, 2) Education, 3) Extension and 4) Integrated Research, Education, and/or Extension Projects. This includes information on budgeting the different components in an Integrated Project. Each program area priority will specify what type of project(s) they allow in Part I, C.
- **AFRI Grant Types** – This document describes the different types of grants that AFRI allows. This includes information on seed grants (what their purpose is and what the budget maximum is), New Investigator eligibility, and strengthening grant eligibility. Some AFRI grant types such as seed grants and equipment grants also have specific limits to their maximum budget listed in this document. Each program area priority will specify what type of project(s) they allow in Part I, C.

- **Part III, A. Eligible Applicants**

Applicant eligibility is linked to project type (listed in Part I, C for each program area priority). Eligibility information is listed in this section. In general, single-function projects (research, education, or extension) have the broadest eligibility. Integrated projects have more restrictive eligibility for only colleges and universities that fulfill certain requirements listed in this section.

- **Part IV, A. Letter of Intent**

This section has a link to the letter of intent instructions which includes information on number of pages and content required for LOIs. All conference grant applications require LOI submission. Each program area priority will specify whether or not they require a LOI submission in Part I, C.
- **Part IV, B. Electronic Application Package**

AFRI uses Grants.gov for all application submissions. This section explains where to find the application package for that particular RFA. If you are with a college or university, you should also contact your Office of Sponsored Programs/Grants Office in case they have specific procedures for application submissions.
- **Part IV, C. Content and Form of Application Submission**

Application and submission information including page limits, project narrative font, and other required or optional documentation can be found in the document linked to from this section. That document also references the [NIFA Grants.gov Application Guide](#) which is available through Grants.gov.
- **Part IV, D. Submission Dates and Times**

Along with repeating the time zone for the deadlines listed in Part I, C and a general checklist for parts of an application (not an exhaustive list of what may be required), this section has specific information on when your Authorized Representative should expect to receive correspondence confirming the submission. If no NIFA correspondence has been received within 30 days of the application deadline, make sure to reach out to the NIFA program contact(s) listed in the RFA.
- **Part IV, E. Funding Restrictions**

You can find information about indirect costs here. The indirect cost limits apply to the total of all indirect costs including those of the lead institution as well as any sub-awards. If you are with a college or university, you should also contact your Office of Sponsored Programs/Grants Office who should be familiar with these calculations as well as other budgetary requirements.
- **Part V, B. Evaluation Criteria**

While developing your application, you should review the evaluation criteria document to which this section links. It details the evaluation criteria used by the AFRI peer review process for various types of applications. There is also a link to a page with a description of NIFA's peer review process and a grant writing tips handout.
- **Part VIII, D. Definitions**

The information in this section, as well as the linked resource (7 CFR 3430), has definitions of terms used in the RFA.

We also have an [AFRI FAQ](#) with some commonly asked questions. Please see the last section of this handout, "Useful Links," for other FAQ links and additional resources.

## AFRI New Investigator Overview

### Presenter

Mark A. Mirando, Ph.D.  
National Science Liaison, Animal Systems  
AFRI Science Coordinator  
[mark.mirando@usda.gov](mailto:mark.mirando@usda.gov)

### Content from Slides

- Webinar Agenda for the Week
  - Seven subsequent webinar sessions
- Overview of AFRI
  - Organization and structure of AFRI
    - Three Requests for Applications (RFAs)
  - AFRI grant types and project types
    - Eligibility criteria and restrictions
    - Opportunities in AFRI for New Investigators
- Questions and Answers

### Webinar Agenda for March 1 - 4

- Monday, March 1
  - 1-2:30 CST - AFRI New Investigator Overview
  - 3-4:30 CST - Overview of AFRI Food Safety, Nutrition and Health Program Area
- Tuesday, March 2
  - 1-2:30 CST - Overview of AFRI Agriculture Economics and Rural Communities Program Area
  - 3-4:30 CST - Overview of AFRI Animal Health and Production and Animal Products Program Area
- Wednesday, March 3
  - 1-2:30 CST - AFRI Education and Workforce Development Program Area
  - 3-4:30 CST - AFRI Agriculture Systems and Technology Program Area
- Thursday, March 4
  - 1-2:30 CST - AFRI Plant Health and Production and Plant Products Program Area
  - 3-4:30 CST - AFRI Bioenergy, Natural Resources, and Environment Program Area

## Overview of the Agriculture and Food Research Initiative

### Organization of AFRI

- Aligned with the 6 Farm Bill priorities
- Three Requests for Applications (RFAs)
  1. Foundational and Applied Science\*
  2. Education and Workforce Development\*
  3. Sustainable Agricultural Systems

\*Published as 2-year RFAs with FY 2021 and FY 2022 deadlines

### Foundational and Applied Science

Program Areas directly aligned with the Farm Bill Priorities for AFRI

- Plant health and production, and plant products
- Animal health and production, and animal products
- Food safety, nutrition, and health
- Bioenergy, natural resources, and environment
- Agriculture systems and technology
- Agriculture economics and rural communities
- Cross-cutting Program Area Priorities

### Program Areas

- Plant health and production, and plant products
  - Foundational Knowledge of Agricultural Production Systems
  - Foundational Knowledge of Plant Products
  - Pests and Beneficial Species in Agricultural Production Systems
  - Physiology of Agricultural Plants
  - Plant Breeding for Agricultural Production
  - Pollinator Health: Research and Application
  - Conventional Plant Breeding for Cultivar Development
- Animal health and production, animal products
  - Animal Reproduction
  - Animal Nutrition, Growth and Lactation
  - Welfare and Well-being of Agricultural Animals
  - Diseases of Agricultural Animals
  - Animal Breeding and Functional Annotation of Genomes
- Food safety, nutrition, and health
  - Food Safety and Defense
  - Novel Foods and Innovative Manufacturing Technologies
  - Diet, Nutrition and the Prevention of Chronic Diseases
  - Food and Human Health
  - Mitigating Antimicrobial Resistance Across the Food Chain

- Bioenergy, natural resources, and environment
  - Soil Health
  - Water Quantity and Quality
  - Sustainable Bioeconomy through Biobased Products
  - Sustainable Agroecosystems: Health, Functions, Processes and Management
- Agriculture systems and technology
  - Engineering for Agricultural Production Systems
  - Bioprocessing and Bioengineering
  - Nanotechnology for Agricultural and Food Systems
- Agriculture economics and rural communities
  - Small and Medium-Sized Farms
  - Economics, Markets and Trade
  - Economic and Social Implications of Food and Agricultural Technologies
  - Rural Economic Development
- Cross-cutting Program Areas Priorities
  - Agricultural Microbiomes in Plant Systems and Natural Resources
  - Critical Agricultural Research and Extension (CARE)
  - Data Science for Food and Agricultural Systems (DSFAS)
  - Inter-Disciplinary Engagement in Animal Systems (IDEAS)
  - Tactical Sciences for Agricultural Biosecurity

#### Education and Workforce Development

- Postdoctoral Fellowships – individual applies
- Predoctoral Fellowships – individual applies
- Research and Extension Experiences for Undergraduates (REEU) – institution applies for a group of fellowships
- Professional Development for Agricultural Literacy
- Agricultural Workforce Training
- Food and Agricultural Non-formal Education
- Agricultural Literacy and Workforce Development Evaluation

#### Sustainable Agricultural Systems

- Started in 2018
- Progression of the Challenge Areas to new transdisciplinary systems-level work
- Up to \$10 million per systems-level Coordinated Agricultural Project (CAP) grant
- Solicits creative and visionary projects that:
  - use transdisciplinary approaches
  - integrate research, education, and extension
  - promote convergence of science and technology
  - solve present and future challenges to food and agricultural production system
  - result in societal benefits

### *AFRI Grant Types*

- Standard Grants
- Coordinated Agricultural Projects (CAP)
- Conference Grants
- Food and Agriculture Science Enhancement (FASE) Grants
  - New Investigator Grants – two types
  - Strengthening Grants – several types
  - Pre- and Postdoctoral Fellowship Grants

### *Food and Agricultural Science Enhancement (FASE) Grants*

#### Goals:

- Help institutions develop competitive projects
- Attract new scientists and educators into careers in high-priority areas of national need in food and agricultural sciences

#### Types:

- New Investigator Grants
  - Standard Grants
  - Seed Grants
- Strengthening Grants
  - Strengthening Standard Grants
  - Strengthening CAP Grants
  - Strengthening Conference Grants
  - Seed, Sabbatical and Equipment Grants
- Pre- and Postdoctoral Fellowships

### *New Investigators Grants*

- Project Director (PD) Eligibility:
  - First 5 years of first career-track position
  - Limited publication record
  - No previous Federal funding as PD other than a pre- or postdoctoral fellowship or AFRI seed grant
  - Offered only in program area priorities of Foundational and Applied Science RFA
- Types
  - New Investigator Standard Grants
    - Standard Grants in all respects except submitted by New Investigator
    - Submitted to Program Area Priority of interest
    - Project type, budget restrictions, page limits, project duration are same as Standard Grants
    - Check “New Investigator” box on the AFRI Project Type form

- New Investigator Seed Grants - New
  - Seed Grants for New Investigators
  - To obtain preliminary data to support a subsequent Standard Grant application to AFRI
  - Submitted to Program Area Priority of interest
  - \$300,000 (total costs) for 2 years
  - Check “New Investigator” and “Seed Grant” boxes on the AFRI Project Type form

### Strengthening Grants

- Project Director Eligibility - located at degree-granting institutions that are...
  - in EPSCoR states or entities
  - small to mid-size – not among most successful,  $\leq 17,500$  students
  - minority-serving – not among most successful,  $>50\%$  minority enrollment
- Types
  - Strengthening Standard Grants
  - Strengthening CAP Grants
  - Strengthening Conference Grants
    - only difference is institutional eligibility
  - Seed, Sabbatical and Equipment Grants
    - Unique to FASE (Seed) and Strengthening (Sabbatical and Equipment)

### Pre- and Postdoctoral Fellowships

- Project Director (PD) Eligibility
  - Citizens, Nationals, Permanent Residents
    - Progress toward degree for Predoctoral Fellowships
    - Time since completion of doctoral degree for Postdoctoral Fellowships
    - see RFA
- Types
  - Predoctoral Fellowships and Postdoctoral Fellowships
  - Offered in the Education and Workforce Development RFA
  - Institutional eligibility is not restricted to degree-granting institutions

### Project Types

#### Types and Eligibility

- Single Function – research, education, or extension
  - Broad eligibility for entities in U.S.
- Integrated research, education and/or extension
  - Eligibility is restricted to colleges and universities in U.S.

## Grant Types and Project Types

Each program area priority in each RFA specifies:

- Grant types requested
- Project type requested

Only applications for the requested grant type and requested project type will be considered for evaluation

## AFRI Webpages for Frequently Asked Questions

- AFRI New Investigator FAQs: [AFRI Food and Agricultural Science Enhancement \(FASE\) Grants for New Investigators FAQs](#)
- AFRI General FAQs: [AFRI Frequently Asked Questions \(FAQ\)](#)
- AFRI FASE FAQs: [AFRI / FASE - Frequently Asked Questions](#)

## What To Do If You Have Questions?

Consult the RFA and Contact the Program Staff!

## Overview of AFRI Food Safety, Nutrition and Health Program Area

March 1, 2021

3:00-4:30 pm CST

## Content from Slides

AFRI New Investigator Webinar Series - all times in CST

- AFRI New Investigator Overview, Monday, March 1, 1-2:30
- AFRI Food Safety, Nutrition and Health Program Area, Monday, March 1, 3-4:30
- AFRI Agriculture Economics and Rural Communities Program Area, Tuesday, March 2, 1-2:30
- AFRI Animal Health and Production and Animal Products Program Area, Tuesday, March 2, 3-4:30
- AFRI Education and Workforce Development Program Area, Wednesday, March 3, 1-2:30
- AFRI Agriculture Systems and Technology Program Area, Wednesday, March 3, 3-4:30
- AFRI Plant Health and Production and Plant Products Program Area, Thursday, March 4, 1-2:30
- AFRI Bioenergy, Natural Resources, and Environment Program Area, Thursday, March 4, 3-4:30

## AFRI Food Safety, Nutrition, and Health Program Area: Program Area Priorities

- A1332 Food Safety and Defense
- A1364 Novel Foods and Innovative Manufacturing Technologies
- A1511 Nanotechnology for Agricultural and Food Systems
- A1366 Mitigating Antimicrobial Resistance across the Food Chain
- A1103 Foundational Knowledge of Plant Products
- A1343 Food and Human Health

- A1344 Diet, Nutrition and the Prevention of Chronic Diseases

### **Cross-cutting Programs Relevant to Food Safety, Nutrition, and Health Program Area:**

#### **Program Area Priorities:**

- A1402 Agricultural Microbiomes in Plant Systems & Natural Resources
- A1541 Data Science for Food & Agricultural Systems (DSFAS)
- A1701 Critical Agricultural Research & Extension (CARE)

### **Food Safety and Defense**

**Program Area Priority Code:** A1332

**Proposed Budget Requests:** Not to exceed **\$650,000** total per project for project periods of 3-5 years

**Project Types:** Research Projects only

**Grant Types:** **Standard**, Conference, and FASE (**Strengthening Standard**, **New Investigator**, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** May 27, 2021 (5:00 pm ET)

**Contact:** Dr. Hongda Chen, [Hongda.Chen@usda.gov](mailto:Hongda.Chen@usda.gov)

**Funding Priorities:** Basic and applied research that will reduce the risk of intentional or unintentional contamination of foods

- Develop microbiological methods for enumerating enteric pathogens, specifically *Salmonella*, *Campylobacter*, and STEC, in large representative food samples designed to represent a food production lot;
- Develop microbiological procedures designed to alleviate the need for enrichment in the detection of very small numbers of pathogens in large food samples collected to represent a food production lot;
- Develop and validate advanced and innovative technologies or processes for food processing, manufacturing, packaging, and cleaning and sanitation to effectively reduce the presence of surviving enteric pathogens, including in low moisture foods and processing facilities; or
- Develop and validate novel strategies for the effective control of persistent reservoirs of foodborne pathogens

### **Novel Foods and Innovative Manufacturing Technologies**

**Program Area Priority Code:** A1364

**Proposed Budget Requests:** Not to exceed **\$650,000** total per project for project periods of 3-5 years

**Project Types:** Research Projects only

**Grant Types:** **Standard**, Conference, and FASE (**Strengthening Standard**, **New Investigator**, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants

**Application Deadline:** June 10, 2021 (5:00 pm ET)

**Contact:** Dr. Hongda Chen, [Hongda.Chen@usda.gov](mailto:Hongda.Chen@usda.gov)

**Funding Priorities:** Research that develop risk-based approaches to ensure the quality, safety and nutrition of novel foods and food ingredients, including products from pulses. This priority area also seeks to advance food manufacturing competitiveness to ensure a more sustainable, resilient and healthy food supply.

- Improve our knowledge and understanding of the chemical, physical, and biological properties of novel foods and food ingredients;
- Improve the safety, quality, shelf-life, convenience, nutrient profile or sensory attributes of novel foods and food ingredients;
- Develop innovative manufacturing technologies that increase productivity, improve food quality and/or nutritional value of foods and food ingredients that are more energy, water and resource efficient; or
- Advance sciences and develop technologies to improve shelf life and minimize food waste and loss throughout the food supply chain including consumer empowering tools.

#### **Nanotechnology for Agricultural and Food Systems**

**Program Area Priority Code:** A1511

**Proposed Budget Requests:** Not to exceed **\$650,000** total per project for project periods of 3-5 years

**Project Types:** Research Projects only

**Grant Types:** **Standard**, Conference, and FASE (**Strengthening Standard**, **New Investigator**, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants

**Application Deadline:** May 27, 2021 (5:00 pm ET)

**Contact:** Dr. Hongda Chen, [Hongda.Chen@usda.gov](mailto:Hongda.Chen@usda.gov); Dr. James Dobrowolski, [James.Dobrowolski@usda.gov](mailto:James.Dobrowolski@usda.gov)

#### **Funding Priorities:**

To advance nanoscale science, engineering and nanotechnology; To address societal challenges facing agricultural and food systems

- Novel uses and high **value-added products** of nano-biomaterials from agricultural and forest origins for food and non-food applications. [Note to the exclusion clause]
- **Environmental, health and safety assessments** of engineered nanoparticles applied in food and agricultural systems, including detection and quantification of engineered nanoparticles, characterization of hazards, exposure levels, transport and fate of the engineered nanoparticles or nanomaterials in foods, agricultural production and environment.
- Nanotechnology-enabled smart **sensors for accurate, reliable and cost-effective** early and rapid detection of targets of interest in agricultural production and food safety.

- Cost-effective distributed sensing networks for **intelligent and precise application of agricultural inputs**.
- **Monitoring physiological biomarkers** for optimal crop or animal productivity and health.
- Discovery and characterization of **nanoscale phenomena, processes, and structures** relevant and important to agriculture and food.

### **Mitigating Antimicrobial Resistance Across the Food Chain**

**Program Area Priority Code:** A1366

**Proposed Budget Requests:** \$1,000,000 total per project for project periods up to 5 years

**Project Types:** Integrated Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** 5pm (EST) Thursday, June 10, 2021

**Contact:** Dr. Steve Smith, [Steven.I.Smith@usda.gov](mailto:Steven.I.Smith@usda.gov); Dr. Kathe Bjork, [Kathe.E.Bjork@usda.gov](mailto:Kathe.E.Bjork@usda.gov)

#### **Funding Priorities:**

- Assess the risk to human health at critical control points along the food chain
- Assess factors such as fitness and virulence associated with foodborne AMR pathogens
- Identify risk associated with antimicrobial use in food animals or crops
- Assess AMR challenges for small-scale or disadvantaged producers
- Determine best management and trusted resources for communicating guidance

#### **Additional Information**

- Interested in identifying international collaborators? See the Joint Programming Initiative on Antimicrobial Resistance website
- Applications that address vaccine development should be submitted to the Diseases of Agricultural Animals program area priority (A1221)

### **Foundational Knowledge of Plant Products**

**Program Area Priority Code:** A1103

**Proposed Budget Requests:** Not to exceed \$650,000 per project

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants Only

**Application Deadline:** May 20, 2021 (5:00 pm ET)

**Contact:** Dr. Victoria Finkenstadt, [Victoria.Finkenstadt@usda.gov](mailto:Victoria.Finkenstadt@usda.gov); Dr. Vance Owens, [Vance.Owens@usda.gov](mailto:Vance.Owens@usda.gov)

#### **Funding Priorities:**

Supports projects to study the synthesis of plant-derived, high-value chemicals and ingredients for use in foods, pharmaceuticals, and other natural products.

- Macronutrients and/or micronutrient synthesis, accumulation, and/or availability that are beneficial to human health and nutrition;
- Primary and secondary metabolism regulating the synthesis of plant metabolites and its chemical ingredients that improve the quality of food and/or feed; or
- Plant-based chemicals that have industrial and/or pharmaceutical relevance.

### Food and Human Health

**Program Area Priority Code:** A1343

**Proposed Budget Requests:** Not to exceed **\$650,000** total per project for project periods of 3-5 years [Up to \$800,000 with appropriate collaboration]

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) **Grants only**

**Application Deadlines:** June 10, 2021 (5:00 pm ET); September 1, 2022 (5:00 pm ET)

**Contact:** Dr. Lisa Jahns, [Lisa.Jahns@usda.gov](mailto:Lisa.Jahns@usda.gov)

#### Program Area Priority:

Investigate the nutrients and contaminants in food and their impact on the gut microbiota

- Enhance the nutritional value of foods through **improved bioavailability of vitamins, minerals, and bioactive components and improved absorption** of vitamins, minerals, and bioactive components including nanoscale delivery;
- Investigate the **multi-directional impact of food composition and structure** (including micro- and nano-structures) on **human gut health** (i.e., nutrient absorption rates, secondary metabolites, pathogen interaction, physiological indications, sensory signaling, etc.) **to assess the safety, quality, and nutritional value of foods;** and/or
- Investigate the role of the **food components or contaminants on the human gut microbiome and its metabolites**, and the subsequent impact on human health.

### Diet, Nutrition and the Prevention of Chronic Diseases

**Program Area Priority Code:** A1344

**Proposed Budget Requests:** Up to \$1,000,000

**Project Types:** Integrated Projects ONLY

**Grant Types:** Standard Grants, Conference Grants, FASE Grants

**Application Deadline:** May 27, 2021 (5:00 pm ET)

**Contact:** Dr. Mallory Koenings, [Mallory.Koenings@usda.gov](mailto:Mallory.Koenings@usda.gov); Dr. Lisa Jahns, [Lisa.Jahns@usda.gov](mailto:Lisa.Jahns@usda.gov)

#### Funding Priorities:

- Develop, implement, and evaluate innovative research, educational, and outreach strategies *to improve eating patterns that support the prevention of chronic disease;*

- Investigate, assess, and recommend food and nutrition research and program interventions with the goal *to improve and sustain health*; or
- *Improve food security and nutritional health outcomes for low-income people* through an evidence-based approach to healthy eating and active living lifestyle programs, thereby supporting a pathway to self-sufficiency.

**Cross-cutting: Agricultural Microbiomes in Plant Systems and Natural Resources**

**Program Area Priority Code:** A1402

**Proposed Budget Requests:** Not to exceed \$850,000 total per project

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants

**Application Deadline:** July 15, 2021

**Contact:** Dr. Ann Lichens-Park, [ann.park@usda.gov](mailto:ann.park@usda.gov)

**Funding Priorities:** Understanding the multipartite interactions among the host, environment, and the microbiome is critical for improving and sustaining agricultural productivity and quality in plant systems, associated natural resources, human nutrition and health.

- Characterize molecular mechanisms and signal exchange involved in microbiome assembly and interactions in various environments or physiological states such as stress, diseases or growth stages
- Functionally characterize microbiomes and microbiome metabolites in conferring specific host phenotypes (such as disease resistance or drought tolerance), optimization of environmental processes (such as water uptake, nutrient cycling or carbon sequestration), and/or host-microbiome interactions (such as host influences on microbiome composition)
- Define genomic elements that shape functional diversity, virulence and resistance to sanitation and/or antimicrobial treatment of foodborne pathogens associated with plant foods

**Cross-cutting: Data Science for Food & Agricultural Systems (DSFAS)**

**Program Area Priority Code:** A1541

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years; for coordination innovation networks priority only \$1,000,000 total per project for project periods of up to five years

**Project Types:** Research Projects or Integrated (research, education and /or extension) Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Requested Grant Types for Coordination Networks:** Standard and FASE (Strengthening Standard) Grants only

**Application Deadline:** July 29, 2021 (5:00 pm ET)

**Contact:** Dr. Ann Stapleton, [NIFA-DSFAS@usda.gov](mailto:NIFA-DSFAS@usda.gov)

**Funding Priorities:**

Data science to enable systems and communities to effectively utilize data, improve resource management, and integrate new technologies and approaches to further U.S. food and agriculture enterprises.

*The most competitive proposals will be equally well grounded in agricultural science and data science.*

- Applications for research and integrated research projects must address one or more of the following data science priorities in relation to food and agricultural systems:
  - Analysis of Agricultural Data
  - Connect Multi-scale, Multi-domain or Multi-format Agricultural Data
  - Agricultural Applications and Human-Technology-Data Interactions
- See the AFRI Foundational & Applied Science RFA for more information including special emphasis projects that apply artificial intelligence and machine learning and specifics for Coordinated Innovation Networks projects.

**Cross-cutting: Critical Agricultural Research & Extension (CARE)**

**Program Area Priority Code:** A1701

**Proposed Budget Requests:** \$300,000 total per project for project periods of 1-3 years

**Project Types:** Integrated (research and extension) Projects only

**Grant Types:** Standard and FASE (Strengthening Standard and New Investigator) Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET)

**Contact:** Dr. James Dobrowolski, [James.Dobrowolski@usda.gov](mailto:James.Dobrowolski@usda.gov); Dr. Vijay Nandula, [Vijay.Nandula@usda.gov](mailto:Vijay.Nandula@usda.gov); Dr. Andres Cibils, [Andres.Cibils@usda.gov](mailto:Andres.Cibils@usda.gov)

**Funding Priorities:**

Critical challenges and opportunities that research and extension, together, can address to improve our nation’s agricultural and food systems

- Projects should include:
  - Integrated activities based on rigorous **research combined with effective extension**
  - Involvement of stakeholders to develop and rapidly apply new knowledge or practices
  - Contribute to improved well-being of the people, communities, plants, and animals involved in, and affected by, agriculture and food-production systems.
- See the AFRI Foundational & Applied Science RFA for more information.

**Other AFRI Program Areas**

- Plant Health and Production and Plant Products
- Animal Health and Production and Animal Products

- Bioenergy, Natural Resources, and Environment
- Agriculture Systems and Technology
- Agriculture Economics and Rural Communities

#### **Non-AFRI Food Safety, Nutrition, and Health Program Area**

- [Expanded Food and Nutrition Education Program](#) (EFNEP)
- [Gus Schumacher Nutrition Incentive Program](#) (GusNIP)
- [Community Food Projects Competitive Grants Program](#)
- [Food and Agriculture Service Learning Program](#) (FASLP)
- [Food Safety Outreach Program](#) (FSOP)
- [Small Business Innovation Research](#) (SBIR) 8.5
- [Equipment Grants Program](#) (EGP)

#### **AFRI Webpages for Frequently Asked Questions**

- AFRI New Investigator FAQs: [AFRI Food and Agricultural Science Enhancement \(FASE\) Grants for New Investigators FAQs](#)
- AFRI General FAQs: [AFRI Frequently Asked Questions \(FAQ\)](#)
- AFRI FASE FAQs: [AFRI / FASE - Frequently Asked Questions](#)

#### **What To Do If You Have Questions?**

Consult the RFA and Contact the Program Staff!

## Overview of AFRI Agriculture Economics and Rural Communities Program Area

March 2, 2021

1:00-2:30 pm CST

#### **Content from Slides**

#### **Agricultural Economics and Rural Communities (AERC) Program Area**

Program Area Priorities:

- Small and Medium-Sized Farms– A1601
- Economics, Markets and Trade– A1641
- Rural Economic Development– A1661
- Economic and Social Implications of Food and Agricultural Technologies– A1642

#### **Cross-cutting Programs Relevant to AERC**

Program Area Priorities:

- Inter-Disciplinary Engagement in Animal Systems (IDEAS) – A1261
- Critical Agricultural Research & Extension – A1701
- Data Science for Food & Agricultural Systems (DSFAS) – A1541

- Tactical Sciences for Agricultural Biosecurity – A1181

### **Small and Medium-Sized Farms**

**Program Area Priority Code:** A1601

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years

**Project Types:** Research only or Integrated Projects

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** June 24, 2021 (5:00 pm ET); September 22, 2022 (5:00 pm ET)

**Contact:** Denis Ebodaghe, [denis.Ebodaghe@usda.gov](mailto:denis.Ebodaghe@usda.gov)

#### **Funding Priorities:**

Focuses on the development or adoption of new models to assist agricultural producers with appropriate scale management strategies and technologies to enhance economic efficiency and sustainability. Example topics include:

- Advance the production, profitability and post-harvest handling of specialty crops including high value-niche market crops such as hemp
- Identify and develop affordable small farm appropriate digital agriculture tools
- Outreach efforts that create opportunities for entry and farm viability for young, beginning, socially-disadvantaged, veteran, or immigrant farmers and ranchers.
- Examine the varying forms of land tenure, including issues related to heir property

### **Economics, Markets and Trade**

**Program Area Priority Code:** A1641

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years. An additional \$150,000 may be requested for projects involving significant collaboration with minority-serving institutions, small- to mid-sized institutions, EPSCoR state institutions, and/or international partners.

**Project Types:** Research only Projects

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** July 15, 2021 (5:00 pm ET); October 6, 2022 (5:00 pm ET)

**Contact:** Robbin Shoemaker, [robbin.shoemaker@usda.gov](mailto:robbin.shoemaker@usda.gov)

#### **Funding Priorities:**

Supports research on development of theories, methods and applications of agricultural economics. It encourages applications in the following broad areas:

- agricultural market structure and performance;
- competitiveness in international trade and domestic markets;
- agricultural production and resource use;
- consumer behavior;

- farm labor and immigration and policy;
- agricultural policy design and impacts;
- technology development and adoption;
- science and innovation policy; and
- issues relating to environmental and natural resource economics.

### **Rural Economic Development**

**Program Area Priority Code:** A1661

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years

**Project Types:** Research only or Integrated Projects

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET); September 15, 2022 (5:00 pm ET)

**Contact:** Robbin Shoemaker, [robbin.shoemaker@usda.gov](mailto:robbin.shoemaker@usda.gov)

#### **Funding Priorities:**

Supports rigorous theoretical and empirical efforts to create and examine innovative approaches for advancing economic opportunities for rural entrepreneurs and communities, with an aim to promote rural prosperity and well-being. Focuses on individuals and activities “beyond the farm gate”. Topics include:

- Explore place-making assets, including cultural amenities, performing arts and the aesthetic character of rural communities.
- Identify strategies for economic growth in regions of persistent extreme poverty that can directly or indirectly impact public-health crises including COVID-19, opioid abuse and suicide.
- Examine the private and public returns to expanding broadband infrastructure into rural areas, the barriers to broadband deployment and adoption and the mechanisms that might ameliorate those factors.

### **Social Implications of Food and Agricultural Technologies**

**Program Area Priority Code:** A1642

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years

**Project Types:** Research only or Integrated Projects

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** July 15, 2021 (5:00 pm ET); October 6, 2022 (5:00 pm ET)

**Contact:** Robbin Shoemaker, [robbin.shoemaker@usda.gov](mailto:robbin.shoemaker@usda.gov)

#### **Funding Priorities:**

Examining the economic and social implications of technology is a form of technology assessment that anticipates the unforeseen and unintended consequences of technological

innovation, including cultural, health, welfare, equity, and ethical. Projects must address the following:

- Assess the broad social, ethical, cultural, legal, and other potential impacts that a broad range of emerging and disruptive technologies,
- Involve a range of individuals including scientists, legal scholars, bioethicists, social scientists, and researchers from the humanities, the public, and other stakeholders

Technologies and scientific advancements of interest include:

- Application of gene editing and gene drives in agricultural systems
- Application of nanotechnology in agriculture and food systems
- Analysis of big data, implications of artificial intelligence, machine learning and predictive decision
- Implementation of autonomous technologies and systems within the agricultural production, food manufacturing, and supply chains.

### **Cross-cutting: Critical Agricultural Research & Extension (CARE)**

**Program Area Priority Code:** A1701

**Proposed Budget Requests:** \$300,000 total per project for project periods of 1-3 years

**Project Types:** Integrated (research and extension) Projects only

**Grant Types:** Standard and FASE (Strengthening Standard and New Investigator) Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET)

**Contact:** Dr. James Dobrowolski, [James.Dobrowolski@usda.gov](mailto:James.Dobrowolski@usda.gov); Dr. Vijay Nandula, [Vijay.Nandula@usda.gov](mailto:Vijay.Nandula@usda.gov); Dr. Andres Cibils, [Andres.Cibils@usda.gov](mailto:Andres.Cibils@usda.gov)

### **Funding Priorities:**

Critical challenges and opportunities that research and extension, together, can address to improve our nation's agricultural and food systems

- Projects should include:
  - Integrated activities based on rigorous **research combined with effective extension**
  - Involvement of stakeholders to develop and rapidly apply new knowledge or practices
  - Contribute to improved well-being of the people, communities, plants, and animals involved in, and affected by, agriculture and food-production systems.
- See the AFRI Foundational & Applied Science RFA for more information.

### **Cross-cutting: Data Science for Food & Agricultural Systems (DSFAS)**

**Program Area Priority Code:** A1541

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years; for coordination innovation networks priority only \$1,000,000 total per project for project periods of up to five years

**Project Types:** Research Projects or Integrated (research, education and /or extension) Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Requested Grant Types for Coordination Networks:** Standard and FASE (Strengthening Standard) Grants only

**Application Deadline:** July 29, 2021 (5:00 pm ET)

**Contact:** Dr. Ann Stapleton, [NIFA-DSFAS@usda.gov](mailto:NIFA-DSFAS@usda.gov)

### **Funding Priorities:**

Data science to enable systems and communities to effectively utilize data, improve resource management, and integrate new technologies and approaches to further U.S. food and agriculture enterprises.

*The most competitive proposals will be equally well grounded in agricultural science and data science.*

- Applications for research and integrated research projects must address one or more of the following data science priorities in relation to food and agricultural systems:
  - Analysis of Agricultural Data
  - Connect Multi-scale, Multi-domain or Multi-format Agricultural Data
  - Agricultural Applications and Human-Technology-Data Interactions
- See the AFRI Foundational & Applied Science RFA for more information including special emphasis projects that apply artificial intelligence and machine learning and specifics for Coordinated Innovation Networks projects.

### **Other related Programs**

- **AgrAbility:** Provides assistance to agricultural producers with disabilities to continue or initiate careers in agricultural production through education, networking and direct assistance. <http://www.agrability.org/>
  - Extension only; eligible applicants 1862 and 1890 LGU Extension Service with subcontract(s) to non-profit disability organizations. Maximum \$720,000 for 4 years. POC Brad Rein [brein@usda.gov](mailto:brein@usda.gov)
- **BFRDP:** The Beginning Farmer and Rancher Development Program provides grants to organizations for education, mentoring, and technical assistance initiatives for beginning farmers or ranchers.
  - Eligibility: Academia, Non-profits; Maximum funding: \$600,000 for three years; Contact: Denis Ebodaghe, [denis.ebodaghe@usda.gov](mailto:denis.ebodaghe@usda.gov)
  - <https://nifa.usda.gov/program/beginning-farmer-and-rancher-development-program-bfrdp>

## Other Related Programs

- **SBIR:** The Small and Mid-Size Farms topic area aims to promote and improve the sustainability and profitability of small and mid-size farms and ranches
  - Eligibility: For profits; Phase 1 funding Maximum: \$100,000 for 8 months; Phase 2 funding maximum: \$650,000 for two years; Contact: Denis Ebodaghe, [denis.ebodaghe@usda.gov](mailto:denis.ebodaghe@usda.gov)
  - <https://nifa.usda.gov/program/small-business-innovation-research-program-sbir>
- **SARE:** The Sustainable Agriculture Research and Education program is regionally directed by Administrative Councils and administered by a host institution in each of four regions. The purpose is to encourage research and outreach designed to increase knowledge concerning sustainable agricultural production systems.
  - Eligibility: Each SARE regions runs a series of competitive grant programs including, but not limited to, Research and Education, Farmer/Rancher, Graduate Student, Farmer + Professional, and Professional Development Program. Eligibility and funding amount varies for each grant type and region. Contact: Vance Owens, [vance.owens@usda.gov](mailto:vance.owens@usda.gov)
  - Go to the National SARE website (<https://www.sare.org/>) which has links to each regional website

## AFRI Webpages for Frequently Asked Questions

- AFRI New Investigator FAQs: [AFRI Food and Agricultural Science Enhancement \(FASE\) Grants for New Investigators FAQs](#)
- AFRI General FAQs: [AFRI Frequently Asked Questions \(FAQ\)](#)
- AFRI FASE FAQs: [AFRI / FASE - Frequently Asked Questions](#)
- Best advice! Serve on a panel!
  - No better way to see what quality proposals look like
  - And learn about the panel process

## What To Do If You Have Questions?

Consult the RFA and Contact the Program Staff!

## Overview of AFRI Animal Health and Production and Animal Products Program Area

March 2, 2021

3:00-4:30 pm CST

## Content from Slides

### Animal Health and Production and Animal Products Program Area Program Area Priorities

- Animal Breeding and Functional Annotation of Genomes – A1201
- Animal Reproduction – A1211

- Diseases of Agricultural Animals – A1221
- Animal Nutrition, Growth and Lactation – A1231
- Welfare and Well-being of Agricultural Animals – A1251
- Ecology and Evolution of Infectious Disease – interagency with NSF, NIH

**Cross-cutting Programs Relevant to Animal Production Systems Program Area Priorities:**

- Tactical Sciences for Agricultural Biosecurity – A1181
- Inter-Disciplinary Engagement in Animal Systems (IDEAS) – A1261
- Critical Agricultural Research & Extension (CARE) – A1701
- Data Science for Food & Agricultural Systems (DSFAS) – A1541

**Animal Reproduction**

**Program Area Priority Code:** A1211

**Proposed Budget Requests:** \$650,000 total per project for 3-5 years

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** May 6, 2021 (5:00 pm ET)

**Contact:** Mark Mirando, [mark.mirando@usda.gov](mailto:mark.mirando@usda.gov)

**Funding Priorities:**

- Cellular, molecular, genomic/genetic or whole-animal aspects of animal reproduction, to improve reproductive efficiency or enhance reproductive management, especially focusing on
  - Gonadal function (including production, function, and preservation of gametes)
  - Hypothalamic-pituitary axis
  - Embryonic and fetal development (including interaction between the conceptus and its uterine environment)
  - Microbiome of the reproductive tract

**Animal Nutrition, Growth and Lactation**

**Program Area Priority Code:** A1231

**Proposed Budget Requests:** \$650,000 total per project for 3-5 years

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** May 6, 2021 (5:00 pm ET)

**Contact:** Steven Smith, [steven.i.smith@usda.gov](mailto:steven.i.smith@usda.gov)

**Funding Priorities:**

- Cellular, molecular, genomic/genetic or whole-animal aspects of nutrition, growth, and lactation, especially focusing on:
  - Nutrient utilization and efficiency, including influence and impact of the gastrointestinal microbiome
  - Innovative approaches to feed formulation or use of novel alternative feedstuffs
  - Improving the quality and efficiency of producing meat, milk, eggs, and animal fiber
  - Metabolic disorders and nutritional deficiencies affecting production of meat, milk, eggs, and animal fiber

**Welfare and Well-being of Agricultural Animals**

**Program Area Priority Code:** A1251

**Proposed Budget Requests:** \$650,000 total per project for 3-5 years; \$800,000 for 3-5 years for “Partnership” grants

**Project Types:** Research and Integrated Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** May 6, 2021 (5:00 pm ET)

**Contact:** Frank Siewerdt, [frank.siewerdt@usda.gov](mailto:frank.siewerdt@usda.gov); Mark Mirando, [mark.mirando@usda.gov](mailto:mark.mirando@usda.gov)

**Funding Priorities:**

- Evaluation of current production practices or development of new management approaches to safeguard animal welfare and sustainable production efficiency
  - Objective measures of animal welfare and well-being, including use of emerging methods and metrics for assessment for outcome-based welfare
  - Alternatives or improvements for pain management, euthanasia and slaughter, handling and transportation to decrease injury and distress
  - Understanding the effect of the microbiome on animal welfare and well-being
  - Selection for robustness, behavior, and/or social effects
  - Innovative alternatives to replace or reduce the use of animals in research

**Animal Breeding and Functional Annotation of Genomes**

**Program Area Priority Code:** A1201

**Proposed Budget Requests:** \$650,000 total per project for 3-5 years; \$1,300,000 for 4-5 years for projects addressing the [USDA Animal Genome Blueprint](#)

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** May 6, 2021 (5:00 pm ET)

**Contact:** Frank Siewerdt, [frank.siewerdt@usda.gov](mailto:frank.siewerdt@usda.gov); Mark Mirando, [mark.mirando@usda.gov](mailto:mark.mirando@usda.gov)

**Funding Priorities for \$650,000 Standard Grants:**

- Novel quantitative genetic methods including selection theory and modeling; implementing selection methods, etc.
- Development of national and regional breeding strategies to address biotic and abiotic stresses, genetic diversity, germplasm storage and characterization, crossbreeding or genome modifications
- Development of new phenotypes for improving selection criteria and/or development of high-throughput methods for on-farm recording of traits

**Funding Priorities for \$1,300,000 Standard Grants:**

- Genome-wide catalog of functional elements in both coding and non-coding regions of the genome, epigenomics, and chromatin architecture, etc.
- Genome design using functional genetic or epigenetic variants underlying traits of interest for traditional selection or as candidates for gene editing
- Comparative genomics approaches for genetic mapping of traits and understanding the evolution of traits of interest to commercial agriculture
- Development of gene editing methods for high-throughput functional screening of candidate loci in cells, tissues or organoid systems

**Diseases of Agricultural Animals**

**Program Area Priority Code:** A1221

**Proposed Budget Requests:** \$650,000 total per project for 3-5 years; \$800,000 for 3-5 years for “Partnership” grants

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** May 6, 2021 (5:00 pm ET)

**Contact:** Kathe Bjork, [kathe.e.bjork@usda.gov](mailto:kathe.e.bjork@usda.gov); Timothy Sullivan, [timothy.sullivan@usda.gov](mailto:timothy.sullivan@usda.gov)

**Funding Priorities:**

- Cellular, molecular, genomic/genetic or whole-animal aspects of animal health and disease, with emphasis on maintaining healthy agricultural animals
  - Maintenance of homeostasis including innate immune responses
  - Disease prevention and control, including vaccines, reverse vaccinology, breeding for resistance, management, and diagnostics (for endemic diseases only)
  - Therapeutic interventions for disease, including minor use animal drugs
  - Development of publicly-accessible, reasonably-priced immunological reagents for aquaculture (major focus on catfish and salmonids) or poultry
  - Establishment of a “Research Coordination Network for Minor Use Drugs”

## Ecology and Evolution of Infectious Disease (EEID)

**Program Area Priority Code:** Interagency with NSF, NIH, BBSRC/UKRI, BSF, and NSFC

**Proposed Budget Requests:** \$2,500,000 total per project for 3-5 years

**Project Types:** Research Projects only

**Grant Types:** Standard Grants only

**Application Deadline:** November 17, 2021 (5:00 pm ET)

**Contact at NSF:** Katharina Dittmar, [kdittmar@nsf.gov](mailto:kdittmar@nsf.gov); Samuel Scheiner, [sscheine@nsf.gov](mailto:sscheine@nsf.gov)

**Contact at NIFA:** Timothy Sullivan, [timothy.sullivan@usda.gov](mailto:timothy.sullivan@usda.gov)

**Website URL:** <https://www.nsf.gov/pubs/2020/nsf20585/nsf20585.htm>

### Funding Priorities:

- Ecological, evolutionary, and social drivers that influence the transmission dynamics of infectious diseases
  - A central theme must be a quantitative or computational understanding of pathogen transmission dynamics
  - zoonotic, environmentally-borne, vector-borne, or enteric pathogens of either terrestrial or aquatic systems and organisms, including diseases of animals and plants, at any scale from specific pathogens to inclusive environmental systems

## Cross-cutting Programs Relevant to Animal Production Systems

Program Area Priorities:

- Tactical Sciences for Agricultural Biosecurity – A1181
- Inter-Disciplinary Engagement in Animal Systems (IDEAS) – A1261
- Critical Agricultural Research & Extension (CARE) – A1701
- Data Science for Food & Agricultural Systems (DSFAS) – A1541

### Tactical Sciences for Agricultural Biosecurity

**Program Area Priority Code:** A1181

**Proposed Budget Requests:** \$650,000 total per single function projects of 3-5 years; \$1,000,000 total per integrated project of 3-5 years

**Project Types:** Research, Extension and Integrated Projects (or Education) only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** July 22, 2021 (5:00 pm ET)

**Contact:** Amer Fayad, [amer.fayad@usda.gov](mailto:amer.fayad@usda.gov); Timothy Sullivan, [timothy.sullivan@usda.gov](mailto:timothy.sullivan@usda.gov)

### Funding Priorities:

- Detection and diagnostics of transboundary and emerging pests and diseases of animal production systems and/or emerging, re-emerging and invasive diseases, insects and weeds associated with plant production systems

- Rapid response to, and recovery from, pests and diseases that pose large-scale biosecurity threats to plant and animal production
  - including existing and imminent threats to agricultural production systems

### **Inter-Disciplinary Engagement in Animal Systems (IDEAS)**

**Program Area Priority Code:** A1261

**Proposed Budget Requests:** \$1,000,000 total per project for 3-5 years

**Project Types:** Integrated Projects (Research and Extension or Education) only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** July 15, 2021 (5:00 pm ET)

**Contact:** Steven Smith, [steven.i.smith@usda.gov](mailto:steven.i.smith@usda.gov); Ganesh Bora, [ganesh.bora@usda.gov](mailto:ganesh.bora@usda.gov); Andres Cibils, [andres.cibils@usda.gov](mailto:andres.cibils@usda.gov)

#### **Funding Priorities:**

- Precision animal management
  - precision feeding, breeding, management and animal health to ensure and enhance economic viability
- Environmental synergies of animal production
  - managing emissions; recycling, reusing co-products of animal agriculture; optimizing animal management for environmental health
- Societal aspects of animal welfare
  - building trust around animal agriculture; consumer experiences that influence perceptions of agricultural animal well-being; public engagement in the policy and practices of animal agriculture for improved animal welfare

### **Critical Agricultural Research & Extension (CARE)**

**Program Area Priority Code:** A1701

**Proposed Budget Requests:** \$300,000 total per project for project periods of 1-3 years

**Project Types:** Integrated (research and extension) Projects only

**Grant Types:** Standard and FASE (Strengthening Standard and New Investigator) Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET)

**Contact:** Dr. James Dobrowolski, [James.Dobrowolski@usda.gov](mailto:James.Dobrowolski@usda.gov); Dr. Vijay Nandula, [Vijay.Nandula@usda.gov](mailto:Vijay.Nandula@usda.gov); Dr. Andres Cibils, [Andres.Cibils@usda.gov](mailto:Andres.Cibils@usda.gov)

#### **Funding Priorities:**

Critical challenges and opportunities that research and extension, together, can address to improve our nation's agricultural and food systems

- Projects should include:
  - Integrated activities based on rigorous **research combined with effective extension**

- Involvement of stakeholders to develop and rapidly apply new knowledge or practices
- Contribute to improved well-being of the people, communities, plants, and animals involved in, and affected by, agriculture and food-production systems.
- See the AFRI Foundational & Applied Science RFA for more information.

### **Data Science for Food & Agricultural Systems (DSFAS)**

**Program Area Priority Code:** A1541

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years; for coordination innovation networks priority only \$1,000,000 total per project for project periods of up to five years

**Project Types:** Research Projects or Integrated (research, education and /or extension) Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Requested Grant Types for Coordination Networks:** Standard and FASE (Strengthening Standard) Grants only

**Application Deadline:** July 29, 2021 (5:00 pm ET)

**Contact:** Dr. Ann Stapleton, NIFA-DSFAS@usda.gov

#### **Funding Priorities:**

Data science to enable systems and communities to effectively utilize data, improve resource management, and integrate new technologies and approaches to further U.S. food and agriculture enterprises.

*The most competitive proposals will be equally well grounded in agricultural science and data science.*

- Applications for research and integrated research projects must address one or more of the following data science priorities in relation to food and agricultural systems:
  - Analysis of Agricultural Data
  - Connect Multi-scale, Multi-domain or Multi-format Agricultural Data
  - Agricultural Applications and Human-Technology-Data Interactions
- See the AFRI Foundational & Applied Science RFA for more information including special emphasis projects that apply artificial intelligence and machine learning and specifics for Coordinated Innovation Networks projects.

### **Other AFRI Programs Relevant to Animal Systems**

#### *AFRI Foundational and Applied Science RFA*

- Mitigating Antimicrobial Resistance Across the Food Chain (A1366)
- Nanotechnology for Agricultural and Food Systems (A1511)

- Engineering for Agricultural Production Systems (A1521)
- Small and Medium-Sized Farms (A1601)
- Economic and Social Implications of Food and Agricultural Technologies (A1642)

#### *AFRI Education and Workforce Development RFA*

- Predoctoral Fellowships (A7101)
- Postdoctoral Fellowships (A7201)
- Research and Extension Experiences for Undergraduates - REEU (A7401)

#### **Non-AFRI Programs Relevant to Animal Systems**

- [Organic Agriculture Research and Extension Initiative](#) (OREI)
- [Organic Transitions Program](#)
- [Beginning Farmers and Ranchers Development Program](#) (BFRDP)
- [Biotechnology Risk Assessment Grants \(BRAG\) program](#)
- [Special Research Grants Program - Aquaculture Research](#)
- [Small Business Innovation Research](#) (SBIR)
  - SBIR Animal Production & Protection (8.3)
  - SBIR Aquaculture (8.7)

#### **AFRI Webpages for Frequently Asked Questions**

- AFRI New Investigator FAQs: [AFRI Food and Agricultural Science Enhancement \(FASE\) Grants for New Investigators FAQs](#)
- AFRI General FAQs: [AFRI Frequently Asked Questions \(FAQ\)](#)
- AFRI FASE FAQs: [AFRI / FASE - Frequently Asked Questions](#)

#### **What To Do If You Have Questions?**

Consult the RFA and Contact the Program Staff!

## Overview of AFRI Education and Workforce Development Program Area

### **Content from Slides**

#### **AFRI's Education and Workforce Development**

- Seeks to address a projected shortfall of qualified graduates in the agricultural, food, and renewable natural resources sectors of the U.S. economy
- Anticipated available funding: approx. \$45 million per budget year
- Has four overarching goals:
  - Growing Agricultural Literacy and Workforce Development for the Future (PDAL, ALE)
  - Training or Retraining of Agricultural Workers (AWT)
  - Developing Pathways (FANE & REEU)

- Advancing Science (Pre- and Postdoctoral Fellows)

### **Food and Agriculture Non-Formal Education**

**Funding Priorities:** support content development and activities for non-formal education to foster development of technology-savvy youth

- Food and Agricultural Non-formal Education (FANE)
  - Develop content and activities to enhance youth's understanding of technologies that enhance the food and agricultural enterprise
  - Should complement and build upon programs that have successfully demonstrated positive youth development strategies and outcomes
- Civic Engagement Experience for Youth (CEEY)
  - Promotes non-formal educational civic engagement experiences for 4-H youth in grades 10-12<sup>th</sup>

**Program Area Priority Code:** A7801

**Proposed Budget Requests:**

- **Food and Agricultural Non-formal Education (FANE):** \$750,000 total per project for project periods of 3 or 4 years
- **Civic Engagement Experience for Youth (CEEY):** \$1,000,000 total per project for project periods of four or five years

**Project Types:** Extension, Education, or Integrated Projects only

**Grant Types:** Standard, and FASE Strengthening Standard Grants only

**Application Deadline:** May 6, 2021 (5:00 pm ET)

**Contact:** Maurice Smith, Jr. PhD, [maurice.smith2@usda.gov](mailto:maurice.smith2@usda.gov); Suzanne Stluka, PhD, [suzanne.stluka@usda.gov](mailto:suzanne.stluka@usda.gov)

### **Professional Development for Agricultural Literacy (PDAL)**

**Funding Priorities:** Increase the number of K-14 educational professionals trained in the food and agricultural sciences.

- Provide immersive learning experiences for K-14 education professionals
  - Hands-on research, experiential learning opportunities and training, curriculum development and teaching training, etc.
- Participant target: Teachers, post-baccalaureate pre-service teachers, counselors, and/or administrators
- Funds cannot be used to support student activities
- Projects are encouraged to integrate participant social-emotional skill development activities and training for effective in-person and/or virtual teaching.

**Program Area Priority Code:** A7501

**Proposed Budget Requests:**

- \$500,000 total per project for project periods of 3 or 4 years
  - A minimum of 50% of project costs must be for participant support

**Proposal limits:** no limit but, NIFA may award up to two grants per lead institution.

**Project Types:** Education, Extension, or Integrated Projects only

**Grant Types:** Standard, and FASE Strengthening Standard Grants only

**Application Deadline:** June 10, 2021 (5:00 pm ET)

**Contact:** Carlos Ortiz, PhD., [carlos.ortiz@usda.gov](mailto:carlos.ortiz@usda.gov)

**Agricultural Workforce Training (AWT)**

**Funding Priorities:** Develop new workforce training programs, or expand, improve, or renew existing workforce training programs at community, junior, and technical colleges/institutes

- Developed by or in active partnership with community/junior/technical colleges/institutes and their industry partners
- Provide students the skills and tools necessary to secure industry-accepted credentials to join the workforce upon project participation completion.
  - Certificates, training or coursework for/part of baccalaureate or post-graduate degrees or training ARE NOT supported under this program area priority
- Funds should be used to support student activities

**Program Area Priority Code:** A7601

**Proposed Budget Requests:**

- \$500,000 total per project for project periods of 3 or 4 years
  - A minimum of 50% of project costs must be for participant support

**Proposal limits:** no limit but, NIFA may award up to two grants per lead institution.

**Project Types:** Education, Extension, or Integrated Projects only

**Grant Types:** Standard, and FASE Strengthening Standard Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET)

**Contact:** Carlos Ortiz, PhD., [carlos.ortiz@usda.gov](mailto:carlos.ortiz@usda.gov)

**Research and Extension Experiences for Undergraduates (REEU)**

**Funding Priorities:** Provide undergraduate students with experiential learning opportunities that include significant research and/or extension components in the food and agricultural sciences.

- REEU Projects
  - Hands-on experiences for undergraduate students at colleges and universities
  - At least 50% of the undergraduate fellows must come from outside the host institution or organization
  - Required to maintain a website, linked to a central REEU webpage to be hosted by the REEU Coordinated Education Network

- REEU-ECN Projects
  - Create and maintain any number of collaboration spaces for REEU project directors and other key personnel to interact and share information, including but not limited to a listserv
  - Provide a clearinghouse for REEU project outputs, data, and documents

**Program Area Priority Code:** A7401

**Proposed Budget Requests:**

- **Research and Extension Experiences for Undergraduates:** \$600,000 or \$750,000 total per project for project periods of 4 or 5 years, respectively
- **Education Coordinated Network for Research and Extension Experiences for Undergraduates (REEU-ECN):** \$500,000 total per project for project periods of five years

**Proposal limits:** no limit but, NIFA may award up to two grants per lead institution. REEU-ECN anticipates making up to one award.

**Project Types:** Research, Education, Extension, or Integrated Projects only

**Grant Types:** Standard, and FASE Strengthening Standard Grants only

**Application Deadline:** July 1, 2021 (5:00 pm ET)

**Contact:** Ray Ali, EdD., [nifa-education@usda.gov](mailto:nifa-education@usda.gov)

### **Pre-Doctoral Fellowship Program**

**Funding Priorities:** Support current doctoral students who are at the stage of conducting dissertation research, ultimately leading to completion of the dissertation and respective terminal degree

- Eligible Predoctoral Fellows:
  - The individual predoctoral Project Director (PD) must be a citizen, national, or permanent resident of the United States and, as per CFR 3430.303, have advanced to candidacy, as per institutional requirements, by: May 25, 2021.
- The predoctoral candidate must be the sole PD listed on the Key Personnel form of the application.
  - The mentor should not be listed as a Co-PD
- Fellows are required to carry out their projects on a full-time basis (i.e., 100% effort)

**Program Area Priority Code:** A7101

**Proposed Budget Requests:**

- \$180,000 total per project for project periods of up to 3 years
  - Predoctoral Fellowship Grants are not renewable and are limited to a total of \$60,000 per year
  - Institutional allowance (in lieu of indirect costs) – up to \$3,000 per year; indirect costs are not permitted on Predoctoral Fellowship Grant awards

**Project Types:** Research, Education, Extension, or Integrated Projects only

**Grant Types:** Predoctoral Fellowship (FASE) Grants only

**Application Deadline:** May 27, 2021 (5:00 pm ET)

**Contact:** Ray Ali, EdD., [nifafellows@usda.gov](mailto:nifafellows@usda.gov)

### **Postdoctoral Fellowship Program**

**Funding Priorities:** Develop new scientists and professionals to enter research, education, and/or extension fields within the food and agricultural sciences within the private sector, government, or academia.

- Eligible Postdoctoral Fellows:
  - As per CFR 3430.303, all doctoral degree requirements must be satisfied by: earlier than January 1, 2018, and no later than February 18, 2022
  - The postdoctoral scholar must be the sole PD listed on the Key Personnel form of the application.
  - The mentor should not be listed as a Co-PD
- Fellows are required to carry out their projects on a full-time basis (i.e., 100% effort)

**Program Area Priority Code:** A7201

#### **Proposed Budget Requests:**

- \$225,000 total per project for project periods of up to 2 years
  - Funds must be requested primarily for salary or stipend and be properly justified
  - Institutional allowance (in lieu of indirect costs) – up to \$3,000 per year; indirect costs are not permitted on Predoctoral Fellowship Grant awards

**Project Types:** Research, Education, Extension, or Integrated Projects only

**Grant Types:** Postdoctoral Fellowship (FASE) Grants only

**Application Deadline:** May 20, 2021 (5:00 pm ET)

**Contact:** Ray Ali, EdD., [nifafellows@usda.gov](mailto:nifafellows@usda.gov)

### **Agricultural Literacy and Workforce Development Evaluation (ALE)**

**Funding Priorities:** Develop a synthesis and assessment of USDA NIFA's Agricultural Literacy and Workforce Development programs' portfolio and investments

- **ALE Projects**
  - Develop and deploy innovative quantitative/qualitative indicators or measures of the array of topics addressed and activities performed by the projects
  - Identify the key outcomes and impacts of the portfolio and continuing workforce needs in food and agriculture sciences
- **OPCD Projects**
  - Develop, pilot, and maintain a career development tracking mechanism for NIFA's scholarship and fellowship programs
  - Provide a clearinghouse for projects outputs, data, and documents

**Program Area Priority Code:** A7702

### Proposed Budget Requests:

- **Agricultural Literacy and Workforce Development Evaluation (ALE):** \$750,000 total per project for project periods of three years.
- **Outcomes in Participant Career Development (OPCD):** \$600,000 total per project for project periods of four years

**Proposal limits:** no limit but, NIFA anticipates making up to one award for ALE and OPCD, respectively

**Project Types:** Research projects only

**Grant Types:** Standard, and FASE Strengthening Standard Grants only

**Application Deadline:** April 22, 2021 (5:00 pm ET)

**Contact:** Carlos Ortiz, PhD., [carlos.ortiz@usda.gov](mailto:carlos.ortiz@usda.gov)

### Education and Workforce Development Program Area Links

The information presented here is for FY2021 AFRI EWD. Please consult:

- Request for Applications: [AFRI - Education and Workforce Development RFA](#)
- Additional information in Part IV C of the RFA's link to the AFRI Resources Page:
  - Program-Specific Information: [2021-2022 AFRI EWD RFA Additional Information for Part IV, C](#)
  - Evaluation Criteria: [AFRI Review Criteria](#)

### AFRI Webpages for Frequently Asked Questions

- AFRI New Investigator FAQs: [AFRI Food and Agricultural Science Enhancement \(FASE\) Grants for New Investigators FAQs](#)
- AFRI General FAQs: [AFRI Frequently Asked Questions \(FAQ\)](#)
- AFRI FASE FAQs: [AFRI / FASE - Frequently Asked Questions](#)

### Other Education Programs

- [NIFA Program's Participant Target Pipeline](#)
  - **NNF:** Food and Agricultural Sciences National Needs Graduate and Postgraduate Fellowship Grants Program
  - **HEC:** Higher Education Challenge Grants Program
  - **MSP:** Higher Education Multicultural Scholars Program
  - **SPECA:** Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Challenge Grants Program
  - **WAMS:** Women and Minorities in Science, Technology, Engineering, and Mathematics Fields Program

### Upcoming Events

- NIFA Events Calendar for Upcoming Deadlines, Trainings, and Webinars: [NIFA Public Event Calendar](#)
- Upcoming Request for Applications (RFA) Release Calendar: [RFA Release Schedule](#)

## Other Resources

- Funding Opportunities: [Grant Opportunity Search](#)
- Competitive Grants Flowchart: [The Competitive Grant Process](#)
- NIFA Grant Resources: [Grant Training](#)
- A Guide for Preparation and Submission of NIFA Applications via Grants.gov: [NIFA Application Guide](#)
- Information on Awarded Grants: [Previous Award Search via NIFA's Data Gateway](#)
- COVID-19 Information for NIFA Stakeholders and Applicants: [Coronavirus Resources](#)

## Questions after this session?

Please consult the RFA and contact the Program Staff for help.

## Overview of AFRI Agriculture Systems and Technology Program Area

March 3, 2021

3:00-4:30 pm CST

## Content from Slides

### Agricultural Systems and Technology Program Area

Program Area Priorities:

- Engineering for Agricultural Production Systems – A1521
- Bioprocessing and Bioengineering – A1531
- Nanotechnology for Food and Agricultural Systems – A1511

### Cross-cutting Programs Relevant to Agricultural Systems and Technology

Program Area Priorities:

- Data Science for Food & Agricultural Systems (DSFAS) – A1541
- Inter-Disciplinary Engagement in Animal Systems (IDEAS) – A1261
- Critical Agricultural Research & Extension – A1701
- Water Quantity and Quality – A1411

### Engineering for Agricultural Production Systems

**Program Area Priority Code:** A1521

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-4 years

**Project Types:** Research Projects or Integrated (research, and education and/or extension) Projects

**Grant Types:** Standard, Conference with LOI, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** July 15, 2021 (5:00 pm ET)

**Contact:** Steven Thomson, [steven.j.thomson@usda.gov](mailto:steven.j.thomson@usda.gov); Ganesh Bora co-lead, [ganesh.Bora@usda.gov](mailto:ganesh.Bora@usda.gov); Bradley Rein co-lead, [brein@usda.gov](mailto:brein@usda.gov); Olivia Moreno, Program Specialist, [olivia.moreno@usda.gov](mailto:olivia.moreno@usda.gov)

**Funding Priorities:** focuses on engineered devices, technologies, and tools to improve agriculturally relevant plant, animal, forestry, and natural resource systems.

- Enable **engineering, sensing, computing, modeling, automation, and information systems**.
- Develop systems for automation and mechanization of **labor-intensive tasks** in crop and animal production.
- Develop and test the implementation of tools and precision technologies for monitoring, measurement, and detection in agricultural systems that **may incorporate both drone and unmanned ground vehicle (UGV) technologies**.
- Explore the use or development of **advanced computational or engineering methods and technologies** for navigation, mining, management, visualization, understanding, and communication of **agricultural systems data**.
- Develop and improve engineering technologies that **prevent disease spread/pathogens in agricultural systems**.
- Develop and test risk assessment and mitigation measures applicable to agriculture (in particular, **reduce hazards to agricultural workers that can include assistive technologies**).
- For integrated projects that provide engineering solutions for **conservation of energy and water resources in irrigation**. Emphasis areas are indicated in the RFA.

### **Bioprocessing and Bioengineering**

**Program Area Priority Code:** A1531

**Proposed Budget Requests:** \$650,000 total per project for 3-4 years + additional \$150,000 for partnerships (see RFA)

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening, New Investigator, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** July 1, 2021 (5:00 pm ET)

**Contact:** Dr. Vicki Finkenstadt, NPL, [victoria.finkenstadt@usda.gov](mailto:victoria.finkenstadt@usda.gov); Dr. Steven Thomson, co-lead, [steven.j.thomson@usda.gov](mailto:steven.j.thomson@usda.gov); Dr. Desiree Rucker, Program Specialist, [desiree.rucker@usda.gov](mailto:desiree.rucker@usda.gov)

**Funding Priorities:** engineered products and processes to improve agriculturally relevant plant, animal, forestry, and natural resource systems

- Improve the production efficiency and capacity of biomass, biofuels, feedstock, bioenergy, and bio-based products
- Advance or expand utilization of waste and byproducts generated in agricultural and food systems

- Engineer new or improved products and processes that make use of materials from agricultural origin (including, but are not limited to, bioplastics and biocomposites)
- Refine the long-term sustainability of agricultural and forestry processing systems that balance productivity along with economic, environmental, and social outcomes
- Identify the factors that either constrain or encourage the adoption and diffusion of agriculturally relevant engineered products and processes.

### **Nanotechnology for Agricultural and Food Systems**

**Program Area Priority Code:** A1511

**Proposed Budget Requests:** Not to exceed **\$650,000** total per project for project periods of 3-5 years

**Project Types:** Research Projects only

**Grant Types:** **Standard**, Conference, and FASE (**Strengthening Standard**, **New Investigator**, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants

**Application Deadline:** May 27, 2021 (5:00 pm ET)

**Contact:** Dr. Hongda Chen, [Hongda.Chen@usda.gov](mailto:Hongda.Chen@usda.gov); Dr. James Dobrowolski, [James.Dobrowolski@usda.gov](mailto:James.Dobrowolski@usda.gov)

#### **Funding Priorities:**

*To advance nanoscale science, engineering and nanotechnology and to address societal challenges facing agricultural and food systems*

- Novel uses and high **value-added products** of nano-biomaterials from agricultural and forest origins for food and non-food applications. [Note to the exclusion clause]
- **Environmental, health and safety assessments** of engineered nanoparticles applied in food and agricultural systems, including detection and quantification of engineered nanoparticles, characterization of hazards, exposure levels, transport and fate of the engineered nanoparticles or nanomaterials in foods, agricultural production and environment.
- Nanotechnology-enabled smart **sensors for accurate, reliable and cost-effective** early and rapid detection of targets of interest in agricultural production and food safety.
- Cost-effective distributed sensing networks for **intelligent and precise application of agricultural inputs**.
- **Monitoring physiological biomarkers** for optimal crop or animal productivity and health.
- Discovery and characterization of **nanoscale phenomena, processes, and structures** relevant and important to agriculture and food.

### **Cross-cutting: Data Science for Food & Agricultural Systems (DSFAS)**

**Program Area Priority Code:** A1541

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years; for coordination innovation networks priority only \$1,000,000 total per project for project periods of up to five years

**Project Types:** Research Projects or Integrated (research, education and /or extension) Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Requested Grant Types for Coordination Networks:** Standard and FASE (Strengthening Standard) Grants only

**Application Deadline:** July 29, 2021 (5:00 pm ET)

**Contact:** Dr. Ann Stapleton, [NIFA-DSFAS@usda.gov](mailto:NIFA-DSFAS@usda.gov)

**Funding Priorities:**

Data science to enable systems and communities to effectively utilize data, improve resource management, and integrate new technologies and approaches to further U.S. food and agriculture enterprises.

*The most competitive proposals will be equally well grounded in agricultural science and data science.*

- Applications for research and integrated research projects must address one or more of the following data science priorities in relation to food and agricultural systems:
  - Analysis of Agricultural Data
  - Connect Multi-scale, Multi-domain or Multi-format Agricultural Data
  - Agricultural Applications and Human-Technology-Data Interactions
- See the AFRI Foundational & Applied Science RFA for more information including special emphasis projects that apply artificial intelligence and machine learning and specifics for Coordinated Innovation Networks projects.

**Cross-cutting: Inter-Disciplinary Engagement in Animal Systems (IDEAS)**

**Program Area Priority Code:** A1261

**Proposed Budget Requests:** \$1,000,000 total per project for 3-5 years

**Project Types:** Integrated Projects (Research and Extension or Education) only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** July 15, 2021 (5:00 pm ET)

**Contact:** Steven Smith, [steven.i.smith@usda.gov](mailto:steven.i.smith@usda.gov); Ganesh Bora, [ganesh.bora@usda.gov](mailto:ganesh.bora@usda.gov); Andres Cibils, [andres.cibils@usda.gov](mailto:andres.cibils@usda.gov)

**Funding Priorities:**

- Precision animal management
  - precision feeding, breeding, management and animal health to ensure and enhance economic viability
- UAV-based imaging for facial recognition, body size and temperature, physical activity
- Environmental synergies of animal production

- managing emissions; recycling, reusing co-products of animal agriculture; optimizing animal management for environmental health
- Societal aspects of animal welfare
  - building trust around animal agriculture; consumer experiences that influence perceptions of agricultural animal well-being; public engagement in the policy and practices of animal agriculture for improved animal welfare

### **Cross-cutting: Critical Agricultural Research & Extension (CARE)**

**Program Area Priority Code:** A1701

**Proposed Budget Requests:** \$300,000 total per project for project periods of 1-3 years

**Project Types:** Integrated (research and extension) Projects only

**Grant Types:** Standard and FASE (Strengthening Standard and New Investigator) Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET)

**Contact:** Dr. James Dobrowolski, [James.Dobrowolski@usda.gov](mailto:James.Dobrowolski@usda.gov); Dr. Vijay Nandula, [Vijay.Nandula@usda.gov](mailto:Vijay.Nandula@usda.gov); Dr. Andres Cibils, [Andres.Cibils@usda.gov](mailto:Andres.Cibils@usda.gov)

#### **Funding Priorities:**

Critical challenges and opportunities that research and extension, together, can address to improve our nation's agricultural and food systems

- Projects should include:
  - Integrated activities based on rigorous **research combined with effective extension**
  - Involvement of stakeholders to develop and rapidly apply new knowledge or practices
  - Contribute to improved well-being of the people, communities, plants, and animals involved in, and affected by, agriculture and food-production systems.
- See the AFRI Foundational & Applied Science RFA for more information.

### **Cross-cutting: Water Quantity and Quality**

**Program Area Priority Code:** A1411

**Proposed Budget Requests:** Not to exceed \$750,000 total per project (including indirect costs) for project periods of three to four years

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** June 10, 2021 (5:00 pm ET)

**Contact:** Dr. Jim Dobrowolski, [james.dobrowolski@usda.gov](mailto:james.dobrowolski@usda.gov)

#### **Funding Priorities:**

Reduce the freshwater demand (both groundwater and surface water) for irrigation and the nutrient demand for maximum crop production

- Reduction of the use of freshwater and improve agricultural resilience/sustainability by innovative approaches, tools and technologies.
- Evaluation of the physical and biogeochemical interactions, fluxes, fate and transport, transformation, and storage of single or multiple nutrients, pathogens or chemicals of environmental concern (CEC) of a variety of sources as it relates to agroecosystem productivity and on associated natural resources and environment.
- Mitigation of soil salinity from the use of lower quality water sources in agriculture.
- Conservation of surface and groundwater quantity through research of agroecosystems.
- Mitigation and/or measurement of soil erodibility and erosion to sustain agroecosystems.

### Other Related Programs

- **National Robotics Initiative (NSF paneled/NIFA funded):** development of scalable robotic technologies and coordinated multi-agent teams that focus on labor-intensive tasks, improved efficiency, inspection and monitoring, coupled UGVs and UAVs for on-farm management, others. Total funding: 5M. 1.2M/grant. **Deadline: May 3, 2021.**  
[steven.j.thomson@usda.gov](mailto:steven.j.thomson@usda.gov); [ganesh.bora@usda.gov](mailto:ganesh.bora@usda.gov)
- **Cyber-Physical Systems (NSF paneled/NIFA funded):** engineered systems that are built from, and depend upon, the seamless integration of computation and physical components. Agriculture topics address **Real-Time Agricultural Data Analytics and Control** and **Smart & Connected Communities (S&CC)**. Total funding: 5M. 1.2M/grant, 400K additional Transition to Practice (TTP) option. **No Deadline** (accepted through Dec 31, 2021).
- **AI Institutes (NSF paneled/NIFA funded):** Total funding: 20M. AI in Agriculture - involving core principles of AI; specifies stakeholder engagement. 4M/year and funded per year. Previous Deadline: December 4, 2020. RFA is being developed for 2021. POCs: [ann.stapleton@usda.gov](mailto:ann.stapleton@usda.gov); [steven.j.thomson@usda.gov](mailto:steven.j.thomson@usda.gov); [idonlon@nsf.gov](mailto:idonlon@nsf.gov).
- **AgrAbility:** Provides assistance to agricultural producers with disabilities to continue or initiate careers in agricultural production through education, networking and direct assistance. <http://www.agrability.org/>
  - Extension only; eligible applicants 1862 and 1890 LGU Extension Service with subcontract(s) to non-profit disability organizations. Maximum \$720,000 for 4 years. POC Brad Rein [brein@usda.gov](mailto:brein@usda.gov)
- **A1601:** Small and Medium Farms. Development and/or adoption of models to assist agricultural decision making with respect to appropriate scale management strategies and technologies to enhance economic efficiency and sustainability; viability and competitiveness of small and medium-sized operations.
  - **650K** for Std grants: other project types apply; research OR integrated. POC: Dr. Denis Ebodaghe [denis.ebodaghe@usda.gov](mailto:denis.ebodaghe@usda.gov)
- **SBIR 8.13:** The Plant Production and Protection – Engineering topic area aims to enhance crop production in both conventional and organic systems by creating and commercializing

engineering **technologies that enhance system efficiency and profitability and that protect crops from pests and pathogens** in economically and environmentally sound ways.

- Eligibility: Phase 1 funding Maximum: \$100,000 for 8 months; Phase 2 funding maximum: \$650,000 for two years; Contact: Vicki Finkenstadt, [victoria.finkenstadt@usda.gov](mailto:victoria.finkenstadt@usda.gov); Dr. Steven Thomson, [steven.i.thomson@usda.gov](mailto:steven.i.thomson@usda.gov)
- <https://nifa.usda.gov/program/small-business-innovation-research-program-sbir>
- **Platforms for Advanced Wireless Research (PAWR)** – supported through public and private partners, bringing together funding from NSF as well as a newly established industry consortium.
  - NSF is supporting a PAWR Project Office (PPO) led by US Ignite, Inc and Northeastern University to select (with NIFA's input) and manage a chosen platform. **NIFA has contributed 1M**; NSF the rest.
- **National Needs Graduate and Postgraduate Fellowship (NNF) Program.** Masters and Doctoral Level.
  - The grantee institutions develop the selection criteria, and it is their responsibility to award fellowships to high caliber students in superior academic standing.

#### **AFRI Webpages for Frequently Asked Questions**

- AFRI New Investigator FAQs: [AFRI Food and Agricultural Science Enhancement \(FASE\) Grants for New Investigators FAQs](#)
- AFRI General FAQs: [AFRI Frequently Asked Questions \(FAQ\)](#)
- AFRI FASE FAQs: [AFRI / FASE - Frequently Asked Questions](#)

#### **What To Do If You Have Questions?**

Consult the RFA and Contact the Program Staff!

## Overview of AFRI Plant Health and Production and Plant Products Program Area

### **Overview of AFRI Plant Health and Production and Plant Products Program Area**

March 4, 2021

1:00-2:30 pm CST

#### **Content from Slides**

#### **Plant Health and Production and Plant Products Program Area**

Program Area Priorities:

- Foundational Knowledge of Agricultural Production Systems – **A1102**
- Foundational Knowledge of Plant Products – **A1103**
- Pests and Beneficial Species in Agricultural Production Systems – **A1112**
- Pollinator Health: Research and Application – **A1113**
- Physiology of Agricultural Plants – **A1152**

- Plant Breeding for Agricultural Production – **A1141**
- Conventional Plant Breeding for Cultivar Development - **A1143**
- NSF - NIFA Plant Biotic Interactions Program – **A1171**

#### **Cross-cutting Programs Relevant to Plant Health and Production Systems**

- Agricultural Microbiomes in Plant Systems and Natural Resources – **A1402**
- Critical Agricultural Research & Extension (CARE) – **A1701**
- Data Science for Food & Agricultural Systems (DSFAS) – **A1541**
- Tactical Sciences for Agricultural Biosecurity – **A1181**

#### **Foundational Knowledge of Agricultural Production Systems**

**Program Area Priority Code:** A1102

**Proposed Budget Requests:** \$650,000 (research only) or \$750,000 (integrated) total per project for project periods of 3-5 years

**Project Types:** Research and Integrated Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET)

**Contact:** Mathieu Ngouajio, [mathieu.ngouajio@usda.gov](mailto:mathieu.ngouajio@usda.gov); John Erickson, [john.erickson@usda.gov](mailto:john.erickson@usda.gov); Neerja Tyagi, Program Specialist, [neerja.tyagi1@usda.gov](mailto:neerja.tyagi1@usda.gov)

**Funding Priorities:** Develop innovative solutions to challenges limiting or threatening the productivity and profitability of agricultural systems.

- Investigate how multiple management components can be integrated to enhance cropping systems performance;
- Determine the impact of production systems on the structure of microbial communities;
- Investigate how changes to cropping systems, affect crop performance, soil health, and other outcomes beneficial to system resilience; or
- Conduct syntheses and meta-analyses of existing data or develop new or extend existing models on performance of agricultural production systems.

#### **Foundational Knowledge of Plant Products**

**Program Area Priority Code:** A1103

**Proposed Budget Requests:** Not to exceed \$650,000 per project for project periods of 3-5 years

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants Only

**Application Deadline:** May 20, 2021 (5:00 pm ET)

**Contacts:** Vance Owens [vance.owens@usda.gov](mailto:vance.owens@usda.gov); Victoria Finkenstadt [victoria.finkenstadt@usda.gov](mailto:victoria.finkenstadt@usda.gov) Shelby Servais, Program Specialist, [shelby.servais@usda.gov](mailto:shelby.servais@usda.gov)

**Funding Priorities:** Supports projects to study the synthesis of plant-derived, high-value chemicals and ingredients for use in foods, pharmaceuticals, and other natural products.

- Macronutrients and/or micronutrient synthesis, accumulation, and/or availability that are beneficial to human health and nutrition;
- Primary and secondary metabolism regulating the synthesis of plant metabolites and its chemical ingredients that improve the quality of food and/or feed; or
- Plant-based chemicals that have industrial and/or pharmaceutical relevance.

### **Pests and Beneficial Species in Agricultural Production Systems**

**Program Area Priority Code:** A1112

**Proposed Budget Requests:** Not to exceed \$750,000 per project

**Project Types:** Research-only and Integrated Projects (Research and Extension) only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants Only

**Application Deadline:** May 27, 2021 (5:00 pm ET)

**Contacts:** Erica Kistner-Thomas [erica.kistnerthomas@usda.gov](mailto:erica.kistnerthomas@usda.gov); Logan Appenfeller, Program Specialist, [logan.appenfeller@usda.gov](mailto:logan.appenfeller@usda.gov)

**Funding Priorities:** Supports projects that advance knowledge of invasive or established plant pests and associated beneficial species leading to innovative and biologically-based strategies to manage pests. Pests may include invertebrates, plant pathogens and/or their vectors, nematodes or weeds. Beneficial species in this program will be restricted to biological control agents and microbes that play a role in pest management.

- Biotic and abiotic factors affecting the abundance or spread of agriculturally-important plant pests, disease vectors, or beneficial species relevant to pest management;
- Behavioral attributes of pests and beneficial species, including intra- or interspecies interactions and/or communication systems relevant to pest management;
- Factors that contribute to invasiveness including (but not limited to) studies using population genetics/genomic approaches or models to predict, prevent or manage outbreaks, or to pinpoint geographic distribution or origin;
- Movement or dispersal dynamics of pests or beneficial organisms, including pests that vector plant diseases;
- Mechanisms of pest resistance to pesticides or toxins in genetically-modified plants and development of strategies to mitigate resistance and/or crop failure; or
- Conference applications that bring together experts in weed biology, plant genomics, herbicide resistance, and data science to better understand how genomic information could lead to novel solutions to manage weeds, how data will be used and maintained, and the underlying molecular mechanisms that contribute to invasiveness.

## **Pollinator Health: Research and Application**

**Program Area Priority Code:** A1113

**Proposed Budget Requests:** Not to exceed \$750,000 per project

**Project Types:** Research only, Extension only, Education only and Research Coordination Networks

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants Only

**Application Deadline:** May 27, 2021 (5:00 pm ET)

**Contacts:** Erica Kistner-Thomas, [erica.kistnerthomas@usda.gov](mailto:erica.kistnerthomas@usda.gov); Megan O'Rourke, [megan.orourke@usda.gov](mailto:megan.orourke@usda.gov); Logan Appenfeller, Program Specialist, [logan.appenfeller@usda.gov](mailto:logan.appenfeller@usda.gov)

**Funding Priorities:** Supports projects that promote healthy populations of animal pollinators in agricultural systems where reliance of crops on pollinators for pollination services is increasing and where declines of pollinators is evident.

- Factors that influence the abundance, diversity and health of pollinators. Examples may include biotic, abiotic as well as social, cultural or economic phenomena;
- Functions of the microbiome associated with pollinators and their role in promoting healthy populations;
- Development and evaluation of innovative tools and management practices that would likely be adopted by stakeholders to ensure healthy pollinators;
- Development, implementation and/or evaluation of management practices of other crop pests/diseases that also ensure protection of pollinators and other beneficial species;
- Education-only that target K-14 level students to advance learning about pollinators in agricultural and associated landscapes;
- Extension only projects that include informal training, workshops or demonstration projects related to pollinators in agriculture and associated systems; or
- Establishment of a Research Coordination Network for a National Native Bee Monitoring Plan.

## **Physiology of Agricultural Plants**

**Program Area Priority Code:** A1152

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** May 20, 2021 (5:00 pm ET)

**Contact:** John Erickson, [john.erickson@usda.gov](mailto:john.erickson@usda.gov); Ed Kaleikau, [edward.kaleikau@usda.gov](mailto:edward.kaleikau@usda.gov); Shelby Servais, Program Specialist, [shelby.servais@usda.gov](mailto:shelby.servais@usda.gov)

**Funding Priorities:** Improve productivity or other performance factors of agriculturally-important plants using physiological approaches

- Molecular, biochemical, whole-plant, agronomic, or eco-physiological approaches, especially focusing on
  - Plant growth and developmental processes (e.g., plant architecture, carbon assimilation, source-sink relationships)
  - Mechanisms of plant response to abiotic stresses (e.g., WUE)
  - Nutrient uptake, assimilation, and/or utilization, particularly increased plant use efficiency for N, P, or other supplemental nutrients

### **Plant Breeding for Agricultural Production**

**Program Area Priority Code:** A1141

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-4 years;  
\$800,000 total per project for projects that include specific types of partnerships;  
\$15,000,000 total per project for project periods of 5 years for Coordinated Agricultural Project (CAP) Grants for “Innovation in Genomic Technology to Accelerate Breeding Progress”.

**Project Types:** Research and Integrated Projects; Integrated Projects (research and education) only for CAP

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants; CAP and FASE (Strengthening CAP) Grants only

**Application Deadline:** May 20, 2021 (5:00 pm ET)

**Contact:** Ed Kaleikau, [edward.kaleikau@usda.gov](mailto:edward.kaleikau@usda.gov); Ann Stapleton, [ann.stapleton@usda.gov](mailto:ann.stapleton@usda.gov); Shelby Servais, Program Specialist, [shelby.servais@usda.gov](mailto:shelby.servais@usda.gov)

**Funding Priorities:** Support public breeding efforts to improve crop productivity, efficiency, quality, and performance. Includes all agriculturally important plants.

- **Breeding targets**
  - Increased nutrient use efficiency
  - Increased photosynthetic efficiency
  - Tolerance to drought, flood & temperature extremes
  - Resistance to pests & diseases
  - Improved taste, aroma, nutrition, or food safety
  - Adaptation to vertical agriculture systems
  - CAP Innovations in Genomic Technology to Accelerate Breeding Progress (Research and Education)
- **Research**
  - Pre-breeding & germplasm enhancement
  - Participatory breeding
  - Selection theory

- Applied quantitative genetics
- Phenomics
- Crop growth modeling
- Artificial intelligence

### **Conventional Plant Breeding for Cultivar Development**

*(Note: This program area priority is being added through a modification to the RFA which may or may not have been posted yet.)*

**Program Area Priority Code:** A1143

**Proposed Budget Requests:** \$500,000 total per project for project periods of 3-5 years

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants

**Application Deadline:** May 20, 2021 (5:00 pm ET)

**Contact:** Ed Kaleikau, [edward.kaleikau@usda.gov](mailto:edward.kaleikau@usda.gov); Ann Stapleton, [ann.stapleton@usda.gov](mailto:ann.stapleton@usda.gov); Shelby Servais, Program Specialist, [shelby.servais@usda.gov](mailto:shelby.servais@usda.gov)

**Funding Priorities:** support public breeding efforts that provide farmers with greater access to locally and regionally adapted cultivars.

Research must address later stages of cultivar development focused on testing and evaluation of developed materials in established regional trials with the primary goal of releasing publicly finished cultivars.

- Relevance to cultivar development should be clearly justified, demonstrable, and specific.
- Research that incorporates training of field-based plant breeders is encouraged.

### **NSF/NIFA Plant Biotic Interactions Program**

**Program Area Priority Code:** A1171

**Proposed Budget Requests:** No upper limit but typically range from \$50K to \$300K per year for project periods of 2-4 years

**Project Types:** Research or Research and Education Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator) Grants only

**Application Deadline:** No deadline; applications submitted to NSF for joint review are accepted all year

**Contact:** Ann Lichens-Park, [ann.park@usda.gov](mailto:ann.park@usda.gov); Michael Mishkind, [mmishkin@nsf.gov](mailto:mmishkin@nsf.gov); Nicole Donofrio, [ndonofri@nsf.gov](mailto:ndonofri@nsf.gov)

**Funding Priorities:**

- Supports research on processes that mediate beneficial and antagonistic interactions between plants and their viral, bacterial, oomycete, fungal, plant and invertebrate symbionts, pathogens and pests
- May focus on the biology of the plant host, its pathogens, pests or symbionts, interactions among these
- Expected to support research along entire range from basic to translational, including projects with aspects of both

**For more information:** <https://www.nifa.usda.gov/funding-opportunity/nsf-nifa-plant-biotic-interactions-program-pbi>

**Cross-cutting: Agricultural Microbiomes in Plant Systems and Natural Resources**

**Program Area Priority Code:** A1402

**Proposed Budget Requests:** Not to exceed \$850,000 total per project

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants

**Application Deadline:** July 15, 2021

**Contact:** Dr. Ann Lichens-Park, [ann.park@usda.gov](mailto:ann.park@usda.gov); Christopher Green, Program Specialist, [christopher.green@usda.gov](mailto:christopher.green@usda.gov)

**Funding Priorities:** Understanding the multipartite interactions among the host, environment, and the microbiome is critical for improving and sustaining agricultural productivity and quality in plant systems, associated natural resources, human nutrition and health.

- Characterize molecular mechanisms and signal exchange involved in microbiome assembly and interactions in various environments or physiological states such as stress, diseases or growth stages
- Functionally characterize microbiomes and microbiome metabolites in conferring specific host phenotypes (such as disease resistance or drought tolerance), optimization of environmental processes (such as water uptake, nutrient cycling or carbon sequestration), and/or host-microbiome interactions (such as host influences on microbiome composition)
- Define genomic elements that shape functional diversity, virulence and resistance to sanitation and/or antimicrobial treatment of foodborne pathogens associated with plant foods

**Cross-cutting: Critical Agricultural Research & Extension (CARE)**

**Program Area Priority Code:** A1701

**Proposed Budget Requests:** \$300,000 total per project for project periods of 1-3 years

**Project Types:** Integrated (research and extension) Projects only

**Grant Types:** Standard and FASE (Strengthening Standard and New Investigator) Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET)

**Contact:** Dr. James Dobrowolski, [James.Dobrowolski@usda.gov](mailto:James.Dobrowolski@usda.gov); Dr. Vijay Nandula, [Vijay.Nandula@usda.gov](mailto:Vijay.Nandula@usda.gov); Dr. Andres Cibils, [Andres.Cibils@usda.gov](mailto:Andres.Cibils@usda.gov)

**Funding Priorities:**

Critical challenges and opportunities that research and extension, together, can address to improve our nation's agricultural and food systems

- Projects should include:
  - Integrated activities based on rigorous **research combined with effective extension**
  - Involvement of stakeholders to develop and rapidly apply new knowledge or practices
  - Contribute to improved well-being of the people, communities, plants, and animals involved in, and affected by, agriculture and food-production systems.
- See the AFRI Foundational & Applied Science RFA for more information.

**Cross-cutting: Data Science for Food & Agricultural Systems (DSFAS)**

**Program Area Priority Code:** A1541

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years; for coordination innovation networks priority only \$1,000,000 total per project for project periods of up to five years

**Project Types:** Research Projects or Integrated (research, education and /or extension) Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Requested Grant Types for Coordination Networks:** Standard and FASE (Strengthening Standard) Grants only

**Application Deadline:** July 29, 2021 (5:00 pm ET)

**Contact:** Dr. Ann Stapleton, [NIFA-DSFAS@usda.gov](mailto:NIFA-DSFAS@usda.gov)

**Funding Priorities:**

Data science to enable systems and communities to effectively utilize data, improve resource management, and integrate new technologies and approaches to further U.S. food and agriculture enterprises.

*The most competitive proposals will be equally well grounded in agricultural science and data science.*

- Applications for research and integrated research projects must address one or more of the following data science priorities in relation to food and agricultural systems:
  - Analysis of Agricultural Data
  - Connect Multi-scale, Multi-domain or Multi-format Agricultural Data
  - Agricultural Applications and Human-Technology-Data Interactions

- See the AFRI Foundational & Applied Science RFA for more information including special emphasis projects that apply artificial intelligence and machine learning and specifics for Coordinated Innovation Networks projects.

### **Cross Cutting- Tactical Sciences for Agricultural Biosecurity**

**Program Area Priority Code:** A1181

**Proposed Budget Requests:** \$650,000 total per project for single function projects for project periods of 3-5 years; \$1,000,000 total per project for integrated projects for project periods of 3-5 years

**Project Types:** Research, Extension, and Integrated Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** July 22, 2021 (5:00 pm ET)

**Contact:** Amer Fayad, [amer.fayad@usda.gov](mailto:amer.fayad@usda.gov); Timothy Sullivan, [timothy.sullivan@usda.gov](mailto:timothy.sullivan@usda.gov); Jesse Ostrander, Program Specialist, [jesse.ostrander@usda.gov](mailto:jesse.ostrander@usda.gov)

**Funding Priorities:** This program area priority focuses on increasing U.S. national capacity to prevent, rapidly detect, and respond to biological threats to U.S. agriculture and food supply. Supported activities will be aimed at increasing agricultural biosecurity at the regional and national levels, and across the public and private sectors.

- Detection and diagnostics of transboundary and emerging pests and diseases associated with animal production systems and/or emerging, re-emerging and invasive diseases, insects and weeds associated with plant production systems.
- Rapid response to, and recovery from, pests and diseases that pose large-scale biosecurity threats to plant and animal production, including existing and imminent threats to U.S. agricultural production systems.
- Proposals that address common threats to agricultural biosecurity in both animal and plant systems are encouraged.
- Inclusion of experiential learning opportunities for students on applied aspects of agricultural biosecurity as part of the proposed extension or research activities is encouraged.

### **Other AFRI Programs**

- AFRI Education and Workforce Development RFA
  - Predoctoral fellowships (A7101)
  - Postdoctoral fellowships (A7201)
  - Research and Extension Experiences for Undergraduates (A7401)

### **Non-AFRI programs**

- [Specialty Crop Research Initiative \(SCRI\)](#)
- [Potato Breeding Research](#)

- [Supplemental and Alternative Crops \(SAC\)](#)
- [Small Business Innovation Research Program - Phase I](#)
- [Alfalfa Seed and Alfalfa Forage System Program](#)
- [Crop Protection and Pest Management](#)
- [Organic Agriculture Research and Extension Initiative \(OREI\)](#)
- [Organic Transitions \(ORG\)](#)
- [Biotechnology Risk Assessment Research Grants Program](#)
- [Minor Crop Pest Management Program Interregional Research Project #4 \(IR-4\)](#)
- [Methyl Bromide Transition Program](#)

### **National Program Leaders**

National Program Leader contact information can also be found in the RFA.

PHPPP Program Area Priorities

- A1102** – [John Erickson](#) and [Mathieu Ngouajio](#)
- A1103** – [Vance Owens](#) and [Victoria Finkenstadt](#)
- A1112/A1113** – [Erica Kistner-Thomas](#)
- A1152** – [John Erickson](#) and [Ed Kaleikau](#)
- A1141/A1143** – [Ed Kaleikau](#) and [Ann Stapleton](#)
- A1171** – [Ann Lichens-Park](#)

Cross-cutting Programs

- A1402** – [Ann Lichens-Park](#)
- A1701** – [James Dobrowolski](#), [Vijay Nandula](#), and [Andres Cibils](#)
- A1541** – [Ann Stapleton](#)
- A1181** – [Amer Fayad](#) and [Timothy Sullivan](#)

### **AFRI Webpages for Frequently Asked Questions**

- AFRI New Investigator FAQs: [AFRI Food and Agricultural Science Enhancement \(FASE\) Grants for New Investigators FAQs](#)
- AFRI General FAQs: [AFRI Frequently Asked Questions \(FAQ\)](#)
- AFRI FASE FAQs: [AFRI / FASE - Frequently Asked Questions](#)

### **What To Do If You Have Questions?**

Consult the RFA and Contact the Program Staff!

# Overview of AFRI Bioenergy, Natural Resources, and Environment Program Area

March 4, 2021

3:00-4:30 pm CST

## Content from Slides

### AFRI Bioenergy, Natural Resources and Environment (BNRE)

- The Bioenergy, Natural Resources, and Environment (BNRE) program area supports foundational and applied research and integrated projects to promote, improve, and maintain healthy agroecosystems and the natural resources that are essential to the sustained long-term production of agricultural goods and services.
- Total Program Funds – Approximately \$33 million for each review cycle

### Program Area Priorities

- A1401 Soil Health
- A1411 Water Quantity and Quality
- A1414 Sustainable Bioeconomy through Biobased Products
- A1451 Sustainable Agroecosystems: Health, Functions, Processes and Management

### Cross-cutting Programs Relevant to the Bioenergy, Natural Resources and Environment (BNRE)

Program Area Priorities:

- A1402 Agricultural Microbiomes in Plant Systems & Natural Resources
- A1541 Data Science for Food & Agricultural Systems (DSFAS)
- A1701 Critical Agricultural Research & Extension (CARE)
- A1261 Inter-Disciplinary Engagement in Animal Systems (IDEAS)

### Soil Health

**Program Area Priority Code:** A1401

**Proposed Budget Requests:** Not to exceed \$750,000 total per project (including indirect costs) for project periods of three to four years.

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** June 10, 2021 (5:00 pm ET)

**Contact:** Dr. Jim Dobrowolski, [james.dobrowolski@usda.gov](mailto:james.dobrowolski@usda.gov)

**Funding Priorities:** Basic and applied research that will lead to the development of tools, practices, techniques and/or innovations for improving soil health and the resilience and sustainability of agricultural production systems and ecosystem services.

- Foundational and applied research to advance scientific understanding of soil physical and biogeochemical processes and interactions;
- The assessment, development and adoption of models, decision support tools and new management/conservation practices and/or processes that will lead to improving or maintaining soil health and productivity while maintaining or improving environmental health and sustainability of our natural resource base;
- A focus on the interactions between the social and human dimensions with environmental and economic dimensions is encouraged. Proposed projects that are primarily fundamental science must explain how a better understanding of the fundamental processes will lead to strategies to improve overall soil health and the resilience and sustainability of agricultural production systems and ecosystem services.

### **Water Quantity and Quality**

**Program Area Priority Code:** A1411

**Proposed Budget Requests:** Not to exceed \$750,000 total per project (including indirect costs) for project periods of three to four years

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** June 10, 2021 (5:00 pm ET)

**Contact:** Dr. Jim Dobrowolski, [james.dobrowolski@usda.gov](mailto:james.dobrowolski@usda.gov)

**Funding Priorities:** Reduce the freshwater demand (both groundwater and surface water) for irrigation and the nutrient demand for maximum crop production

- Reduction of the use of freshwater and improve agricultural resilience/sustainability by innovative approaches, tools and technologies.
- Evaluation of the physical and biogeochemical interactions, fluxes, fate and transport, transformation, and storage of single or multiple nutrients, pathogens or chemicals of environmental concern (CEC) of a variety of sources as it relates to agroecosystem productivity and on associated natural resources and environment.
- Mitigation of soil salinity from the use of lower quality water sources in agriculture.
- Conservation of surface and groundwater quantity through research of agroecosystems.
- Mitigation and/or measurement of soil erodibility and erosion to sustain agroecosystems.

### **Sustainable Bioeconomy through Biobased Products**

**Program Area Priority Code:** A1414

**Proposed Budget Requests:** Up to \$1,000,000 (including indirect costs) for periods of four years

**Project Types:** Integrated Projects (research, and education and/or extension) only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants

**Application Deadline:** June 10, 2021 (5:00 pm ET)

**Contact:** Dr. Daniel Cassidy, [patrick.cassidy@usda.gov](mailto:patrick.cassidy@usda.gov); Dr. Jim Dobrowolski, [james.dobrowolski@usda.gov](mailto:james.dobrowolski@usda.gov)

**Funding Priorities:** The development of bio-based products can complement existing agricultural production systems and industrialized processes by creating opportunities to improve overall system profitability and productivity

### **Sustainable Agroecosystems: Health, Functions, Processes and Management**

**Program Area Priority Code:** A1451

**Proposed Budget Requests:** Up to \$650,000 (including indirect costs) for periods of three to four years

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET)

**Contact:** Dr. Megan O'Rourke, [Megan.O'Rourke@usda.gov](mailto:Megan.O'Rourke@usda.gov); Dr. Jim Dobrowolski, [james.dobrowolski@usda.gov](mailto:james.dobrowolski@usda.gov)

**Funding Priorities:** We focus on improvement of ecosystem health and productivity in managed systems (croplands, forests, grasslands and rangelands) that are currently under stress and at risk from variable climates, pests, pathogens, invasive plants, and increased environmental pressures.

### **Cross-cutting: Critical Agricultural Research & Extension (CARE)**

**Program Area Priority Code:** A1701

**Proposed Budget Requests:** \$300,000 total per project for project periods of 1-3 years

**Project Types:** Integrated (research and extension) Projects only

**Grant Types:** Standard and FASE (Strengthening Standard and New Investigator) Grants only

**Application Deadline:** June 17, 2021 (5:00 pm ET)

**Contact:** Dr. James Dobrowolski, [James.Dobrowolski@usda.gov](mailto:James.Dobrowolski@usda.gov); Dr. Vijay Nandula, [Vijay.Nandula@usda.gov](mailto:Vijay.Nandula@usda.gov); Dr. Andres Cibils, [Andres.Cibils@usda.gov](mailto:Andres.Cibils@usda.gov)

### **Funding Priorities:**

Critical challenges and opportunities that research and extension, together, can address to improve our nation's agricultural and food systems

- Projects should include:
  - Integrated activities based on rigorous **research combined with effective extension**
  - Involvement of stakeholders to develop and rapidly apply new knowledge or practices
  - Contribute to improved well-being of the people, communities, plants, and animals involved in, and affected by, agriculture and food-production systems.

- See the AFRI Foundational & Applied Science RFA for more information.

### **Cross-cutting: Data Science for Food & Agricultural Systems (DSFAS)**

**Program Area Priority Code:** A1541

**Proposed Budget Requests:** \$650,000 total per project for project periods of 3-5 years; for coordination innovation networks priority only \$1,000,000 total per project for project periods of up to five years

**Project Types:** Research Projects or Integrated (research, education and /or extension) Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Requested Grant Types for Coordination Networks:** Standard and FASE (Strengthening Standard) Grants only

**Application Deadline:** July 29, 2021 (5:00 pm ET)

**Contact:** Dr. Ann Stapleton, [NIFA-DSFAS@usda.gov](mailto:NIFA-DSFAS@usda.gov)

#### **Funding Priorities:**

Data science to enable systems and communities to effectively utilize data, improve resource management, and integrate new technologies and approaches to further U.S. food and agriculture enterprises.

*The most competitive proposals will be equally well grounded in agricultural science and data science.*

- Applications for research and integrated research projects must address one or more of the following data science priorities in relation to food and agricultural systems:
  - Analysis of Agricultural Data
  - Connect Multi-scale, Multi-domain or Multi-format Agricultural Data
  - Agricultural Applications and Human-Technology-Data Interactions
- See the AFRI Foundational & Applied Science RFA for more information including special emphasis projects that apply artificial intelligence and machine learning and specifics for Coordinated Innovation Networks projects.

### **Cross-cutting: Agricultural Microbiomes in Plant Systems and Natural Resources**

**Program Area Priority Code:** A1402

**Proposed Budget Requests:** Not to exceed \$850,000 total per project

**Project Types:** Research Projects only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants

**Application Deadline:** July 15, 2021

**Contact:** Dr. Ann Lichens-Park, [ann.park@usda.gov](mailto:ann.park@usda.gov)

**Funding Priorities:** Understanding the multipartite interactions among the host, environment, and the microbiome is critical for improving and sustaining agricultural productivity and quality in plant systems, associated natural resources, human nutrition and health.

- Characterize molecular mechanisms and signal exchange involved in microbiome assembly and interactions in various environments or physiological states such as stress, diseases or growth stages
- Functionally characterize microbiomes and microbiome metabolites in conferring specific host phenotypes (such as disease resistance or drought tolerance), optimization of environmental processes (such as water uptake, nutrient cycling or carbon sequestration), and/or host-microbiome interactions (such as host influences on microbiome composition)
- Define genomic elements that shape functional diversity, virulence and resistance to sanitation and/or antimicrobial treatment of foodborne pathogens associated with plant foods

### **Inter-Disciplinary Engagement in Animal Systems (IDEAS)**

**Program Area Priority Code:** A1261

**Proposed Budget Requests:** \$1,000,000 total per project for 3-5 years

**Project Types:** Integrated Projects (Research and Extension or Education) only

**Grant Types:** Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only

**Application Deadline:** July 15, 2021 (5:00 pm ET)

**Contact:** Steven Smith, [steven.i.smith@usda.gov](mailto:steven.i.smith@usda.gov); Ganesh Bora, [ganesh.bora@usda.gov](mailto:ganesh.bora@usda.gov); Andres Cibils, [andres.cibils@usda.gov](mailto:andres.cibils@usda.gov)

### **Funding Priorities:**

- Precision animal management
  - precision feeding, breeding, management and animal health to ensure and enhance economic viability
- Environmental synergies of animal production
  - managing emissions; recycling, reusing co-products of animal agriculture; optimizing animal management for environmental health
- Societal aspects of animal welfare
  - building trust around animal agriculture; consumer experiences that influence perceptions of agricultural animal well-being; public engagement in the policy and practices of animal agriculture for improved animal welfare

### **Other AFRI Programs**

- A1102 Foundational Knowledge of Agricultural Production Systems
- A1113 Pollinator Health: Research & Applications
- A1112 Pests & Beneficial Species in Agricultural Production Systems
- A7101 Pre-doctoral fellowships

- A7201 Post-doctoral fellowships

#### **Non-AFRI Programs of Interest Related to BNRE**

- [Renewable Resources Extension Act Focus Funds](#) (RREA-NFF)
- [Equipment Grants Program](#) (EGP)
- [Specialty Crops Research Initiative](#) (SCRI)
- [Organic Agriculture Research and Extension Initiative](#) (OREI)
- [Organic Transitions Program](#) (ORG)
- [Sustainable Agriculture Research & Education](#) (SARE)
- [Small Business Innovation Research](#) (SBIR)
  - 8.1 Forests and Related Resources
  - 8.4 Conservation of Natural Resources
  - 8.8 Biofuels and Biobased Products
  - 8.12 Small and Mid-Size Farms

#### **Researching Programs: NIFA Data Gateway**

- <https://nifa.usda.gov/data>
- Why use data gateway?
  - Search funded project by KEYWORDS, PROGRAM CODES, PROJECT DIRECTORS
  - Access to Project Reports which include: Non-Technical Summaries, Goals and Objectives, and Project Methods
  - Find funding opportunities by areas of interest and potential future collaborators

#### **AFRI Webpages for Frequently Asked Questions**

- AFRI New Investigator FAQs: [AFRI Food and Agricultural Science Enhancement \(FASE\) Grants for New Investigators FAQs](#)
- AFRI General FAQs: [AFRI Frequently Asked Questions \(FAQ\)](#)
- AFRI FASE FAQs: [AFRI / FASE - Frequently Asked Questions](#)

#### **What To Do If You Have Questions?**

Consult the RFA and Contact the Program Staff!

## Useful Links

- [Agriculture and Food Research Initiative](#) Links
  - [AFRI Requests for Applications](#) – links to all NIFA AFRI RFAs, includes instructions on how to subscribe to AFRI RFA postings of new and modified RFAs on Grants.gov
  - [AFRI RFA Resources](#) – links and documents with information related to AFRI RFAs
  - [AFRI Deadlines](#) – a table with current and future AFRI deadlines for NIFA AFRI RFAs
  - [AFRI FASE & EPSCoR Program](#) – information on AFRI’s Food and Agricultural Science Enhancement (FASE) Grants and the currently applicable USDA Established Program to Stimulate Competitive Research (EPSCoR) eligibility list.
  - [AFRI Interagency Programs](#) – past and present interagency programs
- AFRI Frequently Asked Questions
  - [AFRI Frequently Asked Questions \(FAQ\)](#) – General AFRI questions
  - [AFRI / FASE - Frequently Asked Questions](#) – Questions about AFRI’s Food and Agricultural Science Enhancement (FASE) Grants
  - [AFRI Food and Agricultural Science Enhancement \(FASE\) Grants for New Investigators FAQs](#) – Questions specific to New Investigator grants including eligibility and types of grants
- Other NIFA Links
  - [Competitive Grants Flowchart](#) – an overview showing the steps of the competitive grants process at NIFA
  - [NIFA Peer Review Process for Competitive Grant Applications](#) – along with information on the peer review process, this page also has a handout with some general grant writing tips
  - [Indirect Costs](#)
  - [Grant Management FAQ](#) – this FAQ also includes some information on examples of unallowable costs. If you are at a college or university, your Office of Sponsored Programs/Grants Office should also be able to provide guidance.
  - [Acknowledgment of USDA Support by NIFA](#) – how to acknowledge NIFA support
  - [Terms and Conditions](#) – information on the terms & conditions for NIFA awards