Agriculture and Food Research Initiative Competitive Grants Program

Foundational Program

Fiscal Year (FY) 2017 Request for Applications (RFA)

LETTER OF INTENT DEADLINE: Varies by Program Area
APPLICATION DEADLINE: Varies by Program Area

ELIGIBILITY: See Part III, A of RFA

USDA United States Department of Agriculture   National Institute of Food and Agriculture

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE; U.S. DEPARTMENT OF AGRICULTURE

AGRICULTURE AND FOOD RESEARCH INITIATIVE COMPETITIVE GRANTS PROGRAM
FOUNDATIONAL PROGRAM

INITIAL ANNOUNCEMENT

CATALOG OF FEDERAL DOMESTIC ASSISTANCE: This program is listed in the Catalog of Federal Domestic Assistance under 10.310.

DATES: If applicable, a Letter of Intent (LOI) must be received by **5:00 p.m. Eastern Time** on the deadline date indicated in the Program Area Descriptions section beginning in Part I, C. (see Part IV, A. for LOI instructions). Please note that a LOI is not required for conference grants. Applications must be received by **5:00 p.m. Eastern Time** on the deadline date indicated in the Program Area Descriptions section beginning in Part I, C. Applications received after this deadline will normally not be considered for funding (see Part IV, C.). Comments regarding this request for applications (RFA) are requested within six months from the issuance of this notice. Comments received after that date will be considered to the extent practicable.

STAKEHOLDER INPUT: We at the National Institute of Food and Agriculture (NIFA) seek your comments about this request for applications (RFA). We will consider your comments when we develop the next RFA for the program, if applicable, and we'll use them to meet the requirements of section 103(c)(2) of the Agricultural Research, Extension, and Education Reform Act of 1998 (7 U.S.C. 7613(c)(2)). Submit your written comments by the deadline set forth in the DATES portion of this notice via email to Policy@nifa.usda.gov. (This email address is only for receiving comments regarding this RFA and *not* for requesting information or forms.) In your comments, please state that you are responding to this RFA.

Visit the NIFA website to access a factsheet on the Center of Excellence (COE) designation process, including COE criteria, and a list of programs offering COE opportunities in fiscal year (FY) 2017. You may also review a recording of COE outreach webinars held in February and March of 2015. We will update COE webpages as appropriate.

NIFA solicits proposed topics for Agriculture and Food Research Initiative (AFRI) RFAs from eligible state and national commodity boards on an ongoing basis, pursuant to Section 7404 of the Agricultural Act of 2014 (Pub. L. 113-79). Topics must relate to the established AFRI priority areas, which are 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; and agriculture economics and rural communities (as stated in the 2014 Farm Bill).

NIFA received topics from eligible commodity boards until July 18, 2016, for incorporation into FY 2017 RFAs. Topics submitted by the commodity boards that aligned with NIFA

priorities were chosen for inclusion in selected Programs of this RFA. The NIFA Fact Sheet on implementation of the commodity boards provision of the 2014 Farm Bill can be found at: https://nifa.usda.gov/sites/default/files/resource/Commodity%20Board%20Fact%20Sheet%20P6.pdf.. Additional information on eligibility and how to submit topics for inclusion in future AFRI Requests for Applications can be found at: http://nifa.usda.gov/commodity-boards.

Applicants are encouraged to view the Program Area Descriptions beginning in Part I, C., of this RFA for additional details on commodity board-specific priorities and submission of applications relevant to these priorities. All applications submitted to these priorities must follow the application submission requirements described for the Program Area under which they are listed.

Additionally, applicants must state in the last sentence of their application's Project Summary section that the proposal is submitted in response to a specific commodity board topic. Applicants must provide a letter of support from the relevant commodity board directly to the pertinent Program Contact within 60 days of the application submission deadline. All applications will be evaluated using the same standard review criteria and procedures applied to all AFRI grant applications. Applications without a letter of support from a relevant commodity board will not be eligible to receive commodity board co-funding.

EXECUTIVE SUMMARY: The Agriculture and Food Research Initiative (AFRI) is America's flagship competitive grants program that provides funding for fundamental and applied research, education, and extension projects in the food and agricultural sciences. In this RFA, NIFA requests applications for six AFRI priority areas through the Foundational Program for FY 2017. The goal of this program is to invest in agricultural production research, education, and extension projects for more sustainable, productive and economically viable plant and animal production systems. The global agricultural output needs to be expanded significantly to meet the food needs of the population expected in 2050; thus, it is imperative to develop innovative, safe and sustainable management strategies for livestock, crops, and critical underlying resources.

In FY 2017, applications are sought in the following priority areas:
1. Plant health, and production and plant products;
2. Animal health, and production and animal products;
3. Food safety, nutrition, and health;
4. Bioenergy, natural resources, and environment;
5. Agriculture systems and technology; and
6. Agriculture economics and rural communities

The anticipated amount available for new grants in this FY 2017 Foundational Program RFA is approximately $150.2 million.

This RFA is being released prior to the passage of budget appropriations for FY 2017. Enactment of additional continuing resolutions or appropriations may affect the availability or level of funding for this program.

This notice identifies the objectives for AFRI projects, deadline dates, funding information, eligibility criteria for projects and applicants, and application forms and associated instructions needed to apply for an AFRI Foundational Program grant.

<u>Significant changes</u> described in this RFA include the addition of new program area priorities within the Plant Health and Production and Plant Products Program Area; Animal Health and Production and Animal Products Program Area; Food Safety, Nutrition, and Health Program Area; Bioenergy, Natural Resources, and Environment Program Area; and the Agriculture Economics and Rural Communities Program Area. Changes also include addition of four specific priorities for co-funding with the Mushroom Council and National Peanut Board.

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PART I—FUNDING OPPORTUNITY DESCRIPTION

A. Legislative Authority and Background

Section 7406 of the Food, Conservation, and Energy Act of 2008 (FCEA) (Pub. L. 110-246) amended section 2(b) of the Competitive, Special, and Facilities Research Grant Act (7 U.S.C. 450i(b)) to authorize the Secretary of Agriculture to establish the Agriculture and Food Research Initiative (AFRI), a competitive grant program that will provide funding for fundamental and applied research, education, and extension to address food and agricultural sciences, as amended by the 2014 Farm Bill under section 7401. The legislation directed the Secretary to award grants to address priorities in U.S. agriculture in the following six Farm Bill priority areas:
1. Plant health and production and plant products;
2. Animal health and production and animal products;
3. Food safety, nutrition, and health;
4. Bioenergy, natural resources, and environment;
5. Agriculture systems and technology; and
6. Agriculture economics and rural communities.

To the maximum extent practicable, NIFA, in coordination with the Under Secretary for Research, Education, and Economics (REE), will make grants for high priority research, education, and extension, taking into consideration, when available, the determinations made by the National Agricultural Research, Extension, Education, and Economics Advisory Board (NAREEEAB) pursuant to section 2(b)(10) of the Competitive, Special, and Facilities Research Grant Act (7 U.S.C. 450i(b)(10)), as amended. The authority to carry out this program has been delegated to NIFA through the Under Secretary for REE.

B. Purpose and Priorities

The purpose of the Agriculture and Food Research Initiative (AFRI) is to support research, education, and extension work by awarding grants to solve key problems of local, regional, national, and global importance in sustaining conventional, organic, and urban agricultural systems. These include farm efficiency, profitability and sustainability, ranching, bioenergy, forestry, aquaculture, rural communities and entrepreneurship, human nutrition, mitigating impacts of biotic and abiotic constraints on food production, food safety, mitigating food waste and food loss, physical and social sciences, home economics and rural human ecology, biotechnology, and classical breeding. Through this support, AFRI advances knowledge in both fundamental and applied sciences important to agriculture. It also allows AFRI to support education and extension activities that deliver science-based knowledge to end users, allowing them to make informed, practical decisions. This AFRI RFA provides funding for research-only, and integrated research, education, and/or extension projects addressing the six priorities of the 2014 Farm Bill as indicated in Part I, A.

Food and agricultural systems are under the constraints of a growing population, pressure on natural resources, challenges of climate variability, and complex demands of ensuring nutritional security and food safety in a global economy. Addressing these challenges require

research, education, extension, and integrated programs in concert with agroecological approaches that increase agricultural and natural resource sustainability. The term "sustainable agriculture" (NARETPA, 7 U.S.C. 3103) means a combined system of plant and animal production practices having a site-specific application that will, over the long-term, achieve the following goals: 1) satisfy human food and fiber needs; 2) enhance environmental quality and the natural resource base upon which the agricultural economy depends; 3) make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; 4) sustain the economic viability of farm operations; and 5) enhance the quality of life for farmers and society as a whole. AFRI encourages projects addressing enhancement of sustainability of agricultural systems.

NIFA supports global engagement that advances U.S. agricultural goals. To attain the agency's goals for U.S. agriculture, global competence of our nation's agricultural workforce, and safe and nutritious food security in a growing world, NIFA recognizes that collaboration with international partners can contribute to advances in U.S. agriculture. In an increasingly interconnected world, these U.S. advances may have global importance. Thus, applications in response to AFRI RFA programs are strongly encouraged to include collaborations with international partners, but may only be submitted by eligible U.S. institutions. Such applications may include subcontracts to international partners or other institutions and must clearly demonstrate benefits to the U.S. Additional guidance on including international activities is provided on the [AFRI International Partnerships webpage](#).

In many science areas covered by this RFA, large and diverse datasets are produced at a rapid pace. The availability of big data provides unprecedented opportunities for synthesizing new knowledge, for making predictive decisions, and fostering data-supported innovation in agriculture. NIFA has embarked on Food and Agriculture Cyberinformatics and Tools (FACT) initiative to catalyze activities in these areas. In FY 2017, all program area priorities that accept conference applications also welcome submission of FACT workshop applications. The workshops supported will focus on identifying priorities and bottlenecks in generating, managing and integrating data in a specific domain of the food and agricultural system. Expected outcomes include strategic plans and specific community-supported solutions to handling standards, repositories, data sharing and engagement across sector and disciplines. In addition, these workshops should begin to address how data management plans can assist in prioritizing collection and storage of primary and meta-data relevant for each community. NIFA expects that the FACT workshops will be held by October 1, 2017. Applicants for all conference grants, including FACT workshops, should consult with the Program Contact listed in this RFA for the Program Area Priority most relevant to the focus of the conference.

Stakeholder Input

For information on stakeholder input related to AFRI and the Foundational Program, please visit https://nifa.usda.gov/resource/afri-stakeholder-feedback.

Background

AFRI is NIFA's flagship competitive grants programs for addressing critical societal issues, and funding is offered through the Foundational Program, five primary Challenge Areas, and the Food, Agriculture, Natural Resources and Human Sciences Education and Literacy Initiative (formerly the NIFA Fellowships program) to promote agricultural research, education, and extension efforts to address societal challenges.

This AFRI RFA for 2017 is aligned with Section 7406, Subsection (b) of the Competitive, Special, and Facilities Research Grant Act (7 U.S.C. 450i(b)) as amended by the 2014 Farm Bill under section 7401.

This AFRI RFA addresses the six priorities and subpriorities of the 2014 Farm Bill as described below under each Program Area. It also aligns with Strategic Goal 1 (Objectives 1.1, 1.2, and 1.3), Strategic Goal 2 (Objectives 2.1, 2.2, and 2.3), Strategic Goal 3 (Objectives 3.1 and 3.2), and Strategic Goal 4 (Objectives 4.1, 4.2, 4.3 and 4.4.) of the USDA Strategic Plan

This AFRI RFA aligns with the USDA Research, Education, and Economics (REE) Action Plan. Program Areas in this AFRI RFA draws from specific actionable items defined in the REE Action Plan including: Goals 1, 2, 3, 4, 5, and 7. Several action items are addressed by other AFRI RFAs. NIFA may also solicit additional applications for the usage of AFRI funds through other announcements, including supplemental AFRI RFAs or RFAs issued in conjunction with other federal agencies. Such announcements will be made public in the same manner as this announcement. Other sources of NIFA funding for work relevant to this RFA can be found at www.nifa.usda.gov/afri.

The AFRI Foundational Program is aligned with the NIFA Strategic Plan, and specifically addresses Strategic Goal 1: Science (Subgoals 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 and 1.7).

C. Program Area Description

    a. Plant health, and production and plant products;
    b. Animal health, and production and animal products;
    c. Food safety, nutrition, and health;
    d. Bioenergy, natural resources, and environment;
    e. Agriculture systems and technology; and
    f. Agriculture economics and rural communities
    g. Critical Agricultural Research and Extension (CARE)
    h. Exploratory Research

a. Plant Health and Production and Plant Products

Background
Plant production, protection, and the development of new plant products are critical to the sustainability and competitiveness of U.S. agriculture, and the growth of our nation's economy. Future improvements to production systems will require a greater understanding of complex, inter-related factors, across a wide range of scales. These include investigations of plant biology at molecular, cellular, and whole-plant levels as well as innovative and environmentally-sound approaches to improve plant performance and protect them from biotic and abiotic stresses.

The Plant Health and Production and Plant Products program area was established with the recognition that by increasing knowledge of plant systems and the various factors that affect productivity, we can help U.S. producers and consumers face critical challenges in areas such as food security, stewardship of natural resources, bioenergy, climate variability, sustainable intensification, organic production, loss of agricultural land, and increasing global competition. Research applications submitted to this program area must justify the choice of organism or system in terms of its importance to agriculture. The use of model systems is allowed, but applicants must describe the relevance of model system development to specific crop species, and must also describe how results obtained from model systems will be transferred to agriculturally-important organisms during the project period.

The AFRI Plant Health and Production and Plant Products program area addresses the following priorities of the 2014 Farm Bill: A. Plant Health and Production and Plant Products – Plant systems (subpriorities: i. plant genome structure and function; ii. molecular and cellular genetics and plant biotechnology; iii. conventional breeding, including cultivar and breed development, selection theory, applied quantitative genetics, breeding for improved food quality, breeding for improved local adaptation to biotic stress and abiotic stress; iv. plant pest interactions and biocontrol systems; v. crop plant response to environmental stresses; and vi. [improved] nutrient qualities of plant products); D. Bioenergy, Natural Resources, and Environment (subpriorities i. fundamental structures and functions of ecosystems; ii. biological and physical bases of sustainable production systems; iv. global climate effects on agriculture; v. forestry; and vi. biological diversity) and F. Agriculture Economics and Rural Communities – Markets, trade and policy (subpriority iv. choices and applications of technology).

The Plant-Associated Microbes and Plant-Microbe Interactions program area priority under this program area is being offered through a joint program with the National Science Foundation titled Plant Biotic Interactions. The NIFA Program Contact for Plant Biotic Interactions Program is Dr. Ann Lichens-Park (202) 401-6460 or apark@nifa.usda.gov.

Total Program Funds – Approximately $44 million

Program Area Key Information Applicable to ALL Plant Health and Production and Plant Products Program Area Priorities:
  - All applications must adhere to the requirements beginning in Part IV.

- Applications from, and collaborations with, minority-serving institutions, small to mid-sized institutions, and/or Experimental Program to Stimulate Competitive Research (EPSCoR) states are encouraged.
- For projects related to Plant Health and Production and Plant Products Program Area that require $300,000 or less and 1) are at the stage where results can be applied quickly following project completion (e.g., stakeholders adopt recommendations, practices, products or technologies resulting from the project) and 2) work on critical stakeholder-identified problems, applicants should consider submitting to the Critical Agricultural Research and Extension (CARE) Program Area (A1701), described in this RFA.

Program Area Priorities – Each application must address one of the following five program area priorities:

1. **<u>Foundational Knowledge of Agricultural Production Systems</u>**
   Program Area Priority Code – A1102
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years**.
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding the budgetary guidelines will not be reviewed.

   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
   Letter of Intent not required for this program area priority
   Application Deadline – June 29, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contacts – Dr. Mathieu Ngouajio (202) 401-4895 or mngouajio@nifa.usda.gov, and Dr. Robert Nowierski (202) 401-4900 or rnowierski@nifa.usda.gov

   Program Area Priority –
   This program area priority supports research to advance our knowledge of cropland, managed forest, and rangeland production systems using experimentation and synthesis, including agroecological approaches. Research supported by this priority will address critical or process-limiting dynamics that occur among and within the various management components of the production system. This research is expected to lead to the development of innovative solutions to problems limiting or threatening the productivity, efficiency, and sustainability of the selected production system.

   Applications must address one or more of the following:
   - Investigate how multiple management components of agricultural production systems can be integrated to enhance plant resilience to various stressors and improve product quality and/or productivity.

- Investigate how production systems can alter the plant microbiome and determine how the alterations affect plant resilience to various stressors and/or affect product quality and/or productivity.
- Investigate how changes in production system management or biodiversity affect soil health.
- Synthesis and meta-analysis of the existing data to derive general principles about the function and properties of agricultural production systems.

Program Area Priority Additional Information:
- Appropriate systems for study include food and fiber crops, managed forests and rangelands. Both conventional and organic production systems are appropriate for the study.
- The production system studied should be comprised of several key management components, such as: pest management (including insects, nematodes, pathogens and weeds), integrated crop management, soil fertility, soil health, agronomic practices, cover cropping, biodiversity, and economics. Please note that only studies involving two or more management components will be supported.
- Applicants who wish to submit an application focused solely on the management of pests or beneficial species should consider submitting to the Pests and Beneficial Species in Agricultural Production Systems program area priority (A1112).
- This program area priority does not support projects on or involving livestock. Please refer to the Animal Health and Production and Animal Products program area in this RFA to review funding opportunities for research on livestock.

2. **Pests and Beneficial Species in Agricultural Production Systems**
   Program Area Priority Code – A1112
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 total per project (including indirect costs) for project periods of up to 5 years**.
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding the budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, Collaborative, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only
   Letter of Intent not required for this program area priority
   Application Deadline – July 12, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contacts – Dr. Mary Purcell-Miramontes (202) 401-5168 or mpurcell@nifa.usda.gov, and Dr. Jeffrey Steiner (202) 734-1067 or jeffrey.steiner@nifa.usda.gov

   Program Area Priority –
   This program area priority supports research to address one of the following three challenges: 1) elucidate the fundamental ecological, molecular, biological or chemical

processes affecting plant-associated pests or associated organisms (arthropods, nematodes, arthropod-vectors of plant diseases, microbes or weeds); 2) promote healthy populations of beneficial organisms and micro-organisms associated with pests (e.g., symbionts, mycorrhizal fungi, endophytes or biological control agents) in agricultural production systems (e.g., horticultural plants, croplands, managed forests and rangelands in rural or urban agro-ecosystems); and 3) increase our understanding of multi-trophic interactions between plants, pests or beneficial species. Studies involving invasive and newly emerging pests or established pest species are encouraged. This research is expected to lead to the development of innovative and environmentally-sound strategies to manage agriculturally-important plant pests.

Applications must address one or more of the following:
- Interactions of plant pests or beneficial species with biotic or abiotic (environmental) factors affecting their abundance and spread. Factors may include, but are not limited to, other plant pests or beneficial species, climate variability, plant compounds, pesticides, toxins or contaminants. Molecular, organismal, population and/or community levels of research are appropriate.
- Effects of communication, attractants or defense signaling systems on pests or beneficial species.
- Movement or dispersal dynamics of pests or beneficial organisms, including pests that vector plant diseases – this includes epidemiological factors that influence disease spread, the influence of agronomic practices on weed populations, and research on fundamental aspects of weed biology that impact reproductive biology, seedbank dynamics, and other aspects of population dynamics.
- Mechanisms of pest resistance to pesticides or toxins in genetically-modified plants (e.g., fungicides, herbicides, insecticides, Bt toxin) and development of strategies to mitigate resistance and/or crop failure.
- Fundamental research that leads to biologically-based pest management approaches to manage pests and/or sustain beneficial species.

In addition to the priorities listed above, NIFA and the National Peanut Board are seeking to co-fund projects on innovations in disease and pest management in peanut production. Applications must address the following priority:
- Develop innovations in management of diseases and pests that are costly to and are major deterrents to achieving sustainable yields and high quality in peanut production.

Applicants seeking funding through this commodity board co-funded priority must provide a letter of support from the commodity board directly to the NIFA Program Contact within 60 calendar days after the application submission deadline. When seeking a letter of support, applicants should submit their entire application to the **National Peanut Board** and request a letter that specifically indicates that the National Peanut Board supports the application for co-funding. To obtain a letter of support or for further questions, please contact the **National Peanut Board** representative (DeMarquine Wilson, 3350 Riverwood Parkway, Ste 1150, Atlanta, GA 30339; 678-424-5757 or dhwilson@nationalpeanutboard.org). Additionally, applicants must state in the last sentence

of their application's Project Summary section that the proposal is submitted in response to this specific commodity board topic.

Program Area Priority Additional Information:
- Applications for research on pests of livestock or pests of humans (e.g., vectors of human diseases or nuisance pests such as flies, bed bugs, cockroaches, and termites) are not supported by this program area priority. Please refer to the Animal Health and Production and Animal Products program area in this RFA to review funding opportunities for research on pests of livestock.
- **Research on pollinators is no longer included in this program area priority.** Applicants should consider applying to Pollinator Health: Research and Application, Program Area Priority Code A1113, described in this RFA.
- Applicants for research on plant-biotic interactions using molecular approaches should consider applying to the joint NSF/NIFA Plant Biotic Interactions Program.
- Applications for research that are primarily focused on the development of pest or beneficial species management strategies or tactics, not fundamental mechanisms, may be more appropriate for the Critical Agricultural Research and Extension Program Area of this RFA or for the Applied Research and Development Program Area of the Crop Protection and Pest Management Competitive Grants Program, another program offered by NIFA that also provides limited support for projects focused on nuisance pests in urban or rural systems.
- NIFA is partnering with Ireland and Northern Ireland under the U.S. – Ireland Research and Development Partnership to solicit collaborative research applications in the Pests and Beneficial Species in Agricultural Production Systems program area priority. For more information including FAQs about this program, visit the AFRI website. Applicants submitting to this partnership should select <u>Collaborative</u> as the grant type.

3. **Physiology of Agricultural Plants**
   Program Area Priority Code – A1152
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years**.
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding the budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
   Letter of Intent not required for this program area priority
   Application Deadline – June 28, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contacts – Dr. Liang-Shiou Lin (202) 401-5045 or llin@nifa.usda.gov, and Dr. Shing Kwok (202) 401-6060 or skwok@nifa.usda.gov

Program Area Priority –
This program area priority will support projects that use molecular, biochemical, whole-plant, agronomic or eco-physiological approaches to improve plant productivity or performance through studies on:
- Plant growth and developmental processes.
- Mechanisms of plant response to abiotic stresses, including water use efficiency.
- Photosynthetic efficiency, carbon assimilation, and source-sink relationship.
- Primary and secondary metabolism in agriculturally-important plants and associated weeds, with particular relevance to nutritional quality of food and feed and economically-important traits including traits with potential benefits in weed control.
- Nutrient uptake (macronutrients and/or micronutrients), assimilation, accumulation and/or utilization, particularly increased efficiency in using nitrogen, or phosphorus.

Program Area Priority Additional Information:
- Studies of plant-microbe interactions in nutrient use are not appropriate for this program area priority.
- Applicants must indicate in the first sentence of their Project Summary with which <u>single</u> priority listed above their project is best aligned.

4. **Plant Breeding for Agricultural Production**
   Program Area Priority Code – A1141
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years**.
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding the budgetary guidelines will not be reviewed.

   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
   Letter of Intent not required for this program area priority
   Application Deadline – July 19, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contacts – Dr. Ed Kaleikau (202) 401-1931 or
   ekaleikau@nifa.usda.gov, and Dr. Liang-Shiou Lin
   (202) 401-5045 or llin@nifa.usda.gov

   Program Area Priority –
   This program area priority will support public breeding efforts to improve crop productivity, efficiency, quality, performance, and/or local adaptation. Both conventional/classical and genomics-enabled plant breeding will be supported. These efforts should address the priority needs identified by the USDA Roadmap for Plant Breeding.

   Applications must address one or more of the following priorities:
   - Pre-breeding and germplasm enhancement.

- Cultivar development.
- Selection theory.
- Applied quantitative genetics.
- Participatory breeding.

In addition to the priorities listed above, NIFA and the National Peanut Board are seeking to co-fund projects that use genetic and genomic approaches to develop improved varieties of peanuts. Applications must address the following priority:
- Develop and implement genetic and genomic tools to breed for improvements in aflatoxin resistance, disease resistance, size and shape, flavor, nutrient content, or drought tolerance, etc.

Applicants seeking funding through this commodity board co-funded priority must provide a letter of support from the commodity board directly to the NIFA Program Contact within 60 calendar days after the application submission deadline. When seeking a letter of support, applicants should submit their entire grant application to the **National Peanut Board** and request a letter that specifically indicates that the National Peanut Board supports the application for co-funding. To obtain a letter of support or for further questions, please contact the **National Peanut Board** representative (DeMarquine Wilson, 3350 Riverwood Parkway, Ste 1150, Atlanta, GA 30339; 678-424-5757 or dhwilson@nationalpeanutboard.org). Additionally, applicants must state in the last sentence of their application's Project Summary section that the application is submitted in response to this specific commodity board topic.

Program Area Priority Additional Information:
- Choice of plant species and objectives must be justified in terms of importance to agricultural food and fiber production systems in the United States.
- Research that incorporates training of field-based plant breeders is encouraged.
- Relevance to cultivar development should be clearly justified, demonstrable and specific.
- Conventional/classical breeding research that incorporates development of publicly available cultivars bred to be adapted to the soils, climates, and farming systems of farmers of all regions is encouraged.
- Conference grants must focus on at least one of the following: (i) public-private collaboration in plant breeding, and/or (ii) plant breeding research and education to provide graduate student interaction with geneticists, breeders and other scientists, and promote careers in plant breeding, genetics and genomics.
- For plant breeding applications requiring $300,000 or less that develop and implement solutions to critical stakeholder-identified problems associated with the Plant Health and Production and Plant Products Farm Bill priority such as variety development, or evaluation for resistance to pests or diseases, applicants may consider submitting their applications to the Critical Agricultural Research and Extension (CARE), Program Area Priority Code – A1701, described in this RFA.
- For plant breeding applications that require $100,000 or less and 1) address new and emerging problems with high potential impact; 2) apply new knowledge or new approaches to unsolved challenges that have high potential impact; 3) develop

necessary tools to elicit a paradigm shift in the field of study; and or, 4) provide a rapid response to natural disasters or similar unanticipated events, applicants should consider submitting their applications to the Exploratory Research Program Area, described in this RFA.

- Plant breeding, genetics and genomics researchers with expertise and interest in "Social Implications of Emerging Technologies" are encouraged to consider submitting their applications to the Agriculture Economics and Rural Communities (AERC), Program Area Priority Code – A1642, described in this RFA.

5. **<u>Pollinator Health: Research and Application</u>**
   Program Area Priority Code – A1113
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$1 million <u>total per project</u> (including indirect costs) for project periods of up to 5 years**.
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding the budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening, Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
   Letter of Intent not required for this program area priority
   Application Deadline – June 28, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contact – Dr. Mary Purcell-Miramontes (202) 401-5168 or
   mpurcell@nifa.usda.gov

   Program Area Priority –
   This program area priority supports basic and applied research to promote healthy populations of animal pollinators (e.g., bees, wasps, flies, moths, beetles, bats, and birds). Several factors are significantly impacting the health of pollinator populations such as pests, diseases, pesticides, pollutants or toxins, nutritional deficits; effects of climate variability, agricultural intensification, nutritional deficits, habitat loss; reduced species or genetic diversity; as well as pollinator or crop management practices. This poses a serious risk to crops that depend on pollinators for production of marketable commodities and would ultimately impact food security. Research is expected to address factors affecting pollinators and impact an affordable and abundant food supply

   Research applications must address one or more of the following:
   - Better understand mechanism(s) involved in one or more variables that significantly influence the abundance, diversity or function of pollinators. Numerous disciplinary approaches will be considered (ecological, behavioral, genomic, physiological, biophysical, sociological, etc.).
   - Elucidating interactions between one or more factors relevant to pollinator health and/or with agro-ecosystems.
   - Characterization of the microbiome and its association with pollinator health (e.g., meeting nutritional requirements, detoxification, immunity to diseases, etc.).

- Innovative approaches (either at an ecological or molecular/genomic level) or technologies to increase pollinator health or sustain diverse populations.
- Studies may include, but are not limited to, detection and monitoring, diagnostics, management of pests, diseases, breeding and other genetic research, landscape designs, habitat restoration, etc.
- Meta-analyses or modeling approaches to identify or predict factors driving changes in pollinator populations. Studies that consider management of other pests or sustaining other beneficial organisms important to the agroecosystem may be included as appropriate.
- Applied and implementation-based research to a) measurably reduce losses of pollinators in managed agroecosystems or in landscapes that support pollinators and/or b) manage other pests and diseases along with ensuring protection of pollinators and other beneficial species (i.e., integrated pest and pollinator management).

Program Area Priority Additional Information:
- Public-private partnerships are encouraged. Letters of support from private partners must be included in the application. Their role (e.g., research coordination, leveraging additional funds or other resources, sharing data and information, or citizen engagement) should be specified.

b. Animal Health and Production and Animal Products

Background
Animal health and production play critical roles in the sustainability and competitiveness of U.S. agriculture. Livestock, poultry, equine, and aquaculture species contribute significantly to the nation's economy, global food production, and food security. To remain globally competitive, a better understanding of the critical biological and physiological mechanisms underlying nutrition, growth, reproduction, and health in these species is needed. Basic research at the genetic, genomic, molecular, cellular, and organ systems levels, combined with applied research approaches, is essential to control and prevent animal diseases, reduce animal health and production costs, enhance nutritional quality of animal products, and minimize environmental impacts. New knowledge gained from this research will facilitate better management strategies for both conventional and organic production systems to enhance production efficiency and animal well-being, improve animal health, and develop healthy animal products for human use. These strategies may include the application of biotechnology, conventional/classical breeding, and breed development.

The AFRI Animal Health and Production and Animal Products program area addresses the following priorities within the 2014 Farm Bill: B. Animal Health and Production and Animal Products - Animal systems (subpriorities i. aquaculture; ii. cellular and molecular basis of animal reproduction, growth, disease, and health; iii. animal biotechnology; iv. conventional breeding, including breed development, selection theory, applied quantitative genetics, breeding for improved food quality, breeding for improved local adaptation to biotic stress and abiotic stress, and participatory breeding; v. identification of genes responsible for improved production traits and resistance to disease; vi. improved nutritional performance of animals; vii.

improved nutrient qualities of animal products and uses; viii. the development of new and improved animal husbandry and production systems that take into account production efficiency, animal well-being, and animal systems applicable to aquaculture; ix. the research and development of surveillance methods, vaccines, vaccination delivery systems, or diagnostic tests for pests and diseases including epizootic diseases in domestic livestock [including deer, elk, other animals of the family Cervidae and bison], and zoonotic diseases [including bovine brucellosis and bovine tuberculosis] in domestic livestock or wildlife reservoirs that present a potential concern to public health; and x. the identification of animal drug needs and the generation and dissemination of data for safe and effective therapeutic applications of animal drugs for minor species and minor uses of such drugs in major species).

Total Program Funds – Approximately $34.8 million

Program Area Key Information Applicable to <u>ALL</u> Animal Health and Production and Animal Products Program Area Priorities:
- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, minority-serving institutions, small to mid-sized institutions, and/or EPSCoR states are encouraged.
- Applicants must justify the use of model systems (*e.g.,* laboratory animals or cell cultures). Applications that primarily (*i.e.,* encompassing greater than 50% of the work proposed) use non-agricultural or non-aquaculture species as models will not be considered.
- Applicants must include power analyses, when appropriate, and describe the experimental design, experimental unit, replication and sample size for each experimental group.
- For animal-related projects that require $100,000 or less and 1) address new and emerging problems with high potential impact; 2) apply new knowledge or new approaches to unsolved challenges that have high potential impact; 3) develop necessary tools to elicit a paradigm shift in the field of study; and/or, 4) provide a rapid response to natural disasters or similar unanticipated events, applicants should consider submitting their application to the Exploratory Research Program Area, described in this RFA.
- For projects related to Animal Health and Production and Animal Products Program Area that require $300,000 or less and 1) are at the stage where results can be applied quickly following project completion (e.g., stakeholders adopt recommendations, practices, products or technologies resulting from the project) and 2) work on critical stakeholder-identified problems, applicants should consider submitting to the Critical Agricultural Research and Extension (CARE) Program Area (A1701), described in this RFA.

Program Area Priorities – Each application must address one of the following six program area priorities:

1. **<u>Animal Reproduction</u>**
   Program Area Priority Code – A1211
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**

- Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding budgetary guidelines will not be reviewed.

Requested Project Types – Research Projects

Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>

Letter of Intent not required for this program area priority

Application Deadline – June 15, 2017 (5:00 p.m. Eastern Time)

Program Area Priority Contact – Dr. Mark Mirando (202) 401-4336 or
mmirando@nifa.usda.gov

Program Area Priority –

Cellular, molecular, genomic/genetic or whole-animal aspects of animal reproduction, relevant to improving reproductive efficiency or enhancing reproductive management, especially focusing on:

- Gonadal function (including production, function, and preservation of gametes);
- Hypothalamic-pituitary axis; or
- Embryonic and fetal development (including interaction between the conceptus and its uterine environment).

Program Area Priority Additional Information

- Applications focused on effects of plane of nutrition on reproductive performance should be submitted to the Animal Reproduction program area priority (A1211). Applications to study effects of nutritional plane during gestation on subsequent growth performance or lactation of the offspring should be submitted to the Animal Nutrition, Growth and Lactation program area priority (A1231). Applications to study effects of nutritional plane during gestation on immune function or susceptibility to disease of the dam or offspring should be submitted to the Animal Health and Disease program area priority (A1221).
- Applicants are encouraged to review the [Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species](#) interagency grant program.

2. <u>**Animal Nutrition, Growth and Lactation**</u>

    Program Area Priority Code – A1231

    Proposed Budget Requests –

    - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
    - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
    - Requests exceeding budgetary guidelines will not be reviewed.

    Requested Project Types – Research Projects

    Requested Grant Types – Standard, Conference, Collaborative, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>

Letter of Intent not required for this program area priority
Application Deadline – June 15, 2017 (5:00 p.m. Eastern Time)
Program Area Priority Contact – Dr. Steven Smith (202) 401-6134 or
sismith@nifa.usda.gov

Program Area Priority –
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; or
- Metabolic disorders and nutritional deficiencies affecting production of meat, milk, eggs, and animal fiber.

Program Area Priority Additional Information
- Applications focused on the effects of metabolic disorders (*e.g.,* hepatic lipidosis, ketosis, post-parturient hypocalcemia, displaced abomasum, insulin resistance) and nutrient deficiencies on meat, milk and egg production should be submitted to the Animal Nutrition, Growth and Lactation program area priority (A1231). Applications focused on the effects of metabolic disorders and nutrient deficiencies on immune function or susceptibility to disease should be submitted to the Animal Health and Disease program area priority (A1221).
- Applications focused on effects of plane of nutrition on reproductive performance should be submitted to the Animal Reproduction program area priority (A1211). Applications to study effects of nutritional plane during gestation on subsequent growth performance or lactation of the offspring should be submitted to the Animal Nutrition, Growth and Lactation program area priority (A1231). Applications to study effects of nutritional plane during gestation on immune function or susceptibility to disease of the dam or offspring should be submitted to the Animal Health and Disease program area priority (A1221).
- Applicants are encouraged to review the Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species interagency grant program.
- NIFA is partnering with Ireland and Northern Ireland under the U.S. – Ireland Research and Development Partnership to solicit collaborative research applications in the Animal Nutrition, Growth and Lactation program area priority. For more information including FAQs about this program, visit the AFRI website. Applicants submitting to this partnership should select Collaborative as the grant type.

3. **Animal Well-Being**
   Program Area Priority Code – A1251

Proposed Budget Requests –
- Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
- Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding budgetary guidelines will not be reviewed.

Requested Project Types – Research Projects

Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>

Letter of Intent not required for this program area priority

Application Deadline – June 15, 2017 (5:00 p.m. Eastern Time)

Program Area Priority Contacts – Dr. Peter Johnson (202) 401-1896 or pjohnson@nifa.usda.gov, and Dr. Margo Holland (202) 401-5044 or mholland@nifa.usda.gov

Program Area Priority –

Evaluation of current management practices and development of new management practices that reduce animal stress and optimize sustainable production efficiency, especially focusing on:
- Behavioral and/or physiological methods to objectively measure animal stress and well-being;
- Prevention or alleviation of pain or stress associated with management practices, including stocking density, handling and transportation; or
- Methods of humane slaughter or on-farm euthanasia.

<u>NOTE</u>: Applications that address animal welfare with a <u>significant</u> engineering component such as the design, manufacture, and operation of structures, technologies, machines, processes, and/or systems should be submitted to the Agriculture Systems and Technology Program Area Priority: Agricultural Engineering (A1521) described in this RFA.

4. <u>**Animal Health and Disease**</u>

Program Area Priority Code – A1221

Proposed Budget Requests –
- Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
- Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding budgetary guidelines will not be reviewed.

Requested Project Types – Research Projects

Requested Grant Types – Standard, Collaborative, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>

Letter of Intent not required for this program area priority

Application Deadline – June 15, 2017 (5:00 p.m. Eastern Time)

Program Area Priority Contacts – Dr. Margo Holland (202) 401-5044 or mholland@nifa.usda.gov, and Dr. Peter Johnson (202) 401-1896 or pjohnson@nifa.usda.gov

Program Area Priority –

For this priority, the emphasis is on maintaining healthy agricultural animals to ensure a safe and adequate food supply. Cellular, molecular, genomic/genetic or whole-animal aspects of animal health and disease that study relevant diseases, including arthropod pests of livestock, or parasites are welcome. Areas of research include, but are not limited to, the following:

- Maintenance of homeostasis, including influences of microbiomes on health and disease;
- Disease prevention and control (*e.g.,* vaccines, diagnostics, enhanced innate or adaptive immunity, disease resistance or susceptibility, or management); or
- Therapeutic interventions for disease reduction/treatment, including alternatives to current antimicrobial treatments.

In addition to the priorities listed above, standard research applications for *the development of* a "U.S. Animal Vaccinology Research Coordination Network" are also *being* solicited. The purpose of this Network is to leverage US expertise in vaccinology of agricultural animals and encourage mutually beneficial international linkages to accelerate the development of new vaccine tools and technologies.

US Animal Vaccinology Research Coordination Network
- Budgets for Network proposals are limited to a maximum of $100,000/year for 5 years ($500,000 total, including indirect costs). NIFA anticipates a maximum of 1 award.
- Applications must be titled: "US Animal Vaccinology Research Coordination Network- Abbreviation of Lead Organization Name" (e.g., "US Animal Vaccinology Research Coordination Network-UBA")
- The most competitive proposals will describe two components in the Project Narrative: (1) a clear vision that will foster a more cohesive, multi-disciplinary, multi-species US animal vaccinology community; and, (2) a compelling process to achieve that vision.
- Applications **must** describe the **process/procedures** the team will use to:
  - Include members of US vaccinology research communities working on ruminants, swine, poultry, equine and aquacultured species into one multi-species network to jointly advance this field. Proposals that do not include research representatives from all five species will not be reviewed.
  - Link with one or more international groups (such as the UK Veterinary Vaccinology Network) to leverage expertise and resources.
  - Address unmet community needs slowing development of safe and efficacious vaccines for animals of agricultural importance. Proposed activities may:
    - facilitate sharing of existing and new knowledge (*e.g.,* more robust distribution of reagents and resources or establishment of new research partnerships);

- o facilitate gap analysis, identification of high impact research priorities, and discussion of new technologies; and/or
- o identify innovative, synergistic activities that will bring benefit to US vaccinology efforts.
  - ▪ Communicate effectively with the larger communities (such as a website or list server).
  - ▪ Identify how the network could be sustained beyond 5 years.
- NOTE: Although the focus of this Network is on next generation vaccines, bottlenecks and opportunities associated with more conventional vaccine approaches may be addressed if high impact is anticipated.
- Applicants are encouraged to consider including one or more links with relevant industry and other stakeholders or partners (such as the human vaccinology research community (One Health approach)).

Program Area Priority Additional Information
- If diagnostic tests are developed, applicants must provide a validation plan.
- Applications with primary focus on the following should not be submitted to the Animal Health and Production and Animal Products program area:
  - o *Food Safety.* Consult the Food Safety, Nutrition, and Health program area priorities in this RFA for a possible fit. Only pathogens that cause important disease in the agricultural animal are eligible for support in Animal Health and Production and Animal Products program area.
  - o *Secondary effects or indirect effects of disease* (*e.g.,* on reproduction, muscle growth, lactation) or *Plant-based vaccines*.
- Applications focused on the effects of metabolic disorders (*e.g.,* hepatic lipidosis, ketosis, post-parturient hypocalcemia, displaced abomasum, insulin resistance) and nutrient deficiencies on meat, milk and egg production should be submitted to the Animal Nutrition, Growth and Lactation program area priority (A1231). Applications focused on the effects of metabolic disorders and nutrient deficiencies on immune function or susceptibility to disease should be submitted to the Animal Health and Disease program area priority (A1221).
- Applications to study effects of nutritional plane during gestation on immune function or susceptibility to disease of the dam or offspring should be submitted to the Animal Health and Disease program area priority (A1221).
- Applicants are encouraged to review the Ecology and Evolution of Infectious Diseases and the Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species interagency grant programs.
- NIFA is partnering with Ireland and Northern Ireland under the U.S. – Ireland Research and Development Partnership to solicit collaborative research applications in the Animal Health and Disease program area priority. For more information including FAQs about this program, visit the AFRI website. Applicants submitting to this partnership should select Collaborative as the grant type.

5. **Tools and Resources - Animal Breeding, Genetics and Genomics**
   Program Area Priority Code – A1201

Proposed Budget Requests –
- Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
- Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding budgetary guidelines will not be reviewed.

Requested Project Types – Research Projects

Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>

Letter of Intent not required for this program area priority

Application Deadline – June 15, 2017 (5:00 p.m. Eastern Time)

Program Area Priority Contact – Dr. Lakshmi Kumar Matukumalli (202) 401-1766 or
<u>lmatukumalli@nifa.usda.gov</u>

Program Area Priority

Development of community genetic and genomic tools and resources, including software, experimental protocols and breeding methods, which can be applied to advance basic biology and improve animal health and production. Tools and resources may focus on:
- Novel quantitative genetic methods including selection theory and modeling; or
- Bioinformatics, cyber-infrastructure and databases for high-throughput genotyping, sequencing, and phenotyping.

Program Area Priority Additional Information
- This Program Area Priority is limited to the development of tools and resources. Applications that apply genomic variation (*e.g.,* selecting within a breed for a specific trait of interest) and relevance to function and phenotype for improved animal health or production, conventional/classical animal breeding, breed development, or applied quantitative genetics should be directed to Program Area Priorities 1, 2, 3, or 4 identified above.

6. **<u>Annotation of Agricultural Animal Genomes</u>**
   Program Area Priority Code – A1202
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$2,500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.

   Requested Project Types – Research Projects

   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, and New Investigator) Grants <u>only</u>

   Letter of Intent not required for this program area priority

   Application Deadline – June 15, 2017 (5:00 p.m. Eastern Time)

– Dr. Lakshmi Kumar Matukumalli (202) 401-1766 or
lmatukumalli@nifa.usda.gov

Program Area Priority
High-throughput genotyping and whole genome sequencing studies led to identification of
genomic regions associated with animal production or health traits. An extensive, genome-
wide catalog of functional elements is needed to expedite the discovery of causal genetic
variants to enable precision animal breeding. Applications may focus on:
- Discovery of genome-wide functional elements in both coding and non-coding regions
  of the genome. Functional elements include genes, RNA transcripts, DNA and RNA
  regulatory elements (including enhancers, promoters, and insulators, differential
  splicing, translation, and RNA stability); or
- Development of genomic and epigenomic datasets (*e.g.,* RNA-seq, ChIP-seq, DNase-
  seq) based on biochemical assays that have been developed and widely used by the
  research community to study chromatin architecture and gene regulation.

Program Area Priority Additional Information:
- Each application should focus on one of the major agricultural animal species.
- Projects should demonstrate strong community support and coordination with domestic
  and international partners and/or consortia (*e.g.,* Encyclopedia of DNA Elements
  (ENCODE), modENCODE, Functional Annotation of Animal Genomes) for diverse
  collection of animals, tissues, assays, protocols, and methods for data processing and
  analysis.

c. Food Safety, Nutrition, and Health

Background
Human health is significantly affected by the safety, quality, and nutritional value of food.
Knowledge generated from this program will enhance the microbial, chemical, and physical
safety and quality of foods by improving: 1) control strategies and detection methodologies for
foodborne contaminants; 2) understanding of the interaction of food, foodborne contaminants
and food ingredients with the human gut microbiome; 3) manufacturing, processing and
packaging technologies that enhance food safety and food quality; 4) understanding of
antimicrobials used in the food chain; and 5) the bioavailability of nutrients during digestion
and absorption as they relate to human health. In addition, knowledge generated from this
program will help improve our understanding of the food-related choices and behaviors of
growers, producers, processers, and consumers and how they are influenced by socio-economic
and other incentives in ways that enhance the safety, quality, and nutrient value of the food
supply.

The AFRI Food Safety, Nutrition and Health program area addresses the following priorities
within the Farm Bill: Food Safety, Nutrition, and Health - Nutrition, food safety and quality,
and health (subpriorities i. microbial contaminants and pesticide residues relating to human
health; ii. links between diet and health; iii. bioavailability of nutrients; iv. postharvest
physiology and practices; and v. improved processing technologies).

Total Program Funds – Approximately $22.1 million

Program Area Key Information applicable to <u>ALL</u> Food Safety, Nutrition, and Health Program Priority Areas:
- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, minority-serving institutions, small to mid-sized institutions, and/or EPSCoR states are encouraged.
- Use of trans-disciplinary teams, including social and behavioral scientists and economists, is encouraged, where appropriate.
- For any food safety, nutrition, and health research topics not addressed in this RFA, in the AFRI Food Safety Challenge Area RFA, or the AFRI Childhood Obesity Prevention Challenge Area RFA, applicants should consider applying to the AFRI Exploratory Research Program Area, described in this RFA.
- For projects related to Food Safety, Nutrition, and Health program area that require $300,000 or less and 1) are at the stage where results can be applied quickly following project completion (e.g., stakeholders adopt recommendations, practices, products or technologies resulting from the project) and 2) work on critical stakeholder-identified problems, applicants should consider submitting to the Critical Agricultural Research and Extension (CARE) Program Area (A1701) described in this RFA.

Program Area Priorities – Each application must address at least one of the following five program area priorities:

1. **<u>Improving Food Safety</u>**
   Program Area Priority Code – A1331
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
   Letters of Intent not required for this program area priority
   Application Deadline – July 27, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contact – Dr. Isabel Walls, (202) 401-6357 or iwalls@nifa.usda.gov, and Dr. Max Teplitski (202) 734-1808 or max.teplitski@nifa.usda.gov

   Program Area Priority –
   Research project applications must address one or more of the following:
   - Develop and validate novel concentration and purification methods for the rapid, low-cost, and efficient isolation or capture of foodborne contaminants (viable or infectious

human pathogens, chemicals, toxins, or engineered nanoparticles) from foods or environmental samples related to food production, harvesting or processing. This can include irrigation and processing water, soil, manure, and food contact surfaces. Applications that address the development and validation of methods that are effective in multiple matrices and for multiple contaminants are encouraged;

- Develop or improve and validate foodborne contaminant detection methods, including whole genome sequencing methods and relevant bioinformatics. Justification for the development of a new method must be addressed in the Project Narrative. The requirement for a sensitive, specific, and rapid method will depend on the application and the needs of the end user, but all three of these characteristics must be addressed, explained, and justified. Where appropriate, methods that are quantitative or can be used in-line, in-field, or in-plant, or can detect infectious or viable foodborne pathogens are encouraged. Validation studies that include food or environmental samples appropriate for the foodborne contaminants are required;
- Investigate the fate or dissemination of foodborne contaminants associated with food production or processing;
- Develop strategies to reduce foodborne contaminants in foods or the environment at any point along the food supply chain; or
- Identify and characterize emerging or under-researched contaminants that are known or expected to cause foodborne disease.

Program Area Priority Additional Information:
- A discussion and justification of the foodborne contaminants to be studied as a food safety threat should be included in the Project Narrative.
- Applications addressing the development of control strategies or identifying and promoting development of economic and other incentives that lead to behavioral changes promoting food safety are encouraged.
- Research on the applications of genome sequencing technologies to improve food safety will be considered.
- Research on the role of foodborne contaminants on the human gut microbiome and its metabolites will be considered if it addresses food safety issues.
- Research on the impact of climate variability on foodborne contaminants along the food production chain will be considered.
- Research to understand the role that genes play in contamination of plants and foods of animal origin with human pathogens will be considered.

2. **Improving Food Quality**
   Program Area Priority Code – A1361
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 total per project (including indirect costs) for project periods of up to 5 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects

Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
Letters of Intent not required for this program area priority
Application Deadline – July 6, 2017 (5:00 p.m. Eastern Time)
Program Area Priority Contact – Dr. Melvin Carter (202) 720-7166 or melvin.carter@nifa.usda.gov, and Dr. Jodi Williams (202) 720-6145 or jwilliams@nifa.usda.gov

Program Area Priority –
Applications must address one of the following:
- Improve our knowledge and understanding of the chemical, physical, and biological properties of foods and food ingredients. Knowledge gained should be used to improve the quality, shelf-life, convenience, nutrient value or sensory attributes of food; or
- Improve our understanding of the impact of foods and food ingredients in our diet on the gut microbiome to promote human health and well-being. Projects should address the physical, biological and/or chemical interactions of foods and ingredients on the gut microbiome. Sensory attributes of all foods and ingredients should be addressed where appropriate.

In addition to the priorities listed above, NIFA and the **Mushroom Council** are seeking to co-fund projects that investigate the enhancement of nutrient quality, palatability and consumer acceptability of mushroom/protein blends, including blends and other mushroom applications that lower sodium content. Applications must address the following priority:
- Investigate the enhancement of nutrient quality, palatability and consumer acceptability of mushroom/protein blends, including blends and other mushroom applications that lower sodium content. The research should focus on the development of protein mushroom blends which promote satiety and maintenance of lean body mass. These innovative protein mushroom blends and applications would help address the Dietary Guidelines for Americans to lower the energy density in the food supply and decrease sodium consumption in the U.S. population.

Applicants seeking funding through this commodity board co-funded priority must provide a letter of support from the commodity board directly to the NIFA Program Contact within 60 calendar days after the application submission deadline. When seeking a letter of support, applicants should submit their entire grant application to the **Mushroom Council** and request a letter that <u>specifically indicates that the Mushroom Council supports the application for co-funding</u>. To obtain a letter of support or for further questions, please contact the **Mushroom Council** representative (Cheryl Abbate, Mushroom Council, 303 Twin Dolphin Dr., Suite 600, Redwood Shores, CA 94065; 650-632-4250 or cheryl@mushroomcouncil.org). Additionally, applicants must state in the last sentence of their application's Project Summary section that the application is submitted in response to this specific commodity board topic.

Program Area Priority Additional Information:
- Applications addressing food processing and packaging technologies should be submitted to the Food Manufacturing Technologies program area priority (A1363).

- Applications addressing food safety as it relates to contaminants or hazards should be submitted to the Improving Food Safety program area priority (A1331).
- Projects that address food loss and waste are strongly encouraged.
- For applications addressing the chemical, physical, and biological properties of foods and food ingredients, identifying and promoting the development of economic and other incentives that lead to healthier consumer choices are encouraged.

3. **Understanding Antimicrobial Resistance**
   Program Area Priority Code - A1362
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 total per project (including indirect costs) for project periods of up to 5 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.

   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only
   Letters of Intent not required for this program area priority
   Application Deadline – July 6, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contact – Dr. Max Teplitski (202) 734-1808 or
   max.teplitski@nifa.usda.gov, and Dr. Mervalin Morant
   (202) 401-6602 or mmorant@nifa.usda.gov

   Program Area Priority –
   Research project applications must address one of the following:
   - Develop and assess new or enhanced methods, tools or technologies to track and monitor the fate, transport, or role of antimicrobial resistant organisms or their genes, or metabolites or antibiotic residuals in the environment, including soil, air or water;
   - Improve our understanding of the emergence and transmission mode (e.g. mobile genetic elements) of antimicrobial resistance in agriculture impacted environments resulting from the use of antimicrobials that could impact human health;
   - Improve our knowledge and understanding of the basic science that underpins the development of alternatives to traditional antimicrobials currently used in agriculture that will improve the safety of the food supply, while minimizing the emergence or spread of antimicrobial resistance; or
   - Determine and evaluate potential links between the use of antimicrobials in agriculture and their impact on human health.

   Program Area Priority Additional Information
   - Projects that address novel technologies such as gene editing to monitor, track and restrict the transmission of antimicrobial resistance across the food chain are encouraged.

- The impact of alternative strategies to traditional antimicrobials on human health must be considered. For example, strategies should not create selection pressure favoring the development of antimicrobial resistance to medically-relevant human antibiotics.
- Where applicable, applications may address socio-economic and human behavioral changes that may impact the use of antimicrobials in the food production system.
- While development of vaccines that prevent certain diseases can be one way to decrease antimicrobial resistance, this program does <u>not</u> support research on the development of vaccines for controlling animal diseases. Applications that address vaccine development for animal diseases should be submitted to the Animal Health and Production and Animal Products Program Area Priority: Animal Health and Disease (A1221) described in this RFA.
- Applications that primarily focus on the control of foodborne pathogens should be submitted to the Improving Food Safety program area priority (A1331).

4. <u>**Food Manufacturing Technologies**</u>
   Program Area Priority Code – A1363
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$1 million <u>total per project</u> (including indirect costs) for project periods of up to 4 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Integrated Projects only
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
   Letters of Intent not required for this program area priority
   Application Deadline – June 7, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contact – Dr. Hongda Chen (202) 401-6497 or
   hchen@nifa.usda.gov, and Dr. Melvin Carter (202) 720-7166 or melvin.carter@nifa.usda.gov

   Program Area Priority –
   Food manufacturing encompasses engineering, processing technologies, packaging, sanitation, robotics, nano-technology, sensors, high-speed automation, mathematical modeling, computer simulation, and quality/safety inspections.

   Applications <u>must</u> address the following:
   - Develop innovative food manufacturing technologies that improve food safety, food quality, and nutritional value using a multi-disciplinary approach.
   - Develop innovative educational, training, or extension resources that evaluate consumer and producer understanding, acceptance and behavior towards food manufacturing trends and innovations.

Program Area Priority Additional Information
- Applications that address new and innovative food manufacturing technologies designed to develop new or improved food products with increased nutrient value, safety, and quality are encouraged.
- Applicants are encouraged to develop manufacturing technologies to improve energy and water use efficiency towards environmental and economic sustainability.
- Projects that address contaminants in food manufacturing are encouraged.
- Projects that streamline logistics, enhance sustainability, and/or utilize waste stream by-products are encouraged.
- Innovative food technologies to improve shelf life and minimize food waste and loss are encouraged.
- This program area priority **ONLY accepts Integrated** (research, extension and/or education) **Projects.**

5. **Function and Efficacy of Nutrients**
   Program Area Priority Code – A1341
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 total per project (including indirect costs) for project periods of up to 5 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only
   Letters of Intent not required for this program area priority
   Application Deadline – July 6, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contact – Dr. Paul Cotton (202) 401-6010 or paul.cotton@nifa.usda.gov, and Dr. Deirdra Chester (202) 401-5178 or dnchester@nifa.usda.gov

   Program Area Priority –
   Applications must address the following:
   - Investigate the role of bioactive components of food in preventing inflammation or promoting gastrointestinal health.

   Program Area Priority Additional Information:
   - Justification must be provided for the relationship of the bioactive component(s) being studied to human health outcomes.
   - Priority will be given to projects that use a whole food approach or that address health effects of a combination of two or more bioactive components found in food. The whole food approach may also be one that adds enrichment, fortification or micro- and nano-encapsulation to enhance bioavailability of bioactive components in food.

- This program does not support research on the development of dietary supplements, research on dietary therapies for existing disease, or for the establishment, expansion, or maintenance of dietary databases.
- This program does not support survey research on the nutritional status of population groups or sub-groups.

d. Bioenergy, Natural Resources, and Environment (BNRE)

Background
This program area supports research to promote, improve, and maintain healthy agro-ecosystems and their underlying natural resources that are essential to the sustained long-term production of agricultural goods and services. Agro-ecosystems may include crop production systems, animal, livestock, or integrated crop-livestock production systems including harvested forages and feeds, pastures, range and forest lands that are actively managed to provide economic, societal, and environmental benefits for individuals, communities, and society at large. Emerging systems for the production of biomass feedstocks, biopower, biofuels, chemicals, and other biobased products need to be integrated into agricultural landscapes in ways that enhance or do not degrade the natural resource base or other production systems.

Agroecology and sustainable management of agro-ecosystems, as well as maintenance of the supporting natural resources and ecosystem services, require improved understanding of interactions among physical, chemical, and biological processes and their response to natural and anthropogenic changes. Science-based information that integrates the complex interactions between management practices and natural processes is needed to make decisions to support agricultural production and their associated natural resources and ecosystem services, and to avoid critical thresholds of irreversible damage or loss.

Three specific goals of this Program Area are to :1) obtain new and improved methods, including agroecological approaches, to understand, assess and manage working lands for increased health, resilience and productivity; 2) achieve substantial reductions in environmental footprints of working lands; and 3) develop tools and indicators to assess biodiversity losses and gains of landscapes dominated by agricultural, bioenergy, forest, and range production systems and the functional significance of these changes.

The AFRI Bioenergy, Natural Resources, and Environment program area addresses the following priorities within the 2014 Farm Bill: D. Bioenergy, Natural Resources and the Environment (subpriorities i. fundamental structures and functions of ecosystems; ii. biological and physical bases of sustainable production systems; iii. minimizing soil and water losses and sustaining surface water and ground water quality; iv. the effectiveness of conservation practices and technologies designed to address nutrient losses and improve water quality; v. global climate effects on agriculture; vi. forestry; and vii. biological diversity).

The following Program Area Priorities seek to improve the understanding of fundamental processes and interactions among the economic, environmental, and social pillars of sustainability in actively managed agro-ecosystems, including rangelands, and forests. This

program anticipates funding a suite of projects that reflects diverse spatial and temporal scales, geographic diversity, and multiple types of production systems.

Total Program Funds – Approximately $15.1 million

Program Area Key Information applicable to <u>ALL</u> Bioenergy, Natural Resources and Environment (BNRE) priority areas:
- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, minority-serving institutions, small to mid-sized institutions, and/or EPSCoR states are encouraged.
- All applications should justify the choice of the systems under study in terms of importance to sustainability of agroecosystems and preservation.
- This program welcomes applicants to address strategies that facilitate the adoption of sustainable practices by different groups with different cultural perspectives.
- Projects focused on long-term research data are welcome to partner with research programs and institutions with existing networks that perform "long-term" (10-20 years) research functions such as the USDA Long-Term Agro-ecosystem Research Network (LTAR), NSF Long Term Ecological Research (LTER), USDA Climate Hubs, USDA National Agricultural Library Ag Data Commons (https://data.nal.usda.gov/about-ag-data-commons), or others.
- Projects focused on data integration for decision making such as organizing and managing large data sets that include sustainability factors, and their interactions to assess risk, valuation of biodiversity and ecosystem services for landscape planning, and management or to make key policy and on farm decisions may include reference sources from the Millennium Ecosystem Assessment, LTAR/LTER databanks, and/or the USDA Life Cycle Assessment (LCA) Digital Commons (www.lcacommons.gov).
- Where appropriate, projects may focus on developing and accessing models and approaches for applying adaptive management strategies.
- This Program Area invites applications for conferences/workshops that consider the three pillars of sustainability and interactions among the components. Conferences/workshops might include topics such as: science innovation for sustainable agriculture, adaptive management, data management and decision making using the USDA LCA Digital Commons, long-term data for decision making, new research collaborations or Science, Technology, Engineering and Mathematics (STEM) through minority-serving institutions.
- For projects related to the Bioenergy, Natural Resources, and Environment Program Area that require $300,000 or less and 1) are at the stage where results can be applied quickly following project completion (e.g., stakeholders adopt recommendations, practices, products or technologies resulting from the project) and 2) work on critical stakeholder-identified problems, applicants should consider submitting to the Critical Agricultural Research and Extension (CARE) Program Area (A1701), described in this RFA.

Program Area Priorities – Each application must address one of the following two program area priorities:

1. **<u>Sustainable Agroecosystems: Functions, Processes and Management</u>**
   Program Area Priority Code – A1401

Proposed Budget Requests –
- Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 4 years.**
- Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding budgetary guidelines will not be reviewed.

Requested Project Types – Research Projects

Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>

Letter of Intent not required for this program area priority

Application Deadline – June 21, 2017 (5:00 p.m. Eastern Time)

Program Area Priority Contacts – Dr. Nancy Cavallaro (202) 401-5176 or ncavallaro@nifa.usda.gov, and Dr. Karelyn Cruz (202) 604-7742 or karelyn.cruz@nifa.usda.gov

Program Area Priority -

This priority area calls for research that will lead to one or more of the specific program goals listed above via a) foundational research to advance scientific understanding of processes and interactions, b) development of models and decision support tools, and/or c) the assessment and development of new management/conservation practices and/or processes. Research should lead to substantial improvements in water, nutrient, carbon, and/or land use efficiencies or footprints, or improvements to impaired natural resources and ecosystem services within a managed plant and/or animal production system. Applicants may focus on the interactions between the social and human dimensions with environmental and economic dimensions. Proposed projects that are primarily fundamental science must explain how a better understanding of the fundamental processes will help sustain ecosystem services or help inform actions to achieve improved efficiencies and diminished negative impacts on natural resources.

Applications must address at least one of the following:
- **Nutrient Cycles and Management** to evaluate the physical and biogeochemical (including microbial) processes affecting the fluxes, fate and transport, transformation, and storage of single or multiple nutrients. Nutrient(s) chosen for study must be justified in terms of their impact on agro-ecosystem productivity and on associated natural resources and environment.
- **Chemicals of Environmental Concern (CEC)** to evaluate fluxes, fate and transport, transformation, accumulation, and impacts of CEC. Of primary interests are agrochemicals, bio-solids and CEC from animal and human waste pathways that are of concern for human health and food safety, or ecosystem health (e.g., human and veterinary drugs, antibiotics, hormones, toxic metals, air pollutants).
- **Soil Health and Microbial Communities** as key components for sustainable agroecosystems. Healthy soils harmonize the soil biological, chemical and physical properties in order to sustain plants, animals and humans. Research that will lead to fundamental understanding of key biogeochemical processes and/or evaluate the effects of management practices on soil microbial communities and their functions is

welcome. Results should lead to strategies to improve overall soil health and the resilience and sustainability of agricultural production systems and ecosystem services.

- **Ecosystem Services and Agro-ecosystem Management** that develops and evaluates innovative management practices and novel systems for their potential to enhance ecosystem services, including high-risk/high reward projects that demonstrate a transformative approach to the problem while making a case for feasibility. Applicants should address either 1) the connection of system diversity to production system functionality, productivity, socioeconomic viability, sustainability, biodiversity and the production of other ecosystem services, or 2) new approaches that significantly increase the output or value of at least three ecosystem services, each compared with the current management system for the region. The focus may be at a variety of scales, and the approach may be genetic, management, technology, or combinations of these.
- **Bioenergy and Multifunctional Landscapes**: Bioenergy and biobased product feedstock production is an emerging component of many multi-functional landscapes across the country. This focus area calls for research projects that focus on the impacts of this change in land use in order to inform the successful integration of emerging bioenergy and biobased product feedstock production systems into existing agricultural, forest production, industrial, community, and natural resource landscapes. Impacts addressed under this focus area may include one or more of the issues described in the specific goals listed above. For research involving a broader emphasis on bioproducts and their efficiency, new or improved products, and processing systems, see Bioprocessing and Bioengineering program area priority (A1531) in this RFA.

Program Area Priority Additional Information
- Applicants addressing Nutrient Cycles and Management or CEC should include one of the following:
  o Predictive and/or hindcasting tools to assess control technologies to mitigate excess nutrient, and/or CEC movement; or
  o Improve process-based models to analyze nutrient, and/or CEC life cycles in agroecosystems, rangelands, and forests.

2. <u>**Networks for Synthesis, Data Sharing and Management**</u>
   Program Area Priority Code – A1411
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$450,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
   Letter of Intent not required for this program area priority
   Application Deadline – June 21, 2017 (5:00 p.m. Eastern Time)

Program Area Priority Contact – Dr. Nancy Cavallaro (202) 401-5176 or
ncavallaro@nifa.usda.gov

Program Area Priority –
For this program area priority, the emphasis is on networking and data sharing and management. Projects should use data and information already available or being collected rather than spending a substantial portion of award funds to collect new data. Emphasis should be on analyzing current data to achieve new, broader knowledge. The proposed synthesis work should be through coordinating networking activities around one of the research themes in the context of sustainable crop, livestock, or forest productivity. These projects should move the field forward and create new research directions or opportunities though increased coordination, networking, and synthesis. Moreover, these projects should foster communication that promote collaboration among research, education, and extension faculty and research agencies and institutions with common interests across disciplinary, geographical, and organizational boundaries; establish networks and collaborations between Tier 1 and Tier 2 institutions or between large research facilities and faculty at small, mid-sized, and minority serving institutions . Projects may be regional, national or international in scope. Outcomes of this priority include: minimizing isolation and maximizing cooperation so as to eliminate unnecessary duplication of efforts; coordinating the development of new tools and methods to generate community resources such as databases, sample archives, or instructional materials or facilities; and synthesizing existing knowledge in one of these two areas to come up with new research directions that move the science forward toward more useful and usable products and tools.

Applicants must address one of the following:
- Reactive nitrogen; or
- Soil health and microbiomes.

Program Area Priority Additional Information:
- Each project must include a clearly defined management plan that includes a description of the specific roles and responsibilities of the PD/Coordinator and other members of the group/network. The management plan should include provisions for flexibility that allow the structure or the group to change over time as membership and the network's foci evolve.
- Proposed projects are expected to involve generation of community resources such as databases.

e. Agriculture Systems and Technology (AST)

Background
This Program Area emphasizes the interrelationships between agricultural systems components to develop the next generation of engineered systems, products, processes, and technologies. The "end-use" thrust of this Program Area complements the agro-ecosystems sciences driving BNRE program area components, above. AST blends biological, physical, and social sciences, thus, leading to sustainable, competitive, and innovative solutions for

United States and global agriculture and food systems, encompassing both conventional and organic production. To the extent possible, applicants are encouraged to incorporate interdisciplinary sciences. By doing so, projects are more likely to incorporate varying dimensions of sustainability (economic, environmental, and social) and have a greater impact on agricultural problems. The broad list of topics encompassed by this area includes, but is not limited to, new uses and products from traditional and nontraditional crops, animals, byproducts, and natural resources; robotics, automation, precision and geospatial technologies, energy efficiency, computing, and expert systems; new hazard and risk assessment and mitigation measures; and water quality and management and irrigation.

The Agriculture Systems and Technology program area addresses the following priorities within the 2014 Farm Bill: E. Agriculture Systems and Technology - Engineering products and processes (subpriorities i. new uses and new products from traditional and nontraditional crops, animals, byproducts, and natural resources; ii. robotics, energy, efficiency, computing, and expert systems; iii. new hazard and risk assessment and mitigation measures; and iv. water quality and management).

Total Program Funds – Approximately $11.3 million

Program Area Key Information applicable to <u>ALL</u> Agriculture Systems and Technology priority areas:
- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, minority-serving institutions, small to mid-sized institutions, and/or EPSCoR states are encouraged.
- While this Program Area encourages conference grant applications on any topic related to the program area priorities above, this Program Area is particularly interested in conference or workshop applications that bring together stakeholders, researchers, extension specialists, educators, and technology providers to:
  - Create a roadmap for developing and delivering the next generation of agricultural technologies, including but not limited to precision agriculture, cyber-physical systems, information management, and nanotechnology. These technologies should be smarter, more user- friendly, and readily adaptable to a wide variety of crops and producers (including small-scale or limited-resource) and their unique needs (with little modification) in support of sustainable production practices and systems; or
  - Advance the understanding and application of transformative systems approaches to enhance agricultural and food system sustainability. By "transformative systems" we mean those that offer major and synergistic advances toward the multiple goals of sustainability—productivity, profitability, environmental, and social dimensions. A conference/workshop should bring together state-of-the-art knowledge on how to identify and assess transformative systems, advance the science involved, and produce a summary of its conclusions for publication and other distribution. This Program Area encourages applicants to draw from knowledge of systems science and transformational change in fields outside of agriculture including the social and policy sciences, law, and humanities, but with a focus on their application to agricultural and food systems.

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- Applicant must describe the potential of the proposed work to support or achieve substantial gains in efficiencies of production; the probability that the application of technology will resolve constraints or result in positive impacts; and potential outcomes in terms of expected social and environmental benefits of research (see Part I, B.). Both transformative and incremental solutions are encouraged.
- Applicants are also encouraged to consider the National Robotics Initiative and the Cyber-Physical Systems interagency programs.
- For projects related to Agriculture Systems and Technology Program Area that require $300,000 or less and 1) are at the stage where results can be applied quickly following project completion (e.g., stakeholders adopt recommendations, practices, products or technologies resulting from the project) and 2) work on critical stakeholder-identified problems, applicants should consider submitting to the Critical Agricultural Research and Extension (CARE) Program Area (A1701), described in this RFA.

Program Area Priorities – Each Application must address one of the following three program area priorities:

1. **<u>Agricultural Engineering</u>**
   Program Area Priority Code – A1521
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 4 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
   Letter of Intent not required for this program area priority
   Application Deadline – June 8, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contacts – Dr. Steven Thomson (202) 401-6301 or steven.j.thomson@nifa.usda.gov, and Ms. Charlotte Kirk Baer (202) 720-5280 or cbaer@nifa.usda.gov

   Program Area Priority –
   This Program Area Priority focuses on engineered devices, technologies, and tools to improve agriculturally relevant plant, animal, forestry, and natural resource systems. <u>Applications must have a significant engineering component</u>. Engineering is defined as *the application of scientific and mathematical principles to practical ends such as the design, manufacture, and operation of efficient and sustainable structures, technologies, machines, processes, and systems*. Some broad research emphasis areas include, but are not limited to:
   - Enable engineering, sensing, computing, modeling, automation, and information systems for: forestry and natural resources, plant and animal production and

protection, and post-harvest inspection, handling, and distribution;
- Develop tools and precision technologies for monitoring, measurement, and detection in agricultural systems;
- 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 that enable more effective use of big data;
- Improve efficiency of energy and water use;
- Develop, and test risk assessment and mitigation measures applicable to agriculture (in particular, reduce hazards to agricultural workers); and/or
- Refine the long-term sustainability of agricultural and forestry systems that balance productivity along with economic, environmental, and social outcomes.

Program Area Priority Additional Information:
- Applications that deal with improving food quality, safety, or nutritional value should be submitted to the Food Safety, Nutrition, and Health Program Area in this RFA.
- All applications dealing with nano-scale science and technology should be submitted to the Nanotechnology for Agricultural and Food Systems program are priority (A1511).
- Because this program area priority accepts only research projects, applications should not include any outreach, education, or extension activities as part of the project work plan. Those applications that contain non-research components may be returned without review.

2. **Bioprocessing and Bioengineering**
   Program Area Priority Code – A1531
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 total per project (including indirect costs) for project periods of up to 4 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only
   Letter of Intent not required for this program area priority
   Application Deadline – June 8, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contacts – Dr. Steven Thomson (202) 401-6301 or steven.j.thomson@nifa.usda.gov, and Ms. Charlotte Kirk Baer (202) 720-5280 or cbaer@nifa.usda.gov

   Program Area Priority –
   This Program Area Priority focuses on engineered products and processes to improve agriculturally relevant plant, animal, forestry, and natural resource systems. Applications must have a significant engineering component. Engineering, in the context of this program

priority, is defined as *the application of engineering principles and tools to biological materials or systems to create usable, tangible, economically viable products and processes*. Some broad research emphasis areas include, but are not limited to:

- 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 not limited to, bioplastics and biocomposites); or
- Refine the long-term sustainability of agricultural and forestry processing systems that balance productivity along with economic, environmental, and social outcomes.

Program Area Priority Additional Information:
- Applications that deal with improving food quality, safety, or nutritional value should be submitted to the Food Safety, Nutrition, and Health Program Area in this RFA.
- All applications dealing with nano-scale science and technology should be submitted to the Nanotechnology for Agricultural and Food Systems program are priority (A1511).
- Because this program area priority accepts only research projects, applications should not include any outreach, education, or extension activities as part of the project work plan. Those applications that contain non-research components may be returned without review.

3. **Nanotechnology for Agricultural and Food Systems**
   Program Area Priority Code – A1511
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 total per project (including indirect costs) for project periods of up to 4 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only
   Letter of Intent not required for this program area priority
   Application Deadline – July 6, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contacts – Dr. Hongda Chen (202) 401-6497 or hchen@nifa.usda.gov, Dr. Mervalin Morant (202) 401-6602 or mmorant@nifa.usda.gov, and Dr. Wesley Dean (202) 689-4286 or wesley.dean@nifa.usda.gov

Program Area Priority –
Nanoscale science, engineering, and technology embrace opportunities in a wide range of critical challenges facing agriculture and food systems. This Program Area Priority encourages applications in the following broad areas: innovative ideas and fundamental sciences to develop nanotechnology enabled solutions for food security through improved productivity, quality, and biodiversity; improved nutritional value of feeds and more effective therapies that significantly impact animal health and wellness; enhanced food safety and biosecurity; and increased protection for natural resources, the environment, and agricultural ecosystems. The Program Area Priority scope includes, but is not limited to:

- Public deliberation, social acceptability, and risk perception, management, and communication about nanotechnology and nano-based food or non-food products by agricultural stakeholders (including consumers), using appropriate social science tools;
- Novel uses and high value-added products of nano-biomaterials from agricultural and forest origins for food and non-food applications. Note: Applications primarily addressing packaging, food contact surfaces, food safety, fertilizing, environment, health, or other aspects of agriculture and food production will be acceptable, whereas applications addressing how engineered nanomaterials affect nutritional or quality attributes of food are not solicited in this RFA);
- Nanoscale-based sensing mechanisms and smart sensors for reliable and cost-effective early detection of pathogens, allergens, insects, diseases, chemicals, and contaminants in food, plant and animal production systems, water, soil and the agricultural production environment;
- Monitoring physiological biomarkers for optimal crop or animal productivity and health;
- Cost effective, distributed sensing networks for intelligent and precise application of agricultural inputs (e.g., fertilizer, water, and chemicals) using the Internet of Agricultural Things (i.e., cyber-physical systems);
- Appropriate environmental, health and safety assessments of engineered nanoparticles applied in food and agricultural systems including characterization of hazards, exposure levels, transport and fate of the engineered nanoparticles or nanomaterials in crops, soils (and soil biota), and livestock. This may also include animal feed formulations and processes that utilize novel nanomaterials or develop new nanostructured materials or nanoparticles that are bio-persistent in digestive pathways; or
- Discovery and characterization of nanoscale phenomena, processes, and structures relevant and important to agriculture and food.

Program Area Priority Additional Information:
- Nanotechnology is defined by the National Nanotechnology Initiative (NNI) as "…the understanding and control of matter at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable applications. Encompassing nanoscale science, engineering and technology, nanotechnology involves imaging, measuring, modeling and manipulating matter at this length scale" (http://nano.gov/). Applications should contain a clear statement about how the work proposed uses nanotechnology as defined by the NNI. A proposed study working at the scale of atoms or molecules does not necessarily meet the criteria of nanotechnology. Rather, the work proposed should

be based on one or more of the unique phenomena, properties, and processes that occur at the nanoscale and are dimensionally dependent. Typical examples include: quantum phenomena e.g., size quantization of electron states; dominance of surfaces; self-assembly of atoms or molecules into new materials e.g., single wall carbon nanotubes, graphene, borophene; or collective phenomena e.g., plasmons, phonons, because of the material being at the nanoscale. The proposed work should be based on the fundamental differences in physical, chemical, and biological behavior of materials at the nanoscale compared to bulk materials or individual atoms/molecules.

- This Program Area Priority encourages new platforms of nanotechnology in the area of higher order assembled systems, and more complex systems that include the exploitation of bio-nano interfaces, hybrid bio-inorganic systems, systems biology, synthetic biology, and additive manufacturing technology.

- Applications, especially those with potential near term commercial impact, are encouraged to include socioeconomic analyses of anticipated benefits to agriculture, food, and society and to identify the factors that may contribute to, or hinder, adoption.

- Applications dealing with the development and validation of concentration, purification and detection methods for engineered nanoparticles as <u>contaminants</u> in foods, transport and fate of the engineered nanoparticles or nanomaterials associated with food production and processing, as well as control strategies should be submitted to the Improving Food Safety program area priority (A1331), described in this RFA.

f. Agriculture Economics and Rural Communities (AERC)

Background
Challenges facing the agricultural sector and rural communities, the production and consumption of food, and management of natural resources and the environment continue to evolve. Increasing global demands for food production in the face of limited resources and changing climate will have major implications for how we use natural resources, engage in healthy and sustainable diets, invest in science, and foster economic opportunities and quality of life for rural America. Given the opportunities and challenges, the primary goal of the AERC program is to promote economically, socially, and environmentally sustainable agriculture and resilient rural communities.

The AERC Program Area supports rigorous social science projects, including behavioral and experimental economics research and analysis, that informs decision making and policy design to enhance the sustainability of agricultural production systems, both conventional and organic, and related activities in rural areas, protect the environment, enhance quality of life, and alleviate poverty. Topical issues include, but are not limited to, the interactions between agriculture, environment and communities in rural areas; demographic changes and impacts; consumer preferences or behavior; decision-making under uncertainty; crop insurance; availability of credit and financing; market structure and performance; and policy design and impact. The AERC Program Area supports social and behavioral science disciplines. Interdisciplinary efforts involving social and nonsocial science disciplines are also invited.

The AERC Program Area addresses the following 2014 Farm Bill priority areas: F. Agriculture Economics and Rural Communities – Markets, trade and policy (subpriorities i. strategies for entering into and being competitive in domestic and overseas markets; ii. farm efficiency and profitability, including the viability and competitiveness of small and medium-sized dairy, livestock, crop and other commodity operations; iii. new decision tools for farm and market systems; iv. choices and application of technology; v. technology assessment; and vi. new approaches to rural development, including rural entrepreneurship); and D. Bioenergy, Natural Resources, and Environment – (subpriorities ii. biological and physical bases of sustainable production systems; and v. forestry).

Total Program Funds – Approximately $17.6 million

Program Area Key Information applicable to <u>ALL</u> Agriculture Economics and Rural Communities' priority areas:
- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, minority-serving institutions, small to mid-sized institutions, and/or EPSCoR states are encouraged.
- Applications must include a section providing a justification for the system studied relevant to improving economic, social, and environmental sustainability of agriculture or rural communities.
- Applications that propose to develop, test and/or apply decision-support aids or tools are welcomed.
- This program area funds the study of entrepreneurship and business development, but it will not fund the development of new business start-ups or the research and development of new technologies and tools for specific businesses to use. The NIFA Small Business Innovation Research (SBIR) program will entertain applications for new technologies and business development.
- For projects related to Agriculture Economics and Rural Communities Program Area that require $300,000 or less and 1) are at the stage where results can be applied quickly following project completion (e.g., stakeholders adopt recommendations, practices, products or technologies resulting from the project) and 2) work on critical stakeholder-identified problems, applicants should consider submitting to the Critical Agricultural Research and Extension (CARE) Program Area (A1701), described in this RFA.

Program Area Priorities – Each application must address one of the following five program area priorities:

1. **<u>Economics, Markets and Trade</u>**
   Program Area Priority Code – A1641
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.

Requested Project Types – Research Projects
Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only
Letter of Intent not required for this program area priority
Application Deadline – July 6, 2017 (5:00 p.m. Eastern Time)
Program Area Priority Contact – Dr. Robbin Shoemaker (202) 720-5468 or
rshoemaker@nifa.usda.gov
Program Area Priority –
This priority research area encourages the development of theories, methods and applications of economics. It encourages applications in the following broad areas: agricultural market structure and performance; international trade; agricultural production and resource use; consumer behavior; farm labor and immigration and policy; agricultural policy design and impacts; technology development and adoption; and science and innovation policy. Topics for Research Project applications include, but are not limited to:

- Examine the economics of agriculture and food policy, crop insurance, price stabilization and income support, food safety, food insecurity, and the various Titles of the Farm Bill.
- Economics implications of changes in trade and immigration policy.
- The economics of coexistence--strategies and models of coexistence of multiple crop technologies, i.e., conventional and organic, throughout the supply chain;
- Behavioral and experimental economics approaches to address consumer financial decision making, consumption, or savings behavior, producer production and technology adoption behavior, and policy design and implementation;
- Social and economic implication of advances in science and technology, e.g., genomics, the microbiome, nanotechnology, and unmanned aerial vehicles; and opportunities and economic implications of "big data";
- Understanding the socioeconomic and cultural determinants of food waste and loss across the supply chain, or within specific stages of the process, i.e., processing, transportation, marketing, and consumption and the design of incentive mechanisms to minimize losses;
- Social, behavioral and economic sources and barriers to agricultural productivity growth, the role of funding mechanisms, models for efficient funding allocation among areas of science;
- Measuring and evaluating public or private scientific effort, outputs and outcomes for effective quantitative and qualitative research evaluation.

2. **<u>Social Implications of Emerging Technologies</u>**
   Program Area Priority Code – A1642
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 4 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects

Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>

Letter of Intent Deadline – June 1, 2017 (5:00 p.m. Eastern Time)

Program Area Priority e-mail address for Submission of Letter of Intent – ET-LOI@nifa.usda.gov

Application Deadline – August 17, 2017 (5:00 p.m. Eastern Time)

Program Area Priority Contact – Dr. Robbin Shoemaker (202) 720-5468 or rshoemaker@nifa.usda.gov, Dr. Wesley Dean (202) 689-4286 or wesley.dean@nifa.usda.gov, and Dr. Ed Kaleikau (202) 401-1931 or ekaleikau@nifa.usda.gov

Program Area Priority –

Advancements in gene drive research have tremendous potential for transforming agriculture and will likely continue to expand as genome editing tools, such as Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) become more refined. In June of 2016, the National Academy of Science, Engineering, and Medicine recommended that more research is needed to understand the scientific, ethical, regulatory, and social consequences of developing and releasing gene-drive modified organisms. Specifically, it recommended that a collaborative, multidisciplinary, and cautionary approach is needed before gene drive technologies are released. The critical lesson learned from our experience with new genetic technologies is that public trust in science begins with and requires ongoing transparency and open deliberation of the implications of science for society. Research Project applications must address the following:

- Assess the broad social, ethical, legal and other potential impacts that gene drive/genome editing technologies may pose for society, agricultural markets, consumer preferences, and other domains.
- Involve a range of disciplines including scientists, legal scholars, bioethicists, social scientists and researchers from the humanities, the general public, and other stakeholders to assess the technology's merits and risks and pursue an open and effective means to involve the public in deliberation over these issues.

Program Area Priority Additional Information
- Conference grant applications are encouraged under this program area priority.

3. **<u>Environmental and Natural Resource Economics</u>**

Program Area Priority Code – A1651

Proposed Budget Requests –
- Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
- Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding budgetary guidelines will not be reviewed.

Requested Project Types – Research Projects

Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>

Letter of Intent not required for this program area priority
Application Deadline – June 15, 2017 (5:00 p.m. Eastern Time)
Program Area Priority Contact – Dr. Robbin Shoemaker (202) 720-5468 or
rshoemaker@nifa.usda.gov

Program Area Priority –
This Program Area Priority examines the interrelationship of natural resources and the environment with agriculture and rural communities. Research projects funded through this priority will advance economic theories, methods, tools, analyses and applications that contribute to understanding an ecological approach to agriculture (including forestry and aquaculture) embracing production and sustainable resource management simultaneously. Topics for Research Project applications include, but are not limited to:
- Economic impacts or implications of agriculture, resource conservation and management on the environment;
- Economics of conservation and environmental policies affecting agriculture and rural communities;
- Economic effects or implications of urbanization and land use change;
- The economics of water resource management;
- Methodological advances in non-market valuation and meta-analysis of ecosystem services valuation; or
- Economic incentive mechanisms and policies designed to promote resource conservation and sustainability.

4. **Small and Medium-Sized Farms**
   Program Area Priority Code – A1601
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 total per project (including indirect costs) for project periods of up to 5 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.
   Requested Project Types – Research Projects and Integrated Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants only
   Letter of Intent not required for this program area priority
   Application Deadline – July 28, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contact – Dr. Denis Ebodaghe (202) 401-4385 or
   debodaghe@nifa.usda.gov

   Program Area Priority –
   This program area priority will accept either research-only or integrated project applications to address priorities and related issues focusing on the development and/or adoption of new models to assist agricultural (farm, forest, or ranch) landowner/manager decision making with respect to appropriate scale management strategies and technologies to enhance economic efficiency and sustainability, including the viability and

competitiveness of small and medium-size dairy, poultry, livestock, crop, forestry, and other operations. Topics for research-only or integrated project applications include, but are not limited to:

- Develop effective strategies to aid in the development of research, education and extension/outreach programs to meet the needs of socially disadvantaged small and medium-sized farmers;
- Outreach efforts that create opportunities for veterans to enter farming and develop new tools to ensure that the next generation of small and medium-sized farmers (including veterans) has access to the information and resources they need to operate their farms on a sustainable and profitable basis;
- The feasibility of small to mid-scale processing for fresh fruits and vegetables, frozen fruits and vegetables, value added processing for institutional buyers, or small scale meat processing;
- Develop effective strategies and tools to assist small and medium-sized forest/woodland owners in managing and sustaining their timberland;
- Assess the impacts of changes in input costs and markets, including farm labor (and immigration policies), credit, microfinance, and insurance markets (including healthcare), on farm entry, transition, and economic viability and in turn, implement programs to assist beginning, small and medium-sized farms; or
- Evaluate and implement strategies for effective marketing by small and medium-sized farms, including but not limited to production contracts, cooperative marketing, local/regional marketing (direct or intermediated), and engaging in export markets.

Program Area Priority Additional Information.
- Research project applications must include only research without education or extension.
- Integrated project applications <u>must</u> include research and at least one other function (i.e., education, extension, or both).

5. **<u>Innovation for Rural Entrepreneurs and Communities</u>**
   Program Area Priority Code – A1661
   Proposed Budget Requests –
   - Budgets for Standard Grants, Strengthening Standard Grants, and New Investigator Grants must not exceed **$500,000 <u>total per project</u> (including indirect costs) for project periods of up to 5 years.**
   - Conference and FASE Grants must adhere to the guidelines outlined beginning in Part II, D.
   - Requests exceeding budgetary guidelines will not be reviewed.

   Requested Project Types – Research Projects and Integrated Projects
   Requested Grant Types – Standard, Conference, and FASE (Strengthening Standard, New Investigator, Strengthening Conference, Seed, Equipment, and Sabbatical) Grants <u>only</u>
   Letter of Intent not required for this program area priority
   Application Deadline – July 27, 2017 (5:00 p.m. Eastern Time)
   Program Area Priority Contact – Dr. Robbin Shoemaker (202) 720-5468
   rshoemaker@nifa.usda.gov, and Dr. Wesley Dean (202) 689-4286 or wesley.dean@nifa.usda.gov

Program Area Priority –
Rural businesses and communities in the U.S are facing new and emerging opportunities and challenges arising from, for example, bioenergy and natural gas developments, demographic shifts, and advances in technology and communication. This Program Area Priority is designed to support rigorous theoretical and empirical efforts to create innovative approaches for advancing economic opportunities for rural entrepreneurs and communities. Projects can be either integrated or research only. Projects may evaluate the institutional, social, or economic factors affecting decision making and policy development to enhance the economic growth and well-being of rural communities.

Projects may also explore strategies to promote community and regional innovation in youth entrepreneurship, workforce development and address community and human capital challenges, poverty and income inequality, including through the promotion of Science, Technology, Engineering and Mathematics/ Science, Technology, Engineering, Agriculture/Arts and Mathematics (STEM/STEAM), in rural areas. This program focuses mainly on entrepreneurs and small businesses who are important sources of employment, and/or on other issues "beyond the farm gate" (for projects that focus mainly on farms, see the Small and Medium-Sized Farms program area priority (A1601)).

Emphasis areas for Research Project and Integrated Project applications to this program area priority include, but are not limited to:
- Improve the understanding of factors and conditions that enhance economic opportunities for food and agricultural and rural businesses through tools from the various social sciences, (i.e., sociology, demography, economics, geography, etc.), studies that focus on women, and ethnic and racial minority groups are of interest.
- Examine approaches to expanding local and regional food systems, such as through food hubs and intermediated markets. What are the best strategies for scaling up from direct marketing to regional markets, and improving efficiencies while maintaining the benefits of local identity?
- Examine transportation, energy, and other infrastructure-related decisions and their implications, including interagency initiatives, for agricultural and rural communities.
- Assess the impact of federal investments and strategies, (e.g., Rural Utilities Service, National Telecommunication and Information Administration) on expansion and impact of broadband into rural communities.
- Examine self-employment/non-farm proprietorship and explore the factors that spur the growth and survival of these entrepreneurial efforts or that contribute to their demise. Are there community factors that affect the growth of self-employment? What factors lead to decline or failure of these proprietorships? What policies may promote the sustainability of these establishments? Are there unique challenges faced by women, and ethnic and racial minorities or recent immigrants?
- Examine the role of regional and multi-agency collaborative strategies in addressing rural economic development. What do we know about, what worked and what didn't, and why? What are the implications in terms of future development strategies? Note, our interest is in lessons learned, not an evaluation of a particular program.

- What are the mechanisms or barriers to identifying innovations (technologies, products or processes) that were funded under Federal Government programs that exist and are stalled within academic institutions? How can these innovations be moved out of the academic institution towards commercialization and entry into a commercial market? Additional analysis should be considered to examine how these new innovations could utilize support programs such as the USDA Small Business Innovation Research (SBIR) program to encourage commercialization. Conduct analysis on how investors or entrepreneurs identify existing innovations within academic institutions and begin to exploit commercial opportunities?
- What are the set of community/county, regional, or other structural factors that contribute to high rates of child poverty? What are the possible solutions – programmatic or policy related – that offer hope to rural communities, counties and/or regions that continue to face barriers with regard to tackling this major problem and its broader social consequences?
- Income inequality is a growing crisis in this nation. What is not well understood is how income inequality varies in rural America and why? Is it linked to the nature of a county's major economic drivers, is it linked to human capital, to population growth/decline, or to other factors?

Program Area Priority additional Information.
- Research project applications must be research only without education and extension.
- Integrated project applications <u>must</u> include research and at least one other function (i.e., education, extension, or both).

g. **Critical Agricultural Research and Extension (CARE)**

Background
This program area addresses critical challenges and opportunities that research and extension, together, can address to improve the Nation's agricultural and food systems. Despite prior investments in basic and applied research, critical problems continue to impede the efficient production of agriculturally-important plants and animals, for producing safe and nutritious foods, and to meet environmental challenges for agriculture. These problems may be local, regional, or national, and may call for work focused on one or more scientific disciplines. However, all need immediate attention to meet producer and consumer needs. Finding and implementing solutions to these critical problems require partnership and close coordination among researchers, extension experts, and practitioners in food and agricultural enterprises. Funded projects are expected to produce results that lead to practices that are rapidly adopted by end-users.

The AFRI CARE program area addresses the following priorities of the 2014 Farm Bill: A. Plant Health and Production and Plant Products; B. Animal Health and Production and Animal Products; C. Food Safety, Nutrition, and Health; D. Bioenergy, Natural Resources, and Environment; E. Agriculture, Systems and Technology; and F. Agriculture Economics and Rural Communities.

Total Program Funds – Approximately $3 million

Program Area Key Information:
- All applications must adhere to the requirements beginning in Part IV, in this RFA. If submitting an integrated research and Extension application, please refer to specific content requirements for integrated applications. Applications that do not adhere to these requirements will not be reviewed.
- Applications from, and collaborations with, minority serving institutions, small to mid-sized institutions, and/or EPSCoR states are encouraged.
- A justification of how the project addresses a critical stakeholder need must be included in the Project Narrative of the full application.
- Strict focus on short- to medium-term application of results is a requirement of this program area. Applications must demonstrate that outcomes of the project period can be implemented within 2 years after the grant ends.
- In the full application, a letter of support must be included from the stakeholder(s) which details their role and their degree of interest in implementing projected outcomes.

Program Area Code – A1701
Program Area Code Name – Critical Agricultural Research and Extension
Proposed Budget Requests –
- Standard Grants, Strengthening Standard Grants and New Investigator Grants must not exceed **$300,000 <u>total per project</u> (including indirect costs) for project periods of up to 3 years and are not renewable**.
- FASE (Strengthening Standard and New Investigator) Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding the budgetary guidelines will not be reviewed.

Requested Project Types – Integrated Research and Extension Projects; Research Projects for the commodity board co-funded priority <u>only</u>
Requested Grant Types – Standard and FASE (Strengthening Standard and New Investigator) Grants <u>only</u>
Letter of Intent Deadline – May 24, 2017 (5:00 p.m. Eastern Time)
Program Area e-mail address for Submission of Letter of Intent – criticalag@nifa.usda.gov
  Label the attached Letter of Intent pdf file with the project director's last name. Include the program area priority to which your Letter of Intent is most relevant in the subject line of your email submission (i.e., A. Plant health and production and plant products; B. Animal health and production and animal products; C. Food safety, nutrition, and health; D. Bioenergy, natural resources, and environment; E. Agriculture, systems and technology; and F. Agriculture economics and rural communities).
Application Deadline – August 9, 2017 (5:00 p.m. Eastern Time)
Program Area Priority Contact – Ms. Charlotte Kirk Baer (202) 720-5280 or
                    cbaer@nifa.usda.gov, and Dr. Wesley Dean (202) 689-4286
                    or wesley.dean@nifa.usda.gov
Program Area Priorities –
This Program Area Priority is designed to support unified activities based on rigorous theoretical and applied research combined with effective extension and involvement of stakeholders to develop and rapidly apply new knowledge or practices resulting in improved

well-being of the people, communities, plants, and animals involved in, and affected by, agriculture and food-production systems.

Applications must develop and implement solutions to critical stakeholder-identified problems associated with one or more of the Farm Bill priorities listed below. Applications must demonstrate how results achieved can be applied as quickly as possible following project completion. Applications should include a justification of why the issue is critical (e.g., estimated or actual economic costs to specified agricultural or food system(s), private industry, land owners, rural communities, loss of income, employment, adverse effects on the environment, projected risk of food-borne illnesses, etc.). In addition, applicants should include a plan for how information will be disseminated and discuss strategies to increase the likelihood that stakeholder will adopt recommendations, practices, products or technologies resulting from the project.

Each application must address one or more of the following 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; or
- Agriculture economics and rural communities.

In addition to the priorities listed above, NIFA and the National Peanut Board are seeking to co-fund projects that investigate the effects of peanut bioactives on human cognition. Applications must address the following priority:
- Identify bioactive compounds within peanuts that may improve cognition in humans.

Applicants seeking funding through this commodity board co-funded priority must provide a letter of support from the commodity board directly to the NIFA Program Contact within 60 calendar days after the application submission deadline. When seeking a letter of support, applicants should submit their entire grant application to the **National Peanut Board** and request a letter that specifically indicates that the National Peanut Board supports the application for co-funding. To obtain a letter of support or for further questions, please contact the **National Peanut Board** representative (DeMarquine Wilson, 3350 Riverwood Parkway, Ste 1150, Atlanta, GA 30339; 678-424-5757 or dhwilson@nationalpeanutboard.org). Additionally, applicants must state in the last sentence of their application's Project Summary section that the application is submitted in response to this specific commodity board topic.

h. Exploratory Research

Background
The Exploratory Research Program Area seeks ideas for research that demonstrate extraordinary novelty with potential to position U.S. agriculture at the global forefront. These ideas will provide quantum leaps in our knowledge and capabilities in agriculture and food production. They will address challenges that have never been addressed before or challenges

that have been addressed, but where new and risky ideas could promise high potential impact. This program area provides support for research projects that need to develop proof of concept for untested ideas that will lead to creative and positive disruption of the agricultural norm.

Projects must be potentially transformative and not incremental in nature. Projects must demonstrate the research characteristics described above and not be suitable for submission to other program area priorities under AFRI. Each application must address one or more of the following:
- Extraordinarily novel or innovative ideas that have high potential impact;
- Application of new knowledge or new approaches to unsolved challenges that may result in dramatic improvements;
- Tools required to have a paradigm shift in the field; or
- Rapid response to natural disasters and unanticipated events affecting agriculture.

Projects that represent incremental advances, modification, or variations on previous research are not appropriate for this program. Projects that have been previously submitted and reviewed in another NIFA competitive program will not be considered unless the project was identified in a prior review to be suitable for the Exploratory Research Program Area.

The AFRI Exploratory Research Program Area addresses the following priorities of the 2014 Farm Bill: A. Plant Health and Production and Plant Products; B. Animal Health and Production and Animal Products; C. Food Safety, Nutrition, and Health; D. Bioenergy, Natural Resources, and Environment; E. Agriculture, Systems and Technology; and F. Agriculture Economics and Rural Communities.

Total Program Funds – Approximately $2 million

Program Area Key Information:
- All applications must adhere to the requirements beginning in Part IV unless specific instructions are given under this program area or by the program area contact.
- Applications from, and collaborations with, minority serving institutions, small to mid-sized institutions, and/or EPSCoR states are encouraged.
- The Project Narrative is limited to a maximum of 7 pages, and must have a clearly articulated and compelling justification for the topical area, and a description of methods to be used, anticipated results, next steps and plans for seeking additional funding.
- With the exception of the shorter Project Narrative page length, the application must adhere to the grant application requirements set out in this RFA and in the NIFA Grants.gov Application Guide.
- The letter of intent and the application must include a clear description as to why the project is uniquely suited for the Exploratory Research Program Area, and not suitable for other program area priorities under AFRI.
- Resubmission of applications submitted to the Exploratory Research Program Area in previous years will not be accepted.

Program Area Code – Provided upon invitation to submit the grant application after acceptance of the Letter of Intent.

Program Area Code Name – Exploratory Research

Proposed Budget Requests –

- Standard Grants must not exceed **$100,000 <u>total per project</u> (including indirect costs) for project periods of up to 2 years and are not renewable**.
- Requests exceeding the budgetary guidelines will not be reviewed.

Requested Project Types- Research Projects

Requested Grant Types – Standard Grants <u>only</u>

Letter of Intent Deadline – accepted anytime throughout the year; See Part IV, A for instructions.

Program Area e-mail address for Submission of Letter of Intent –
exploratory@nifa.usda.gov

Label the attached Letter of Intent pdf file with the project director's last name. Include the program area priority to which your Letter of Intent is most relevant in the subject line of your email submission (i.e., A. Plant health and production and plant products; B. Animal health and production and animal products; C. Food safety, nutrition, and health; D. Bioenergy, natural resources, and environment; E. Agriculture, systems and technology; and F. Agriculture economics and rural communities).

Application Deadline – Submission of a full grant application is dependent on the encouragement to submit a grant application based on assessment of the Letter of Intent and availability of funds. Upon receiving encouragement to submit a full grant application, applicants must submit the full application within 60 calendar days.

Program Area Priority Contacts – Ms. Charlotte Kirk Baer (202) 720-5280 or
cbaer@nifa.usda.gov, and Dr. Liang-Shiou Lin (202) 401-5045 or llin@nifa.usda.gov

Program Area Priorities –

Applications must be relevant to one or more of the six 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; or
- Agriculture economics and rural communities.

Program Area Additional Information:

Review criteria for the Exploratory Research Program Area include:

- The scientific merit of the proposed activity;
  - Does the project describe a sound scientific approach that can be accomplished by requisite and qualified personnel within two years to address an important agricultural issue?
- Appropriateness of the proposed research for developing proof-of-concept of new and untested ideas including high risk research that leads to a significant change in the field;
  - To what extent is the proposed project innovative and what is the potential for the proposed work to result in quantum leaps in its respective field of agriculture?
- The applicant's previous experience and background along with the proposed activities; and

- Relevance of the project to sustainable U.S. agriculture, the environment, human health and well-being, and rural communities.
    - Does the project propose to address challenges that have never been addressed before and if so, what is the potential for major advancement?
    - Does the project propose to tackle known challenges in a unique way and if so, what is the potential for major breakthroughs?

PART II—AWARD INFORMATION

A. Available Funding

Of the amount available to make awards, no less than 30 percent will be made available to fund integrated research, education, and extension projects. Of the AFRI funds allocated to research activities, section 7406 of the FCEA directs 60 percent toward grants for fundamental (or basic) research and 40 percent toward grants for applied research. Of the AFRI funds allocated to fundamental research, not less than 30 percent will be directed toward research by multidisciplinary teams. It is expected that no less than 15 percent of the FY 2017 funds will be made available for Food and Agricultural Science Enhancement (FASE) Grants, and no more than two percent of the funds available for fundamental research will be made available for Equipment Grants.

There is no commitment by USDA to fund any particular application or to make a specific number of awards.

NIFA anticipates approximately $150.2 million will be available to support Programs Areas in this AFRI RFA that are designed to help solve critical problems across the United States for project durations of up to 5 years (FY 2017 – FY 2021).

This RFA is being released prior to the passage of an appropriations act for FY 2017. Enactment of additional continuing resolutions or an appropriations act may affect the availability or level of funding for this program.

Funding of projects beyond FY 2017 is contingent upon the availability of funds, and the best interests of the US government. Funding in FY 2017 does not obligate NIFA to any future-year commitments.

The funds will be awarded through a grant. There is no commitment by NIFA to fund any particular application or to make a specific number of awards.

The Automated Standard Applications for Payment System (ASAP), operated by the Department of Treasury's Bureau of the Fiscal Service, is the designated payment system for awards resulting from this RFA. For more information see https://www.fiscal.treasury.gov/fsservices/gov/pmt/asap/asap_home.htm.

B. Types of Applications

In FY 2017, you may submit applications to one of the Program Areas in this RFA as one of the three types of requests: (1) New Application; (2) Renewal Application; and (3) Resubmitted Application.

  (1) **New application**. This is a project application that has not been previously submitted to NIFA. We will review all new applications to ensure they meet administrative requirements and all applications will be competitively evaluated by a review panel

using criteria and selection processes described in Part V—Application Review Requirements.

(2) <u>Renewal application.</u> This is a project application that requests additional funding for a project beyond the period that was approved in an original or amended award. Applications for renewed funding must contain the same information as required for new applications; they also must contain a Progress Report (see Project Narrative, Part IV). We must receive the renewal applications by the relevant due dates. We will evaluate renewal applications in competition with other pending applications in the program area priority to which they are assigned, and will be reviewed according to the same evaluation criteria (Part V, B.) as new applications.

(3) <u>Resubmitted application</u>. This is an application that was submitted previously to NIFA but not funded. Project Directors (PDs) must respond to the previous review panel summary (see Response to Previous Review, Part IV, C.). We must receive resubmitted applications by the relevant due dates. We will evaluate resubmitted applications in competition with other pending applications in the program priority area to which they are assigned, and review them according to the same evaluation criteria (Part V, B.) as new applications. A renewal application that was submitted previously but not funded and is being resubmitted is also considered as Resubmitted application; however, PDs must include a Progress Report (see 2 above) and a Response to Previous Review.

C. Project Types

Applicants must propose one of the AFRI project types specified within the relevant program area description beginning in Part I, C. of this RFA. Only project types specifically solicited under each Program Area or Program Area Priority described in Part I, C. of this RFA will be considered for review. A detailed description of the project types available across AFRI is located at https://nifa.usda.gov/sites/default/files/resource/AFRI-Project-Types.pdf.

D. Grant Types

Applicants must select the appropriate AFRI grant type specified within the relevant program area description beginning in Part I, C. of this RFA. Only grant types specifically solicited under each program area or program area priority described in Part I, C. of this RFA will be considered for review. A detailed description of the grant types available across AFRI is located at https://nifa.usda.gov/sites/default/files/resource/AFRI-Grant-Types.pdf.

E. Responsible and Ethical Conduct of Research

In accordance with sections 2, 3, and 8 of 2 CFR Part 422, institutions that conduct USDA-funded extramural research must foster an atmosphere conducive to research integrity, bear primary responsibility for prevention and detection of research misconduct, and maintain and effectively communicate and train their staff regarding policies and procedures. In the event an application to NIFA results in an award, the Authorized Representative (AR) assures, through acceptance of the award that the institution will comply with the above requirements. Award

recipients shall, upon request, make available to NIFA the policies, procedures, and documentation to support the conduct of the training. See http://nifa.usda.gov/responsible-and-ethical-conduct-research for more information.

PART III—ELIGIBILITY INFORMATION

A. Eligible Applicants

Applications may only be submitted by eligible entities. Eligibility is linked to the project type. All project types are described beginning in Part II, C.

Applicants must respond to the Program Area priorities and deadlines found in this RFA. Grant recipients may subcontract to organizations not eligible to apply provided such organizations are necessary for the conduct of the project. Failure to meet an eligibility criterion by the application deadline may result in the application being excluded from consideration or, even though an application may be reviewed, will preclude NIFA from making an award (see Part III B).

1) **Research, Education or Extension Projects**
   Eligible applicants for single-function Research, Education or Extension Projects include:1) State Agricultural Experiment Station; 2) colleges and universities (including junior colleges offering associate degrees or higher); 3) university research foundations; 4) other research institutions and organizations; 5) Federal agencies, 6) national laboratories; 7) private organizations or corporations; 8) individuals who are U.S. citizens, nationals, or permanent residents; and 9) any group consisting of 2 or more entities identified in 1) through 8). Eligible institutions do not include foreign and international organizations.

2) **Integrated Projects**
   Eligible applicants for Integrated Projects include: 1) colleges and universities; 2) 1994 Land-Grant Institutions; and (3) Hispanic-serving agricultural colleges and universities (https://nifa.usda.gov/hispanic-serving-agricultural-colleges-and-universities-hsacu).

   For Integrated Projects, the terms "college" and "university" mean an educational institution in any state which 1) admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate; 2) is legally authorized within such state to provide a program of education beyond secondary education; 3) provides an educational program for which a bachelor's degree or any other higher degree is awarded; 4) is a public or other nonprofit institution; and 5) is accredited by a nationally recognized accrediting agency or association. A research foundation maintained by a college or university is eligible to receive an award under this program.

3) **Food and Agricultural Science Enhancement Grants**
   The Food and Agricultural Science Enhancement (FASE) Grants have additional eligibility requirements. See Part II, D., for details.

B. Request for Determination of Status

1. Minority–Serving Institution
If an applicant's institution can be considered a minority-serving institution and wishes to be considered for a Strengthening Grant (as described in Part II, D.), but does not serve one or more of the minority groups specified in the Definitions section of this RFA (see Part VIII, D.), the applicant must submit to NIFA, documentation supporting the request. This documentation (see below) must be submitted as part of the requestor's Letter of Intent (if required) and the full application package (Part IV, B.) and we must receive it by the applicable program area or program area priority deadline. The Secretary of Agriculture or designated individual will determine whether the group or groups identified by the institution are eligible as a minority group for the purpose of receiving a Strengthening Grant under this program.

The following information must be provided within the application in the order specified below:
1. A description of each minority group that is being submitted for determination;
2. Data or studies supporting this group's designation as a minority group; and
3. Data indicating that enrollment of the minority group(s) exceeds 50 percent of the total enrollment at the academic institution, including graduate and undergraduate and full-and part-time students.

2. Multi-Campus Institution
All institutions grouped under one main campus as listed in Table 1, unless located in an Experimental Program to Stimulate Competitive Research (EPSCoR) State (see Part II, D.) are excluded from eligibility for all strengthening funds. However, if any campus within a multi-campus listing can provide information demonstrating that it is administratively independent or has an independent accreditation, then the institution may petition for an exemption to this rule and request eligibility for strengthening funds. The Letter of Intent (if required) and the application must include a letter indicating how the institution is independent of the main campus, either through accreditation or administration. In addition, the letter should stipulate that the institution is eligible as a small and mid-sized or minority-serving institution due to enrollment and total federal funds received for science and engineering research and development. The letter must be signed by the Authorized Representative (AR) and included with the Letter of Intent (if requested) and the completed application (see Part IV, B.).

C. Cost Sharing or Matching

If an applied **Research or Integrated Project** with an applied research component, is commodity-specific and not of national scope, the grant recipient is required to match the USDA funds awarded on a dollar-for-dollar basis from non-federal sources with cash and/or in-kind contributions (see Part IV, C., 6). See Part VIII, D., for the definition of applied research. NIFA may waive the matching funds requirement for a grant if we determine that:
      (a) The results of the project, while of particular benefit to a specific agricultural
          commodity, are likely to be applicable to agricultural commodities generally; or

(b) The project involves a minor commodity, the project deals with scientifically important research, and the grant recipient is unable to satisfy the matching funds requirement.

For Equipment Grants: The amount of Federal funds provided may not exceed 50 percent of the cost of the equipment acquired using funds from the grant, or $50,000, whichever is less. Grantees are required to match 100 percent of Federal funds awarded from non-Federal sources. The Secretary may waive all or part of the matching requirement if all three of the following criteria are met: 1) applicants must be a college, university, or research foundation maintained by a college or university that ranks in the lowest one third of such colleges, universities, and research foundations on the basis of Federal research funds received (see Table 2, following Part VIII, for eligibility); 2) if the equipment to be acquired using funds from the grant costs not more than $25,000; and 3) has multiple uses within a single research project or is usable in more than one research project. If the institution believes it is eligible for the waiver for matching funds, the budget justification must include a letter signed by the institution's AR stating this information.

D. Center of Excellence

Pursuant to Section 7214 of the Agricultural Act of 2014 (Pub. L. 113-79), beginning in Fiscal Year 2015, for applicable competitive research and extension programs, NIFA will recognize and provide priority in the receipt of funding to applications from "centers of excellence" that carry out research, extension, and education activities that relate to the food and agricultural sciences. NIFA held listening sessions in July 2014 and accepted written comments from stakeholders to inform NIFA's implementation of the COE provision. Information from the webinars and a summary of the input are available on NIFA's website at http://nifa.usda.gov/centers-excellence.

A COE is composed of one or more of the following entities that provide financial or in-kind support to the COE.

(A) State agricultural experiment stations;

(B) Colleges and universities;

(C) University research foundations;

(D) Other research institutions and organizations;

(E) Federal agencies;

(F) National laboratories;

(G) Private organizations, foundations, or corporations;

(H) Individuals; or

(I) any group consisting of two or more of the entities described in (A) through (H).

COE designation is available only for **standard grant and Coordinated Agricultural Project (CAP) grant** applications. Part IV, C., of this RFA contains additional requirements for COE consideration.

PART IV—APPLICATION AND SUBMISSION INFORMATION

A. Letter of Intent

If a Program Area or Program Area Priority within this RFA requires a Letter of Intent (LOI), then a LOI is a prerequisite for submission of an application. Refer to the Program Area Descriptions beginning in Part I, C for LOI deadlines for a specific Program Area or Program Area Priorities. For detailed guidance on LOI submission, see AFRI Letter of Intent Instructions.pdf.

B. Electronic Application Package

Only electronic applications may be submitted via Grants.gov to NIFA in response to this RFA. We urge you to submit early to the Grants.gov system. For information about the pre-award phase of the grant lifecycle see http://www.grants.gov/web/grants/learn-grants/grants-101/pre-award-phase.html.

<u>New Users of Grants.gov</u>
Prior to preparing an application, we recommend that the Project Director/Principal Investigator (PD/PI) first contact an AR to determine if the organization is prepared to submit electronic applications through Grants.gov. If not (e.g., the institution/organization is new to the electronic grant application process through Grants.gov), <u>then the one-time registration process must be completed</u> **PRIOR** to submitting an application. <u>It can take as long as two weeks to complete the registration process so it is critical to begin as soon as possible.</u> In such situations, the AR should go to **"Register," in the top right corner of the Grants.gov web page (or go to** http://www.grants.gov/web/grants/register.html**), for information on registering the institution/organization with Grants.gov.** Part II,1 of the NIFA Grants.gov Application Guide contains detailed information regarding the registration process. Refer to item 2, below, to locate the "NIFA Grants.gov Application Guide."

<u>Steps to Obtain Application Package Materials</u>
To receive application materials:
1. You must download and install a version of Adobe Reader compatible with Grants.gov to access, complete, and submit applications. For basic system requirements and download instructions, see http://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html. Grants.gov has a test package that will help you determine whether your current version of Adobe Reader is compatible.

2. To obtain the application package from Grants.gov, go to http://www.grants.gov/web/grants/applicants/download-application-package.html and enter the funding opportunity number

   Funding Opportunity Number: USDA-NIFA-AFRI-006351

   From the search result, click "Select Package" to access the application package. A Grant Application Package is tied to a particular funding opportunity. You may submit

an application ONLY to the particular funding opportunity to which the Grant Application Package is associated.

Contained within the application package is the "NIFA Grants.gov Application Guide." This guide contains an introduction and general Grants.gov instructions, information about how to use a Grant Application Package in Grants.gov, and instructions on how to complete the application forms.

If you require assistance to access the application package (e.g., downloading or navigating Adobe forms) **or submitting the application,** refer to resources available on the Grants.gov website (http://www.grants.gov/web/grants/applicants/applicant-tools-and-tips.html). Grants.gov assistance is also available at:

Grants.gov customer support
800-518-4726 Toll-Free or 606-545-5035
Business Hours: 24 hours a day, 7 days a week. Closed on federal holidays.
Email: support@grants.gov
Grants.gov iPortal (see https://grants-portal.psc.gov/Welcome.aspx?pt=Grants):
Top 10 requested help topics (FAQs), Searchable knowledge base, self-service ticketing and ticket status, and live web chat (available 7:00 a.m. – 9:00 p.m. Eastern Time).

Have the following information available when contacting Grants.gov:
- Funding Opportunity Number (FON)
- Name of agency you are applying to
- Specific area of concern

C. Content and Form of Application Submission

You should prepare electronic applications following Parts V and VI of the NIFA Grants.gov Application Guide. This guide is part of the corresponding application package (see Section A of this part). The following is **additional information** you need to prepare for an application in response to this RFA. **If there is discrepancy between the two documents, the information contained in this RFA is overriding.**

Note the attachment requirements in Part III, Section 3 of the guide (e.g., PDF). <u>ANY PROPOSALS THAT ARE NON-COMPLIANT WITH THE REQUIREMENTS (e.g., content format, PDF file format, file name restrictions, and no password protected files) WILL BE AT RISK OF BEING EXCLUDED FROM NIFA REVIEW.</u> Grants.gov does not check for NIFA required attachments or whether attachments are in PDF format; see Part III, Section 6.1 of the guide for how to check the manifest of submitted files. Partial applications will be excluded from NIFA review. We will accept subsequent submissions of an application until close of business on the closing date in the RFA (see Part V, 2.1 of the NIFA Grants.gov Application Guide for further information).

For any questions related to the preparation of an application, review the NIFA Grants.gov Application Guide and the applicable RFA. If assistance is still needed for preparing application forms content, contact:

- Email: electronic@nifa.usda.gov
- Phone: 202-401-5048
- Business hours: Monday through Friday, 7:00 a.m. – 5:00 p.m. Eastern Time, excluding federal holidays.

1. SF 424 R&R Cover Sheet

Information related to the questions on this form is dealt with in detail in Part V, 2 of the NIFA Grants.gov Application Guide. See Part V, Section 2.18 of the NIFA Grants.gov Application Guide for the required certifications and assurances (e.g., Prohibition Against Entities Requiring Certain Internal Confidentiality Agreements).

2. SF 424 R&R Project/Performance Site Location(s)

Detailed information related to the questions on this form is available in Part V, 3 of the NIFA Grants.gov Application Guide.

3. R&R Other Project Information Form

Detailed information related to the questions on this form is available in Part V, 4 of the NIFA Grants.gov Application Guide.

a. Field 7. Project Summary/Abstract – PDF Attachment. Title the attachment as 'Project Summary' in the document header and save file as 'ProjectSummary'

The summary should also include the relevance of the project to the goals of the Program Area Priority within this RFA to which the application is submitted. See Part V. 4.7 of NIFA Grants.gov Application Guide for further instructions and a link to the required form. If relevant, applicants must state in the last sentence of their application's Project Summary section that the proposal is submitted in response to a specific commodity board topic.

b. Field 8. Project Narrative. - PDF Attachment. Title the attachment as 'Project Narrative' in the document header and save file as 'ProjectNarrative'

For Standard, New Investigator, Coordinated Agricultural Project (CAP), Conference, Strengthening Standard, Strengthening CAP and Strengthening Conference Grant applications, the Project Narrative section may **not exceed a total of 18 pages** with 12-point font and line spacing not exceeding six lines of text per vertical inch, including all figures and tables.

For Sabbatical, Equipment, and Seed Grant applications, the Project Narrative section may **not exceed a total of 7 pages** with 12-point font and line spacing not exceeding six lines of text per vertical inch, including all figures and tables.

For Exploratory Research Applications, the Project Narrative section may **not exceed a total of 7 pages** with 12-point font and line spacing not exceeding six lines of text per vertical inch, including all figures and tables.

To ensure fair and equitable competition, applications exceeding the applicable page limitation will be returned without review.

Each Project Narrative is expected to be complete; however, preprints (see Part IV, C. 3.f.6) related to the Project Narrative are allowed if they are directly germane to the proposed project. Information may not be appended to an application to circumvent page limitations prescribed for the Project Narrative.

The Project Narrative <u>Attachment</u> must include all of the following:

1) Response to Previous Review (if applicable)
This requirement only applies to Resubmitted Applications as described in Part II, B. The Project Narrative <u>attachment</u> should include two components: 1) a one-page response to the previous review (containing the previous proposal number in the first line) titled "Response to Previous Review" as the first page of the attachment and 2) the 7- or 18-page Project Narrative, as required (see Part IV, C. 3. b., above). The one-page "Response to Previous Review" does not count against the 7- or 18-page limit of the Project Narrative.

2) Progress Report (if applicable)
This requirement only applies to the Renewal applications and Resubmitted applications that are Renewal Applications (see Part II B). These applications must include a progress report within the applicable page limitation of the Project Narrative.

In addition, the Project Narrative <u>attachment</u> must have
  (a) Introduction
            Include a clear statement of the long-term goal(s) and supporting objectives of the proposed project. Summarize the body of knowledge or past activities that substantiate the need for the proposed project. Describe ongoing or recently completed activities significant to the proposed project including the work of key project personnel. Include preliminary data/information pertinent to the proposed project. This section should include in-depth information on the following, when applicable:
            (i)   Estimates of the magnitude of the issues and the relevance to stakeholders and ongoing state-federal food and agricultural research, education, and extension programs;
            (ii)   The role of stakeholders in problem identification, planning, implementation, and evaluation, as appropriate; and
            (iii)   Reasons for performing the work at the proposed institution.

            All works cited should be referenced (see Bibliography & References Cited in PART IV, C. 3. c., below).

  (b) Rationale and Significance
            1. Concisely present the rationale behind the proposed project;

2. Describe the specific relationship of the project's objectives to one of the Program Area Priorities. Applications that do not address at least one Program Area Priority will not be reviewed; and

3. The potential long-range improvement in and sustainability of U.S. agriculture and food systems should be shown clearly. These purposes are described under Purpose and Priorities in Part I, B. Any novel ideas or contributions that the proposed project offers should also be discussed in this section.

(c) Approach

1. Objectives: All applications must include a statement of objectives or specific aims of the proposed project in clear, concise, complete, and logically arranged terms.

2. Methods: Explicitly state the procedures or methodology you will apply in the proposed project. This section should include, but not necessarily be limited to, descriptions of:

   a. Stakeholder involvement, if applicable, in problem identification, planning, implementation, and evaluation;
   b. Proposed project activities, listed sequentially;
   c. Techniques to be employed in this project, including their feasibility and rationale;
   d. Expected results;
   e. How extension and education activities, if applicable, will be evaluated;
   f. How data will be analyzed or interpreted;
   g. Plans to communicate results to appropriate audiences, including relevant scientific peers, stakeholders and the public, as appropriate;
   h. Pitfalls that might be encountered;
   i. Limitations to proposed procedures.

3. Project Timetable: The proposal should outline all important phases as a function of time, year by year, for the entire project, including periods beyond the grant funding period.

➢ *For Education Project Applications* – In addition to the Project Narrative requirements above, the proposed Education Project should clearly articulate:

- The potential for advancing the quality of education by addressing a specific problem or opportunity;
- The target audience and the level of education addressed;
- The long-term benefits to the institution, including how the institution attributes a high priority to the project and how the project is linked to and supported by the institution's strategic plan;
- A plan for evaluating progress toward achieving project objectives. The plan must include milestones, which signify the completion of a major deliverable, event, or accomplishment and serve to verify that the project is on schedule and on track for successful conclusion. The plan should also include descriptions of indicators that you will measure to evaluate whether the education activities are successful in achieving

project goals and in contributing to achievement of the stated program goals and outcomes; and

- A dissemination plan describing the methods that will be used to communicate findings and project accomplishments.

➢ *For Extension Project Applications* –

- Extension Projects should involve a series of connected learning activities that engage the public in practical problem solving. Programming should be more than a one-time event, a single publication, a one-dimensional activity, or a general public awareness campaign. Together, informal learning activities should be elements in a curriculum-based program that has learning goals and objectives.
- Extension Projects should be connected to both 1) scientific-research based information and 2) science-based teaching techniques and informal education principles.
- In addition to the Project Narrative requirements above, the proposed Extension Project should give emphasis to scholarly principles of engagement and outreach that clearly articulate:
  o The importance of informal education to address a specific local problem or issue;
  o The theoretical basis of informal outreach methods used;
  o Development and/or implementation of a curriculum-based series of connected learning activities (including educational materials) that engage the public in practical problem solving;
  o A plan for evaluating progress toward achieving project objectives. The plan must include milestones, which signify the completion of a major deliverable, event, or accomplishment and serve to verify that the project is on schedule and on track for successful conclusion. The plan should also include descriptions of indicators that you will measure to evaluate whether the extension activities are successful in achieving project goals and in contributing to achievement of the stated program goals and outcomes; and
  o A dissemination plan describing the methods that will be used to communicate findings and project accomplishments.
- AFRI welcomes "community-based" Extension Projects. Community-based programming ranges from a single town to a county, collection of counties, state, or region. Applications with leadership from campus-based faculty specialists that incorporate programming/work of local agents are highly desirable.
- AFRI welcomes (but does not require) Extension Projects that develop content suitable for delivery through eXtension (https://extension.org/). This content is for "end users" as opposed to staff development and must align with the eXtension principles, implementation plan, and other requirements presented at https://extension.org/about/. Funds may be used to contribute to an existing Community of Practice or to form a new Community of Practice as appropriate.

➢ *For Integrated Project Applications* –

- Integrated Project applications must include at least two of the three functions of the agricultural knowledge system (i.e., research, education, and extension). Each function should be represented by one or more objectives within the application. Some Program Area Priorities may require all three functions of the agricultural knowledge

system, and applicants should consult the relevant Program Description (see Part I, C) for the specific requirements of the Program Area Priority to which they are applying.

- Projects must budget sufficient resources to carry out the proposed set of research, education, and/or extension activities that will lead to the desired outcomes. No more than two-thirds of a project's budget may be focused on a single function.
- Integrated Projects must include individuals on the project team with significant expertise in each component of the project (research, education, and/or extension).
- A plan for evaluating progress toward achieving project objectives must be included. The plan must include milestones, which signify the completion of a major deliverable, event, or accomplishment and serve to verify that the project is on schedule and on track for successful conclusion. The plan should also include descriptions of indicators that you will measure to evaluate whether the research, education, and/or extension activities are successful in achieving project goals and in contributing to achievement of the stated program goals and outcomes.
- In addition to the Project Narrative requirements above, the proposed Integrated Project should clearly articulate:
  o Stakeholder involvement in project development, implementation, and evaluation, where appropriate;
  o Objectives for each function included in the project (note that extension and education activities are expected to differ and to be described in separate project objectives; see enumerated descriptions in Part II, C); and
  o A dissemination plan describing the methods that will be used to communicate findings and project accomplishments.
- NIFA encourages (but does not require) Integrated Projects that develop content suitable for delivery through eXtension (https://extension.org/).
- AFRI encourages (but does not require) Integrated Projects that are suitable for 4-H audiences and stakeholder groups while meeting identified program priorities. Opportunities for engaging 4-H in AFRI proposals should align with the 4-H Mission Mandates of Science, Engineering and Technology; Healthy Living; and Citizenship. See guiding principles at http://4-h.org/ or contact your university Cooperative Extension headquarters and/or State 4-H Program Office.

➢ *For Conference Grant Applications* – In addition to the Project Narrative requirements above, substitute the following in the Approach section:
- A justification for the meeting;
- Recent meetings on the same subject with dates and locations;
- Names and organizational affiliations of the chair and other members of the organizing committee;
- A proposed program (or agenda) for the conference, including a listing of scheduled participants and their institutional affiliations; and
- The method of announcement or invitation that will be used.

➢ *For Sabbatical Grant Applications* – In addition to the Project Narrative requirements above, substitute the following in the Approach section:
- A general description of the research, education, and/or extension interests and goals

of the applicant in order to provide perspective for the application;
- A description of the project to be pursued while on sabbatical leave;
- A statement of how the sabbatical leave will enhance the capabilities of the applicant; and
- A statement of future research goals and objectives once the sabbatical is complete and how the sabbatical will enable the applicant to pursue these goals.

➢ *For Equipment Grant Applications* – In addition to the Project Narrative requirements above, include a general description of the project(s) for which the equipment will be used, how the equipment will fit into or enhance the research, education, and/or extension program, and how the equipment will allow the applicant to become competitive for future funding or move into new research areas. Also include a description of other similar or complementary equipment available to the PD at the institution and why the requested equipment is necessary.

➢ *For Seed Grant Applications* – Include all of the components detailed in the Project Narrative section above and present enough detail to allow adequate evaluation. In order to be competitive, long-term goals and a statement describing how this Seed Grant will allow the applicant to become competitive for future funding must be included.

(d) Center of Excellence
Only standard grant and CAP grant application may be considered for center of excellence (COE) designation.

In addition to meeting the other requirements detailed in Part IV, C of this Request for Application (RFA), eligible applicants who wish to be considered as centers of excellence must provide a brief justification statement at the end of their Project Narratives and within the page limits provided for Project Narratives, describing how they meet the standards of a center of excellence, based on the following criteria:
(A) The ability of the center of excellence to ensure coordination and cost effectiveness by reducing unnecessarily duplicative efforts regarding research, teaching, and extension in the implementation of the proposed research and/or extension activity outlined in this application;
(B) In addition to any applicable matching requirements, the ability of the center of excellence to leverage available resources by using public-private partnerships among agricultural industry groups, institutions of higher education, and the Federal Government in the implementation of the proposed research and/or extension activity outlined in this application. Resources leveraged should be commensurate with the size of the award;
(C) The planned scope and capability of the center of excellence to implement teaching initiatives to increase awareness and effectively disseminate solutions to target audiences through extension activities in the implementation of the proposed research and/or extension activity outlined in this application; and
(D) The ability or capacity of the center of excellence to increase the economic returns to rural communities by identifying, attracting, and directing funds to high-priority agricultural issues in support of and as a result of the

implementation of the proposed research and/or extension activity outlined in this application.

Additionally, where practicable (not required), center of excellence applicants should describe proposed efforts to improve teaching capacity and infrastructure at colleges and universities (including land-grant colleges and universities, cooperating forestry schools, certified Non-Land Grant Colleges of Agriculture (NLGCA) (list of certified NLGCA is available at http://www.nifa.usda.gov/funding/pdfs/nlgca_colleges.pdf), and schools of veterinary medicine).

c. Field 9. Bibliography & References Cited – PDF Attachment. No Page Limit. Title the attachment as 'Bibliography & References Cited' in the document header and save file as 'BibliographyReferencesCited'.

All work cited in the text should be referenced in this section of the application. All references must be complete; include titles and all co-authors; conform to an acceptable journal format; and be listed in alphabetical order using the last name of the first author or listed by number in the order of citation.

d. Field 10. Facilities & Other Resources – PDF Attachment. No Page Limit. Title the attachment as 'Facilities & Other Resources' in the document header and save file as 'FacilitiesOtherResources'.

e. Field 11. Equipment – PDF Attachment. No Page Limit. Title the attachment as 'Equipment' in the document header and save file as 'Equipment'.

Describe available equipment. Items of nonexpendable equipment necessary to conduct and successfully complete the proposed project should be listed in Field C. of the R&R Budget and described in the Budget Justification (see Part IV, C. 6 below).

f. Field 12. Other Attachments

The following instructions are in addition to those noted in Part V 4.12 of the NIFA Grants.gov Application Guide.

1) Key Personnel Roles – **PDF Attachment. 2-Page Limit.** Title the attachment as 'Key Personnel' and save file as 'KeyPersonnel'.

   ☼ *For Integrated Grant Applications* – state for key personnel an estimate of the percent of time devoted to research, education, and/or extension activities.

2) Logic Model – **PDF Attachment. 2-Page Limit. Required for all Integrated Project applications. Encouraged for Research, Education, or Extension Project applications.** Title the attachment as 'Logic Model' and save file as 'LogicModel'.

Include the elements of a logic model detailing the activities, outputs, and outcomes of the proposed project. The logic model planning process is a tool that should be used to develop your project before writing your application. This information may be provided as a narrative or formatted into a logic model chart. More information and resources related to the logic model planning process are provided at https://nifa.usda.gov/resource/integrated-programs-logic-model-planning-process.

3) Management Plan – **PDF Attachment. 3-Page Limit. Required for Integrated Project applications. Encouraged for Research, Education, or Extension Project applications.** Title the attachment as 'Management Plan' and save file as 'ManagementPlan'.

The plan is to be clearly articulated and include an organizational chart, administrative timeline, and a description of how the project will be governed, as well as a strategy to enhance coordination, collaboration, communication, and data sharing and reporting among members of the project team and stakeholder groups. The plan must also address how the project will be sustained beyond termination of an award.

The management plan must also include an advisory group of principal stakeholders, partners, and professionals to assess and evaluate the quality, expected measurable outcomes, and potential impacts for the proposed research, education and/or extension. Please include rationale for their role, and how they will function effectively to support the goals and objectives of the project. The plan must demonstrate how partners and stakeholders contribute to project assessment on an annual basis.

4) Data Management Plan (DMP) **- PDF Attachment. 2-Page Limit. Required for Research, Education, Extension, or Integrated Project applications.** Title the attachment as 'Data Management Plan' and save file as 'DataManagementPlan'**.**

The DMP should clearly articulate how the project director (PD) and co-PDs plan to manage and disseminate data generated by the project. NIFA and reviewers will consider the DMP during the merit review process. NIFA is aware of the need to provide flexibility in assessing DMPs. The DMP should contain the following components.

a. Expected Data Type
Describe the type of data (e.g., digital, non-digital), how they will be generated, and whether the data are primary or metadata. Examples include: for research, lab work, field work and surveys; for education, number of students enrolled/participated, degrees granted, curriculum, and training products; for extension, outreach materials, number of stakeholders reached, number of activities, and assessment questionnaires.

b. Data Format
For data to be readily accessible and usable, it is critical to use an appropriate community-recognized standard and machine readable formats when they exist.

The data should preferentially be stored in recognized public databases. Regardless of the format used that data set should contain enough information to allow independent use of the data.

c. Data Storage and Preservation
Data should be stored in a safe environment with adequate measures taken for its long-term preservation. Applicants should describe plans for storing and preserving their data during and after the project and specify the data repositories, if they exist. They should outline strategies, tools, and contingency plans that will be used to avoid data loss, degradation, or damage.

d. Data Sharing and Public Access
Describe your data access and sharing procedures during and after the grant. Provide any restrictions such as copyright, confidentiality, patent, appropriate credit, disclaimers, or conditions for use of the data by other parties.

e. Roles and Responsibilities
Who will ensure DMP implementation? This is particularly important for multi-investigator and multi-institutional projects. Provide a contingency plan in case key personnel leave the project. Also, what resources will be needed for the DMP? If funds are needed, have they been added to the budget request and budget narrative? Projects must budget sufficient resources to develop and implement the proposed DMP.

5) Documentation of Collaboration – **PDF Attachment. No Page Limit.** Title the attachment as 'Documentation of Collaboration' in the document header and save file as 'Collaboration'.

Evidence, e.g., letter(s) of support, should be provided that the collaborators involved have agreed to render services. The applicant also will be required to provide additional information on consultants and collaborators in the budget portion of the application.

☼ *For Sabbatical Grant Applications* – Provide documentation that arrangements have been made with an established investigator(s) to serve as host, including:
- A letter from the home institution detailing the particular arrangements at the home institution with respect to salary and date and duration of sabbatical;
- A letter from the scientific host(s) indicating willingness to serve in this capacity and a description of the host's contribution to the proposed activities both scientifically and with regard to use of facilities and equipment; and
- A statement signed by the Department Head or equivalent official at the host institution indicating a commitment to provide research space and facilities for the period of the applicant's presence.

☼ *For Equipment Grant Applications* – The application must contain a letter(s) from the organization(s) committed to providing the non-Federal matching funds. Provide

evidence of institutional commitment for operation and maintenance of requested equipment. Arrangements for sharing equipment among faculty are encouraged. However, it must be evident that the PD is a principal user of the requested equipment.

6) Preprints – **PDF Attachment. Limited to 2 preprints.** Title the attachment as 'Preprints' in the document header and save file as 'Preprints'.

Preprints related to the Project Narrative are allowed if they are directly germane to the proposed project. Information may not be appended to an application to circumvent page limitations prescribed for the Project Narrative. <u>Extraneous materials will not be used during the peer review process</u>. Only manuscripts in press for a peer- reviewed journal will be accepted and must be accompanied by letters of acceptance from the publishing journals). Preprints attached in support of the application should be single-spaced. Each preprint must be identified with the name of the submitting organization, the name(s) of the PD(s), and the title of the application.

7) Minority-Serving Institution Documentation – **PDF Attachment.** Title the attachment as 'Minorityinfo' in the document header and save file as 'Minorityinfo'.
(a) Letter identifying percentage of applicable minority students.
(b) Request for Determination of Status– see Part III, B.

8) Felony Convictions or Tax Delinquent Status Documentation - **PDF Attachment.** Title the attachment as Felony and Tax Certification in the document header and save file as 'FelonyTaxCertification'. See Part V. Section 4.12 of the NIFA Grants.gov Application Guide for instructions regarding mandatory form.

4. <u>R&R Senior/Key Person Profile (Expanded)</u>

Detailed information related to the questions on this form is available in Part V, 5 of the NIFA Grants.gov Application Guide. This section of the guide includes instructions about the people who require senior/key person profile, and details about the biographical sketch and the current and pending support, including a link to the required form for the current and pending support.

A Senior/Key Person Profile should be completed for the PD and each co-PD, senior associate, and other professional personnel, including collaborators playing an active role in the project. Collaborators only providing services or materials should not be listed in the R&R Senior/Key Person Profile. Evidence (letters of support) for this type of collaboration should be provided in the Documentation of Collaboration (see Part IV, C. 3. f. 5).

a) *Project Role Field* – Complete appropriately.

➢ *For Sabbatical Grant Applications* – Select "PD/PI" for the Sabbatical Grant applicant. Select "Other" for the corresponding scientific host(s) and any other personnel whose qualifications merit consideration in the evaluation of the application.

➢ *For Equipment Grant Applications* – Select "PD/PI" for the Equipment Grant applicant. Select "Faculty" for the other major users of the equipment.

b) *Other Project Role Category Field* – Complete appropriately, if applicable.

c) *Attach Biographical Sketch Field* – **PDF Attachment. 2-Page Limit** (excluding publications listings) per PD, co-PD, senior associate, and other professional personnel. Title the attachment as 'Biographical Sketch' in the document header and save file as 'BiographicalSketch' followed by the last name of the PD or co-PD such that each biographical sketch file in the application has a distinct file name.

A biographical sketch (vitae) of the PD and each co-PD, senior associate, and other professional personnel should be included.

The Conflict of Interest list should not be included in the biographical sketch, but it must be provided as a separate document (see Part IV, C. 7. b for more information).

➢ *For Sabbatical Grant Applications* – A Biographical Sketch must be submitted for the Sabbatical Grant applicant, the scientific host(s), and any other personnel whose qualifications merit consideration in the evaluation of the application.

➢ *For Equipment Grant Applications* – A Biographical Sketch for both the Equipment Grant applicant and other major users of the equipment must be submitted.

d) *Attach Current and Pending Support Field* – **PDF Attachment. No Page Limit**. Title the attachment as 'Current and Pending Support' in the document header and save file as 'CurrentPendingSupport'.

A required form for the Current and Pending Support can be found at: www.nifa.usda.gov/funding/templates/current_pending.doc.

Current and Pending Support information is only required for personnel with PD or co-PD indicated as their Project Role on the R&R Senior/Key Person Profile. All applications must contain a list of all Current and Pending Support detailing public or private support (including in-house support) to which personnel identified in the application have committed portions of their time, if the salary support for person(s) involved is included in the budget. Please note that the project being proposed should be included in the pending section of the form. Total project listed for each PD should be indicated as percent effort and not exceeds 100% for concurrent (Current and Pending) projects.

The AFRI program will not fund an application that duplicates or overlaps substantially with other NIFA funding (including non-competitive funds such as Special Grants or Hatch formula funds) or other Federal funding. As an addendum to the Current and Pending Support, provide a brief summary for any completed, current, or pending projects that

appear similar to the current application, especially previous National Research Initiative (NRI) or AFRI awards.

➢ *For Sabbatical Grant Applications* – Current and Pending Support for both the Sabbatical Grant applicant and the scientific host(s) (as documentation of on-going work in the host's laboratory) must be completed.

➢ *For Equipment Grant Applications* – Current and Pending Support for both the Equipment Grant applicant and other major users of the equipment must be completed. If the applicant has significant funding from other sources, a justification must be provided in the Project Narrative for how this equipment will strengthen the applicant's research program or institution.

5. R&R Personal Data – As noted in Part V, 6 of the NIFA Grants.gov Application Guide, the submission of this information is voluntary and is not a precondition of award. Part V, 6 also notes the importance and use of the information.

6. R&R Budget
Detailed information related to the questions on this form is available in Part V, 7 of the NIFA Grants.gov Application Guide.

a. **Matching.** If you conclude that matching funds are not required as specified under Part III, C., Cost Sharing or Matching, you must include a justification in the Budget Narrative. We will consider this justification when ascertaining final matching requirements or in determining if required matching can be waived. NIFA retains the right to make final determinations regarding matching requirements.

For grants that require matching funds as specified under Part III, C., the Budget Narrative should include written verification of commitments of matching support (including both cash and in-kind contributions) from third parties. Written verification means:

1. For any third party cash contributions, a separate pledge agreement for each donation, signed by the authorized representatives of the donor organization (and the applicant organization ONLY if provided after submission of the application), must include: (1) the donor's name, address, and telephone number; (2) the name of the applicant organization; (3) the title of the project; (4) the dollar amount of the cash donation (the budget narrative must describe how the cash donation will be used); (5) a statement that the donor will pay the cash contribution during the grant period; and (6) whether the applicant can designate cash as the applicant deems necessary or the cash contribution has been designated to a particular budget item.

2. For any third party in-kind contributions, a separate pledge agreement for each contribution, signed by the authorized representatives of the donor organization (and the applicant organization ONLY if provided after submission of the application), must include: (1) the donor's name, address, and telephone number; (2) the name of the

applicant organization; (3) the title of the project; (4) a good faith estimate of the current fair market value of the third party in-kind contribution and a description of how the fair market value was determined; and (5) a statement that the donor will make the contribution during the grant period.

Summarize on a separate page the sources and amount of all matching support from outside the applicant institution and place that information in the proposal as part of the Budget Narrative. You must place all pledge agreements in the proposal immediately following the summary of matching support.

Establish the value of applicant contributions in accordance with applicable cost principles. Refer to Refer to 2 CFR Part 200, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards", for further guidance and other requirements relating to matching and allowable costs.

b. **Budget Periods**. Applications must contain a budget for each budget period for the entire duration of the proposed project. Annual and cumulative budgets are required.

If a project is funded, beginning in the first year of funding, the Project Director will be required to attend annual investigator meetings for the duration of the award (excluding Conference, Sabbatical, and Equipment Grant applications). The Project Directors for Seed Grant applications are required to attend beginning in the second year of funding. The Project Directors for Exploratory Research Grant applications are required to attend the investigator meeting near the termination time of the award. Reasonable travel expenses should be included as part of the project budget.

➢ *For Integrated Project Applications* – Projects must budget sufficient resources to carry out the proposed set of research, education, and/or extension activities that will lead to the desired outcomes. No more than two-thirds of a project's budget may be focused on a single component. Projects that include partnering with eXtension must include financial support for the Community of Practice core functions as well as project-specific activities.

➢ *For Conference Grant Applications* – The budget for the conference may include an appropriate amount for transportation and subsistence costs for participants and for other conference-related costs. Conference awards are not expected to exceed $50,000 and are not renewable. Indirect costs are not permitted on Conference Grant awards. Include an itemized breakdown of all support requested from the AFRI in the Budget Justification (Field K. of the R&R Budget).

➢ *For Sabbatical Grant Applications* – Limit to one year's salary and funds for travel and supplies.

➢ *For Equipment Grant Applications* – Each request shall be limited to one major piece of equipment within the cost range of $10,000-$250,000. Equipment grants are not

renewable. The amount of Federal funding requested shall not exceed 50 percent of the cost or $50,000, whichever is less. Unless waived, it is the responsibility of the PD to secure the required matching funds with non-Federal funds (see Part III, C for more information). No installation, maintenance, warranty, or insurance expenses may be paid from these awards, nor may these costs be part of the matching funds. Indirect costs are not permitted on Equipment Grant awards.

➢ *For Seed Grant Applications* – These awards will be limited to a total of $150,000 (including indirect costs) for two years and are not renewable.

c. *Field H. Indirect Costs* – NIFA is prohibited from paying indirect costs exceeding 30 percent of the total Federal funds provided under each award. This limitation is equivalent to 42.857 percent of the total direct costs of an award. See Part IV, E for additional information.

d. *Field K. Budget Justification* – **PDF Attachment. No Page Limit.** Title the attachment as 'Budget Justification' in the document header and save file as 'BudgetJustification'.

All cumulative budget categories, with the exception of Indirect Costs, for which support is requested must be individually listed (with costs) in the same order as the cumulative budget. NOTE: For continuation awards, all budget categories for year one must also be fully justified. If consulting, collaborative, or subcontractual arrangements are included in the application, these arrangements should be fully explained and justified. The rate of pay for any consultant must be included, if known at the time of application. Please include a cost breakdown for the consultant, including the number of days in service, travel, and per diem, as well as the rate of pay. Letters of consent or collaboration and other evidence should be provided in the Documentation of Collaboration (see Part IV, C. 3. f. 5) to show that collaborators have agreed to participate. A proposed statement of work, biographical sketch, and a budget for each arrangement involving the transfer of substantive programmatic work or the provision of financial assistance to a third party must be supplied. In multi-institutional applications, a budget and budget narrative must be included for each institution involved. The lead institution and each participating institution must be identified.

➢ *For Integrated Project Applications* – Each function should be represented by one or more objectives within the application. Projects must budget sufficient resources to carry out the proposed set of research, education, and/or extension activities that will lead to the desired outcomes. No more than two-thirds of a project's budget may be focused on a single component.

➢ *For Equipment Grant Applications* – The Budget Justification should describe the instrument requested including the manufacturer and model number, if known; provide a detailed budget breakdown of the equipment and accessories required; and indicate the amount of funding requested from NIFA for each component of equipment requested. A

letter signed by the institution's AR stating that the necessary non-Federal matching funds will be made available from an institutional or other source is required. An institution that believes it is eligible for the waiver of the matching funds should include a letter stating and documenting the eligibility that is signed by the institution's AR (see Table 2 following Part VIII for eligibility). A justification must be given for how this equipment will strengthen the applicant's research program or institution.

e. Subcontract Arrangements.
If it will be necessary to enter into a formal subcontract agreement with another institution, financial arrangements must be detailed in the "R&R Subaward Budget Attachment(s) Form." Annual and cumulative budgets, budget justification and a letter of commitment signed by the Authorized Representative (AR) are required for each subcontract agreement. Refer to Part V, 8. of the NIFA Grants.gov Application Guide for instructions on completing this form.

f. Matching
Equipment Grants requiring matching funds, as specified in Part III, C., must include a letter in the budget justification signed by the institution's AR stating that the necessary non-Federal matching funds will be made available from the institution or other source. The amount of Federal funds provided may not exceed 50 percent of the cost of the equipment acquired using funds from the grant, or $50,000, whichever is less. Grantees are required to match 100% of federal funds awarded from non-Federal sources. If the institution believes it is eligible for the waiver for matching funds (see Part III, C. for waiver eligibility), the budget justification must include a letter signed by the institution's AR stating this information. NIFA will consider this justification when ascertaining final matching requirements or in determining if required matching can be waived. NIFA retains the right to make final determinations regarding matching requirements.

For applied Research or Integrated Projects with an applied research component, if a funded project is commodity-specific and not of national scope, the grant recipient is required to match the NIFA funds awarded on a dollar-for-dollar basis from non-federal sources with cash and/or in-kind contributions.

The sources and the amount of all matching support from outside the applicant organization should be summarized on a separate page and placed in the application immediately following the Budget Justification. All pledge agreements must be placed in the application immediately following the summary of matching support.

Establish the value of applicant contributions in accordance with applicable cost principles. Refer to 2 CFR Part 200, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards," for further guidance and other requirements relating to matching and allowable costs.

7. <u>Supplemental Information Form</u>

Detailed information related to the questions on this form is available in Part VI, 1 of the NIFA Grants.gov Application Guide.

a. **Field 2. Program to which you are applying.** Enter the Program (Area Priority) Code Name and the Program (Area Priority) Code for the Program Area Priority to which you are applying from the information provided in the Program Area Descriptions beginning in Part I, C. An application can only be submitted to one program (Area Priority). Note that accurate entry of the Program (Area Priority) Code Name and Program (Area Priority) Code is extremely important for proper and timely processing of application. Failure to enter this information correctly may result in your application not being retrieved on time for review. If you have a question about which topic area is appropriate for your application, please contact the Program Area Priority Contact.

b. **Field 8. Conflict of Interest List – PDF Attachment. No Page Limit**. Title the attachment as 'Conflict of Interest' in the document header save the file as 'ConflictofInterest'. See Part VI, 1.8 of the NIFA Grants.gov Application Guide for further instructions and a link to the required form.

A Conflict of Interest List is required for all applications submitted to the AFRI. The Conflict of Interest List should be provided as a separate PDF attachment and not included in the vitae or resume. A Conflict of Interest List must be completed individually for all personnel who have submitted a Biographical Sketch in the R&R Senior/Key Personnel Profile. **Collate all individual Conflict of Interest lists into a single document file.** The lists can only be submitted as a single PDF attachment.

The required form for the Conflict of Interest List can be found at: www.nifa.usda.gov/funding/templates/conflict_of_interest.doc.

D. Submission Dates and Times

We recommend that you conduct an administrative review of the application before submission of it via Grants.gov to ensure that it complies with all preparation instructions. An application checklist is included in Part VII of the NIFA Grants.gov Application Guide to assist with this review.

You should check the application for completeness. The application should be checked for the following required items, which may include:
- Project Summary/Abstract
- Project Narrative
- Bibliography & References Cited
- Logic Model for Integrated Program
- Management Plan for Integrated Program
- Data Management Plan
- Facilities & Other Resources
- Curriculum Vitae

- Conflict of Interest Lists
- Current and pending support
- Budget
- Budget Justification

This is not an exhaustive list of required items; it only serves to highlight items that may be overlooked. Failure to include any of the three critical required documents of Project Summary/Abstract, Project Narrative, or Bibliography & References Cited sections as PDF attachment will result in the application not being reviewed or considered for funding by NIFA.

Instructions for submitting an application are included in Part IV, Section 1.9 of the NIFA Grants.gov Application Guide.

If you have trouble submitting an application to Grants.gov, you should FIRST contact the Grants.gov Help Desk to resolve any problems. Keep a record of any such correspondence. See Part IV, A for Grants.gov contact information.

1. **Letter of Intent**
   The Letter of intent if applicable, must be received at NIFA by **5:00 p.m. Eastern Time** on the dates indicated in the Program Area Descriptions beginning in Part I, C and in the format specified in Part IV, A.

2. **Full Application**
   Applications must be received by Grants.gov by **5:00 p.m. Eastern Time on the dates indicated in the Program Area Descriptions beginning in Part I, C**. Applications received after this deadline will normally <u>not</u> be considered for funding.

We send email correspondence to the AR regarding the status of submitted applications. We strongly encourage you to provide accurate email addresses, where designated, on the SF-424 R&R Application for Federal Assistance.

If the AR has not received correspondence **from NIFA** regarding a submitted application within 30 days of the established deadline, contact the Agency Contact identified in Part VII of the RFA and request the proposal number assigned to the application. **Failure to do so may result in the application not being considered for funding by the peer review panel. Once the application has been assigned a proposal number, you should cite this number on all future correspondence.**

E. Funding Restrictions

Section 713 of the Consolidated Appropriations Act, 2016 (Pub. L. 114-113) limits indirect costs to 30 percent of the total federal funds provided under each award. Similar language may be included in the FY 2017 appropriation, therefore, when preparing budgets, you should limit your request of the recovery of indirect costs to the lesser of your institution's official negotiated indirect cost rate or the equivalent of 30 percent of total Federal funds awarded. See Part V section 7.9 of the NIFA Grants.gov Application Guide for further indirect cost information. See webpage at https://nifa.usda.gov/indirect-costs for indirect cost options.

Funds made available for grants under the AFRI program must comply with the legislative authority.

You may not use grant funds awarded under this authority to renovate or refurbish research, education, or extension space; purchase or install fixed equipment in such place; or the plan, repair, rehabilitate, acquire, or construction of buildings or facilities.

F. Other Submission Requirements

You should follow the submission requirements noted in Part IV, Section 1.9 in the document entitled "NIFA Grants.gov Application Guide."

For information about the **status of a submitted application**, see Part III, Section 6 of the NIFA Grants.gov Application Guide.

Multiple submissions
In accordance with Part III, Section 5 of NIFA Grants.gov Application Guide, duplicate, essentially duplicate or predominantly overlapping applications submitted to one or more program areas within the AFRI (including FASE Grants) in any one fiscal year will not be reviewed. In addition, applicants may not submit to AFRI an application that is considered duplicate, essentially duplicate, or predominantly overlapping with an application submitted to another NIFA program in the same fiscal year.

PART V—APPLICATION REVIEW REQUIREMENTS

A. General

We evaluate each application in a two-part process. First, we screen each application to ensure that it meets the administrative requirements as set forth in this RFA. Second, a scientific peer-review process will be used to technically evaluate applications that meet the administrative requirements.

We select reviewers based upon their training and experience in relevant scientific, extension, or education fields, taking into account the following factors:
- the level of relevant formal scientific, technical education, or extension experience of the individual, as well as the extent to which an individual is engaged in relevant research, education, or extension activities;
- the need to include experts from various areas of specialization within relevant scientific, education, or extension fields;
- the need to include other experts (e.g., producers, range or forest managers/operators, and consumers) who can assess relevance of the applications to targeted audiences and to program needs;
- the need to include experts from a variety of organizational types (e.g., colleges, universities, industry, state and federal agencies, and private profit and non-profit organizations) and geographic locations;
- the need to maintain a balanced composition with regard to minority and female representation and an equitable age distribution; and
- the need to include reviewers who can judge the effective usefulness of each application to producers and the general public.

After each peer review panel has completed its deliberations, the responsible program staff will recommend that your project be approved for support from currently available funds or be declined due to insufficient funds or unfavorable review.

NIFA reserves the right to negotiate with the PD/PI and/or with the submitting organization or institution regarding project revisions (e.g., reductions in the scope of work, funding level, period, or method of support) prior to recommending any AFRI project for funding.

We will send copies of reviews, _not_ including the identity of reviewers, and a summary of the review panel comments to the PD after the review process has been completed.

B. Evaluation Criteria

Detailed evaluation criteria for each project types, grant types, exploratory research projects and center of excellence are outlined at https://nifa.usda.gov/sites/default/files/resource/AFRI-Review-Criteria.pdf. We will use the appropriate evaluation criteria to review applications submitted in response to this RFA.

C. Conflicts of Interest and Confidentiality

During the peer evaluation process, we take extreme care to prevent any actual or perceived conflicts of interest that may impact review or evaluation. See http://www.nifa.usda.gov/business/competitive_peer_review.html for further information about conflicts of interest and confidentiality as related to the peer review process.

D. Organizational Management Information

Specific management information relating to an applicant shall be submitted one-time, with updates on an as-needed basis. This requirement is part of the responsibility determined prior to the award of a grant identified under this RFA, if such information has not been provided previously under this or another NIFA program. We will provide you copies of forms recommended for use in fulfilling these requirements as part of the pre-award process. Although an applicant may be eligible based on its status as one of these entities, there are factors that may exclude an applicant from receiving federal financial and nonfinancial assistance and benefits under this program (e.g., debarment or suspension of an individual involved or a determination that an applicant is not responsible based on submitted organizational management information).

E. Application Disposition

An application may be withdrawn at any time before a final funding decision is made regarding the application. Each application that is not selected for funding, including those that are withdrawn, will be retained by the agency for a period of three years.

PART VI—AWARD ADMINISTRATION

A. General

Within the limit of funds available for such purpose, the NIFA awarding official shall make grants to those responsible, eligible applicants whose applications are judged most meritorious under the procedures set forth in this RFA. The date specified by the NIFA awarding official as the effective date of the grant shall be no later than September 30 of the federal fiscal year in which the project is approved for support and funds are appropriated for such purpose, unless otherwise permitted by law. The project need not be initiated on the grant effective date, but as soon thereafter as practical so that project goals may be attained within the funded project period. All funds granted by NIFA under this RFA may be used only for the purpose for which they are granted in accordance with the approved application and budget, regulations, terms and conditions of the award, applicable federal cost principles, USDA assistance regulations, and NIFA General Awards Administration Provisions at 7 CFR part 3430, subparts A through E.

B. Award Notice

The award document will provide pertinent instructions and information including, at a minimum, the information described in 2 CFR 200.210.

See http://www.nifa.usda.gov/business/awards/awardterms.html to view current NIFA award terms and conditions.

C. Administrative and National Policy Requirements

Several federal statutes and regulations apply to grant applications considered for review and to project grants awarded under this program. These may include, but are not limited to, the ones listed on the NIFA web page – http://nifa.usda.gov/federal-regulations.

NIFA Federal Assistance Policy Guide—a compendium of basic NIFA policies and procedures that apply to all NIFA awards, unless there are statutory, regulatory, or award-specific requirements to the contrary—is available at http://nifa.usda.gov/policy-guide.

D. Responsible and Ethical Conduct of Research

Refer to Part II, E for more information.

E. Expected Program Outputs and Reporting Requirements

The output and reporting requirements are included in the award terms and conditions (see http://www.nifa.usda.gov/business/awards/awardterms.html for information about NIFA award terms). If there are any program or award-specific award terms, those, if any, will be identified in the award.

If a project is funded, beginning in the first year of funding, the PD will be required to attend annual investigator meetings (excluding Conference, Sabbatical, and Equipment Grant applications). Seed Grant applications are required to attend beginning in the second year of funding. Exploratory Research Grant applications are required to attend the investigator meeting near the termination time of the award. Reasonable travel expenses should be included as part of the project budget.

PART VII—AGENCY CONTACTS

For general questions related to the AFRI Programs, applicants and other interested parties are encouraged to contact:

AFRI Program Office:
Dr. Parag Chitnis, Deputy Director, Institute of Food Production and Sustainability
Dr. Denise Eblen, Deputy Director, Institute of Food Safety and Nutrition
Dr. Muquarrab Qureshi, Deputy Director, Institute of Youth, Family, and Community
Dr. Louis Tupas, Deputy Director, Institute of Bioenergy, Climate, and Environment
        Telephone: (202) 401-5022
        Fax: (202) 401-6488
        E-mail: AFRI@nifa.usda.gov

Specific questions pertaining to technical matters may be directed to the appropriate Program Area Priority Contacts:

Program Area	Program Area Contact
a. Plant Health and Production and Plant Products	Ed Kaleikau (202) 401-1931; ekaleikau@nifa.usda.gov Shing Kwok (202) 401-6060; skwok@nifa.usda.gov Ann Lichens-Park (202) 401-6460; apark@nifa.usda.gov Liang-Shiou Lin (202) 401-5045; llin@nifa.usda.gov Mathieu Ngouajio (202) 401-4895; mngouajio@nifa.usda.gov Robert Nowierski (202) 401-4900; rnowierski@nifa.usda.gov Mary Purcell-Miramontes (202) 401-5168; mpurcell@nifa.usda.gov Jeffrey Steiner (202) 734-1067; jeffrey.steiner@nifa.usda.gov
b. Animal Health and Production and Animal Products	Margo Holland (202) 401-5044; mholland@nifa.usda.gov Peter Johnson (202) 401-1896; pjohnson@nifa.usda.gov Lakshmi Kumar Matukumalli (202) 401-1766; lmatukumalli@nifa.usda.gov Mark Mirando (202) 401-4336; mmirando@nifa.usda.gov Steven Smith (202) 401-6134; sismith@nifa.usda.gov
c. Food Safety, Nutrition, and Health	Melvin Carter (202) 720-7166; melvin.carter@nifa.usda.gov Hongda Chen (202) 401-6497; hchen@nifa.uda.gov Deirdra Chester (202) 401-5178; dnchester@nifa.usda.gov Paul Cotton (202) 401-6010; paul.cotton@nifa.uda.gov Mervalin Morant (202) 401-6602; mmorant@nifa.usda.gov Max Teplitski (202) 734-1808; max.teplitski@nifa.usda.gov Isabel Walls (202) 401-6357; iwalls@nifa.uda.gov Jodi Williams (202) 720-6145; jwilliams@nifa.usda.gov
d. Bioenergy, Natural Resources, and Environment	Nancy Cavallaro (202) 401-5176; ncavallaro@nifa.usda.gov Karelyn Cruz (202) 604-7742; karelyn.cruz@nifa.usda.gov
e. Agriculture Systems and Technology	Hongda Chen (202) 401-6497; hchen@nifa.usda.gov Charlotte Kirk Baer (202) 720-5280; cbaer@nifa.usda.gov Mervalin Morant (202) 401-6602; mmorant@nifa.usda.gov Steven Thomson (202) 401-6301; steven.j.thomson@nifa.usda.gov
f. Agriculture Economics and Rural Communities	Wesley Dean(202) 689-4286; wesley.dean@nifa.usda.gov Denis Ebodaghe (202) 401-4385; debodaghe@nifa.usda.gov Ed Kaleikau (202) 401-1931; ekaleikau@nifa.usda.gov Robbin Shoemaker (202) 720-5468; rshoemaker@nifa.usda.gov
g. Critical Agricultural Research and Extension	Wesley Dean(202) 689-4286; wesley.dean@nifa.usda.gov Charlotte Kirk Baer (202) 720-5280; cbaer@nifa.usda.gov
h. Exploratory Research	Charlotte Kirk Baer (202) 720-5280; cbaer@nifa.usda.gov Liang-Shiou Lin (202) 401-5045; llin@nifa.usda.gov

Administrative/Business Contacts:

Rochelle McCrea
Title: Team Leader
Unit: Office of Grants and Financial Management, Awards Management Division
Location: 2160 Waterfront Centre
Full Address and Directions
Phone: (202) 401-2880
Fax: (202) 401- 6271
Email: rmccrea@nifa.usda.gov

Sondra Watkins
Title: Team Leader
Unit: Office of Grants and Financial Management, Awards Management Division
Location: 2170 Waterfront Centre
Full Address and Directions
Phone: (202) 401-4249
Fax: (202) 401-3237
Email: swatkins@nifa.usda.gov

PART VIII—OTHER INFORMATION

A. Use of Funds; Changes

1. <u>Delegation of Fiscal Responsibility</u>
Unless the terms and conditions of the award state otherwise, awardees may not in whole or in part delegate or transfer to another person, institution, or organization the responsibility for use or expenditure of award funds.

2. <u>Changes in Budget or Project Plans</u>
In accordance with 2 CFR 200.308, awardees must request prior approval from NIFA for the following program or budget-related reasons:

> (i) Change in the scope or the objective of the project or program (even if there is no associated budget revision requiring prior written approval).
> (ii) Change in a key person specified in the application or the federal award.
> (iii) The disengagement from the project for more than three months, or a 25 percent reduction in time devoted to the project, by the approved project director or principal investigator.
> (iv) The inclusion, unless waived by the federal awarding agency, of costs that require prior approval in accordance with 2 CFR 200 Subpart E—Cost Principles of this part or 45 CFR Part 75 Appendix IX, "Principles for Determining Costs Applicable to Research and Development under Awards and Contracts with Hospitals," or 48 CFR Part 31, "Contract Cost Principles and Procedures," as applicable.
> (v) The transfer of funds budgeted for participant support costs as defined in §200.75 Participant support costs to other categories of expense.
> (vi) Unless described in the application and funded in the approved federal awards, the subawarding, transferring or contracting out of any work under a federal award, including fixed amount subawards as described in §200.332 Fixed amount subawards. This provision does not apply to the acquisition of supplies, material, equipment, or general support services.
> (vii) Changes in the approved cost-sharing or matching provided by the non-federal entity.
> (viii) The need arises for additional federal funds to complete the project.

The awardee will be subject to the terms and conditions identified in the award. See http://www.nifa.usda.gov/business/awards/awardterms.html for information about NIFA award terms.

B. Confidential Aspects of Applications and Awards

When an application results in an award, it becomes a part of the record of NIFA transactions, available to the public upon specific request. Information that the Secretary of Agriculture determines to be of a confidential, privileged, or proprietary nature will be held in confidence to the extent permitted by law. Therefore, any information that the applicant wishes to have considered as confidential, privileged, or proprietary should be clearly marked within the

application. We will retain for three years a copy of an application that does not result in an award. Such an application will be released only with the consent of the applicant or to the extent required by law. An application may be withdrawn at any time prior to the final action thereon.

C. Regulatory Information

For the reasons set forth in the final Rule related Notice to 2 CFR Part 415, Subpart C, this program is excluded from the scope of the Executive Order 12372, which requires intergovernmental consultation with state and local officials. Under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35), the collection of information requirements contained in this notice have been approved under OMB Document No. 0524-0039.

D. Definitions

Please refer to [7 CFR 3430, Competitive and Noncompetitive Non-formula Financial Assistance Programs--General Award Administrative Provisions](#), for applicable definitions for this NIFA grant program.

For the purpose of this program, the following additional definitions are applicable:

Applied Research means research that includes expansion of the findings of fundamental research to uncover practical ways in which new knowledge can be advanced to benefit individuals and society.

Food and Agricultural Science Enhancement (FASE) Grants mean funding awarded to eligible applicants to strengthen science capabilities of Project Directors, to help institutions develop competitive scientific programs, and to attract new scientists into careers in high-priority areas of National need in agriculture, food, and environmental sciences. FASE awards may apply to any of the three agricultural knowledge components (i.e., research, education, and extension). FASE awards include Pre- and Postdoctoral Fellowships, New Investigator grants, and Strengthening grants.

Limited institutional success means institutions that are not among the most successful universities and colleges for receiving Federal funds for science and engineering research. A list of successful institutions will be provided in the RFA.

Minority-serving institution means an accredited academic institution whose enrollment of a single minority or a combination of minorities exceeds fifty percent of the total enrollment, including graduate and undergraduate and full- and part-time students. An institution in this instance is an organization that is independently accredited as determined by reference to the current version of the Higher Education Directory, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church, Virginia 22042.

Minority means Alaskan Native, American Indian, Asian-American, African-American, Hispanic American, Native Hawaiian, or Pacific Islander. The Secretary will determine on a

case-by-case basis whether additional groups qualify under this definition, either at the Secretary's initiative, or in response to a written request with supporting explanation.

Multidisciplinary project means a project on which investigators from two or more disciplines collaborate to address a common problem. These collaborations, where appropriate, may integrate the biological, physical, chemical, or social sciences.

Small and mid-sized institutions are academic institutions with a current total enrollment of 17,500 or less including graduate and undergraduate and full- and part-time students. An institution, in this instance, is an organization that possesses a significant degree of autonomy. Significant degree of autonomy is defined by being independently accredited as determined by reference to the current version of the *Higher Education Directory*, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church, Virginia 22042 (703-532-2300).

Strengthening Grants mean funds awarded to institutions eligible for FASE Grants to enhance institutional capacity, with the goal of leading to future funding in the project area, as well as strengthening the competitiveness of the investigator's research, education, and/or extension activities. Strengthening grants consist of Standard, Coordinated Agricultural Project and Conference Grant types as well as Seed Grants, Equipment Grants, and Sabbatical Grants.

Transdisciplinary project means a project on which investigators from different disciplines working collaboratively and integrate different disciplines and move beyond discipline-specific approaches to address a common problem.

USDA EPSCoR States (Experimental Program to Stimulate Competitive Research) means States which have been less successful in receiving funding from AFRI, having a funding level no higher than the 38th percentile of all States based on a 3-year average of AFRI funding levels, excluding FASE Strengthening funds granted to state agricultural experiment stations and degree-granting institutions in EPSCoR States and small, mid-sized, and minority-serving degree-granting institutions. The most recent list of USDA EPSCoR States is provided at https://nifa.usda.gov/sites/default/files/resource/AFRI-Grant-Types.pdf.

E. Materials Available on the Internet
AFRI program information will be made available on the NIFA website at www.nifa.usda.gov/funding/afri/afri.html. The following are among the materials available on the NIFA website:
1.   Stakeholder Input
2.   Requests for Applications
3.   AFRI Abstracts of Funded Projects
4.   AFRI Annual Synopsis
5.   Frequently Asked Questions
6.   Interagency Programs

TABLE 1. Most Successful Universities and Colleges

Any institution listed in Table 1 is not eligible for Strengthening Grants from the FASE program unless they are located in an EPSCoR state.

TABLE 2. Lowest One Third of Universities and Colleges Receiving Federal Funds

The lowest one third of universities and colleges receiving Federal funds listed in Table 2 are used to determine eligibility for possible waiver of matching funds requirement for Equipment Grants.

FIGURE 1. Flow Chart for Strengthening Grant Eligibility

Do you have an appointment at a State Agricultural Experiment Station or a degree granting institution?