Agriculture and Food Research Initiative Competitive Grants Program

MODIFIED: Page 70 – broken link corrected for the Review Criteria (05/24/2016)
MODIFIED: Page 22, 23, & 24 – Application Deadline dates changed (05/27/2016)
MODIFIED: Page 43 – Letter of Intent language for the CARE program removed (06/10/2016)

Foundational Program

FY 2016 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: 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 1, C. Applications received after this deadline will normally not be considered for funding (see Part IV, C., of this RFA). Comments regarding this request for applications (RFA) are requested within 6 months from the issuance of this notice. Comments received after that date will be considered to the extent practicable.

STAKEHOLDER INPUT: The National Institute of Food and Agriculture (NIFA) seeks your comments about this RFA. We will consider the 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 written stakeholder comments by the deadline set forth in the DATES portion of this Notice via e-mail to: Policy@nifa.usda.gov. (This e-mail address is intended only for receiving comments regarding this RFA and not requesting information or forms.) In your comments, please state that you are responding to the Agriculture and Food Research Initiative Foundational 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 2016. You can also review a recording of COE outreach webinars held in February and March of 2015 from the site. The COE webpages will be updated throughout FY 2016 with additional information, such as a summary of comments received from stakeholders.

Pursuant to Section 7404 of the Agricultural Act of 2014 (Pub. L. 113-79), NIFA solicits proposed topics for Agriculture and Food Research Initiative (AFRI) RFAs from eligible state and national commodity boards on an ongoing basis. 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 September 22, 2015 for incorporation into FY2016 RFAs. Topics that are considered appropriate for AFRI are incorporated into the relevant AFRI RFAs. Topics submitted by the commodity boards that aligned with NIFA priorities were chosen for inclusion in selected Programs in 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 of commodity board-specific priorities and submission of applications relevant to these priorities. All applications submitted to these priorities must follow the standard 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 also should provide a letter of support from the relevant commodity board directly to the pertinent Program Contact within 60 days after the application submission deadline. All applications will be evaluated using the same standard review procedures and consideration of funding 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 a competitive grant program that provides funding for fundamental and applied research, education, and Extension projects in food and agricultural sciences. In this RFA, NIFA requests applications for six AFRI priority areas through the Foundational Program for FY 2016. The global agricultural output needs to expand by a minimum of 70 percent 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. 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.

In FY 2016, applications are sought in the following US agriculture 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 grants in FY 2016 is approximately $130 million.

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

Significant changes described in this AFRI Foundational Program RFA include: 1) reorganization of the Plant Health and Production and Plant Products program area; 2) addition of new program area priorities within the Bioenergy, Natural Resources, and Environment program area, Agriculture Systems and Technology program area, and the Agriculture Economics and Rural Communities program area; 3) expansion of the Critical Agriculture Research and Extension (CARE) program area to encompass all six AFRI Farm Bill priorities; 4) addition of Commodity Board priorities in the Plant Breeding for Agricultural Production program area priority, Improving

Food Safety program area priority, and the CARE program area; and 5) piloting of the Distributed Peer Review process (Review_Criteria_NIFA.docx) in three program area priorities (i.e., Tools and Resources - Animal Breeding, Genetics and Genomics; Bioprocessing and Bioengineering; and Economics, Markets and Trade).

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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. The legislation directed the Secretary to award grants to address priorities in United States agriculture in the following 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 AFRI is to support research, education, and extension work by awarding grants that address key problems of national, regional, and multi-state importance in sustaining all components of food and agriculture, including farm efficiency and profitability, ranching, bioenergy, forestry (both urban and agroforestry), aquaculture, rural communities and entrepreneurship, human nutrition, food safety, physical and social sciences, home economics and rural human ecology, biotechnology, and conventional breeding, and including both conventional and organic food production systems. Through this support, AFRI advances knowledge in both fundamental and applied sciences that is important to agriculture. It also allows AFRI to support education and extension activities that deliver science-based knowledge to people, allowing them to make informed practical decisions. This AFRI RFA is announcing funding opportunities for research only projects and integrated research, education, and/or extension projects.

AFRI is intended to promote advances in U.S. food, agriculture and forestry. Agriculture, however, is increasingly worldwide in scope and reach. To attain AFRI's goals for U.S. agriculture and global competence of our nation's agricultural workforce, applicants to Foundational or Challenge Area RFAs are encouraged to include international partnerships or engagement in proposals, as appropriate.

Applicants may submit proposals that support USDA's strategic objective (3.1) to "ensure U.S. agricultural resources contribute to enhanced global food security" (see USDA Strategic Plan

FY2014-2018). Any such activity proposed under AFRI (e.g., partnerships, exchanges, training, and/or travel), must first and foremost support AFRI's domestic program goals. Applicants must clearly describe and demonstrate how international activities proposed in applications submitted to AFRI will contribute to and support advances in U.S. agriculture.

If international activities are proposed, applicants must describe the metrics that will be used for reporting beneficial outputs and outcomes. Such metrics should reflect how the proposed international collaboration adds value to achieving the AFRI program's objectives by introducing innovative technologies/approaches, promoting synergistic science, addressing issues of mutual concern, or other means.

Additional guidance on including international activities in AFRI applications is provided on the Center for International Programs webpage that includes Frequently Asked Questions, descriptions of existing MOUs and other resources to assist applicants interested in enhancing the potential for global engagement.

Supporting the many components of agriculture under the constraints of a growing population, pressure on natural resources, the challenges of climate variability and change, and food security and food safety in a global economy, requires research, education, extension, and integrated programs that increase agricultural and natural resource sustainability. The term "sustainable agriculture" (NARETPA, 7 U.S.C. 3103) means an integrated 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 agriculture 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.

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 one of NIFA's major programs for addressing critical societal issues. USDA leadership has integrated the six AFRI priority areas (outlined in Part I, A) into the Foundational program, six primary Challenge Areas, and the Food, Agriculture, Natural Resources and Human Sciences Education and Literacy Initiative (formerly the NIFA Fellowships program) around which to structure the AFRI program and begin to focus the Department's investment in enabling an integrated approach to biological research, education, and extension. USDA science will support the six priorities for AFRI identified in the 2014 Farm Bill, as indicated in Part I, A.

This AFRI RFA for 2016 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 of the 2014 Farm Bill, including subpriorities, as described subsequently 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 (http://www.ocfo.usda.gov/usdasp/sp2014/usda-strategic-plan-fy-2014-2018.pdf).

The AFRI Foundational Program aligns with the 2014 USDA Research, Education, and Economics (REE) Action Plan (http://www.ree.usda.gov/ree/news/USDA_2014_REE_Action_Plan_08-2014_Final.pdf). Program Areas in this AFRI RFA draw from specific actionable items defined in the REE Action Plan, but not all items defined by the action plan are addressed by this year's RFA. Several action items are addressed by other AFRI RFAs. NIFA may also solicit applications for 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 (http://nifa.usda.gov/about/pdfs/strat_plan_2014.pdf), 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

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 the Nation's economy. Future improvement of production systems will require a greater understanding of complex, inter-related factors at 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 plants 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 plant productivity we can help U.S. agriculture face critical challenges in areas such as food security, sustainability, bioenergy, climate change, multiple cropping, organic production, loss of agricultural land, and increasing global competition. Research proposals 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 plant production systems and must also describe how results obtained from model systems will be transferred to agriculturally-important organisms during the project period.

To allow holistic projects on critical problems in plant production systems and in response to comments from stakeholders, a few changes have been made in the organization of the Plant Health and Production and Plant Products program area priority in FY 2016. Two program area priorities offered in FY 2015 (Plant-Associated Insects and Nematodes; and Weedy and Invasive Species) have been combined in a single program area priority in FY 2016, titled "Pests and Beneficial Species in Agricultural Production Systems". Two other program area priorities offered in FY 2015 (Growth and Development, Composition and Stress Tolerance; and Photosynthesis and Nutrient Use in Agricultural Plants) have been combined in a single program area priority in FY 2016, titled "Physiology of Agricultural Plants". Lastly, another program area priority offered in

FY 2015 (Plant-Associated Microbes and Plant-Microbe Interactions) is being offered as a joint program with the National Science Foundation (NSF) titled "Plant Biotic Interactions". Here is a cross-reference guide to help applicants find the appropriate program area priority in FY 2016:

- If you previously submitted applications to Plant-Associated Insects and Nematodes or Weedy and Invasive Species, you should consider submitting your FY 2016 application to Pests and Beneficial Species in Agricultural Production Systems or Foundational Knowledge of Agricultural Production Systems.
- If you previously submitted applications to Growth and Development, Composition and Stress Tolerance or Photosynthesis and Nutrient Use in Agricultural Plants, you should consider submitting your FY 2016 application to Physiology of Agricultural Plants.
- If you previously submitted applications to Plant-Associated Microbes and Plant-Microbe Interactions, you should consider submitting your FY 2016 application to the Plant Biotic Interactions program, which is a joint NSF-NIFA program. Information on the new program is available at www.nsf.gov/pubs/2016/nsf16551/nsf16551.htm.

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 (sub priorities 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 bio control systems; v. crop plant response to environmental stresses; and vi. [improved] nutrient qualities of plant products); D. Bioenergy, Natural Resources, and Environment - Natural resources and the environment (sub priorities 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 (sub priority iv. choices and applications of technology).

In FY 2016, the Plant Health and Production and Plant Products program area of the AFRI Foundational Program is soliciting Research Project applications for Standard, Conference and Food and Agricultural Science Enhancement (FASE) Grant types relevant to the four program area priorities described below. In addition, AFRI invites Research Project applications for Standard and FASE (Strengthening Standard and New Investigator) Grant types that address one of the Commodity Board priorities listed below.

Letter of Intent not required for this Program Area
Total Program Funds – Approximately $33 million
Proposed Budget Requests –
- 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 (Strengthening Standard, New Investigator, Seed, Equipment and Sabbatical) Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding the budgetary guidelines will not be reviewed.

Program Area Priorities – Each application must address one of the following four Program Area Priorities:

1. **Foundational Knowledge of Agricultural Production Systems**
   Program Area Priority Code – A1102
   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
   Letter of Intent not required for this Program Area Priority
   Application Deadline – August 17, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –
   This program area priority supports research advancing our understanding of cropland, managed forest, and rangeland production systems. 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.

   Proposals must address one or more of the following priorities:
   - 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 study.
   - The production system studied should be comprised of several key management components, such as: pest management (including insects, nematodes, pathogens and weeds), 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 a proposal 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.
   - Budget requests for conference grants in this program area priority must not exceed $25,000 total for the grant period.

2. **Pests and Beneficial Species in Agricultural Production Systems**
   Program Area Priority Code – A1112
   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
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 21, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –
   The goal of this program area priority is to elucidate the fundamental ecological, molecular, biological and/or chemical processes affecting the abundance and spread of plant-associated pests (insects, nematodes, pathogens and weeds) and healthy populations of beneficial species (pollinators and biological control agents) in agricultural production systems (including croplands, managed forests and rangelands); and to increase our understanding of multi-trophic interactions between plants, pests, and/or beneficial species. Pollinators may include honey bees (*Apis mellifera*) and other managed bees, wild bees (both native and introduced species), butterflies and other pollinating insects, birds and bats. Studies involving invasive and newly emerging pests as well as established pest species are encouraged. This research is expected to lead to the development of novel, innovative and environmentally-sound ways to manage agriculturally-important pests and beneficial species.

   Proposals must address one or more of the following priorities:
   - Interactions of pests or beneficial species with plant compounds, genes or stressors (biological or environmental). Environmental stressors include but are not limited to fluctuating weather patterns due to climate change, pesticides or other toxins. Biological stressors include other plant-associated pests or biological control agents.
   - Effects of communication, attractants and/or defense signaling systems on pests or beneficial species.
   - Understanding 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 resistance to pesticides (fungicides, herbicides, insecticides, etc.) and/or strategies to mitigate resistance.
   - Elucidation of individual or interacting factors that affect pollinator populations (i.e., habitat loss, quality of forage, nutritional requirements, pests, diseases, pesticides and associated chemicals, genetics or breeding) that will lead to the development of novel tools and technologies to mitigate their losses. This includes research on the interplay of weedy flora and pollinator health.

   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.

- Applications for research that is primarily focused on the development of pest or beneficial species management strategies or tactics, not fundamental mechanisms, may be more appropriate for the Applied Research and Development Program Area of the Crop Protection and Pest Management Competitive Grants Program, another program offered by NIFA; this program also provides limited support for projects focused on nuisance pests in urban or rural systems.
- Pollinator projects should be consistent with at least one of the goals and actions in the Pollinator Research Action Plan, which is available at www.whitehouse.gov/sites/default/files/microsites/ostp/Pollinator%20Research%20Action%20Plan%202015.pdf.
- Applicants who wish to submit near-term and implementation-based projects on pollinators should consider applying to the New Frontiers in Pollinator Health: From Research to Application program area included in the AFRI RFA for the FY 2016 AFRI Food Security Challenge Area.
- NIFA is partnering with Ireland and Northern Ireland under the United States – Ireland Research and Development Partnership to solicit collaborative research applications in the Pests and Beneficial Species in Agricultural Production Systems program area priority. The goal of this pilot partnership is to leverage fiscal, physical and intellectual resources to facilitate coordinated research that addresses any of the priorities above that are relevant to stakeholders in all three countries. The Irish components of successful applications will be funded by the Department of Agriculture and Rural Development in Northern Ireland or the Department of Agriculture, Food and the Marine in Ireland. To be considered for inclusion in this pilot program, scientists from all three nations must be part of the project team. All applications prepared jointly by United States, Ireland and Northern Ireland researchers will be submitted concurrently to the relevant funding agency in each jurisdiction. More information about the United States – Ireland Research and Development Partnership can be found at www.intertradeireland.com/randd/.

3. **Physiology of Agricultural Plants**
   Program Area Priority Code – A1152
   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
   Letter of Intent not required for this Program Area Priority
   Application Deadline – August 11, 2016 (5:00 p.m. Eastern Time)

   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.
   - Photosynthetic efficiency, carbon assimilation and/or 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.

Program Area Priority Additional Information:
Studies of plant-microbe interactions in nutrient use are not appropriate for this program area priority.

4. <u>**Plant Breeding for Agricultural Production**</u>
   Program Area Priority Code – A1141
   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
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 28, 2016 (5:00 p.m. Eastern Time)

   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 and genomics-enabled plant breeding will be supported. These efforts should address the priority needs identified by the USDA Roadmap for Plant Breeding
   (http://nifa.usda.gov/sites/default/files/resources/usda-roadmap-plant-breeding.pdf).

   Proposals 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 identified above, NIFA and various commodity boards are seeking to co-fund research projects relevant to the respective commodity board. Each application must address one of the following priorities:
   - Develop innovative technologies and approaches that enable wheat breeders to address the prevalence and impact of viruses on the wheat crop (e.g., wheat streak mosaic, barley yellow dwarf, and soilborne and spindle streak complexes) to include: novel approaches, including but not limited to the application of proteomics, metabolomics, and/or genomics to identify and mobilize high-value traits within hard red winter wheat germplasm; pre-breeding and germplasm enhancement through identification and mobilization of novel viral resistance traits leading to cultivar development; development and application of tools to predict phenotype from genotype to accelerate enhancement of finished wheat varieties; or the development of screening technologies for virus detection. (**Kansas Wheat Commission** representative**:** Will Zorrilla, 785-539-0255 or wzorrilla@earthsharvest.org).
   - Understand the basis for the interaction of genotypes and environmental conditions to predict crop performance to include: development of high-throughput phenotyping equipment and methods; collection of novel phenotype data from diverse environments; creation of data management tools and methods for handling, storing and analyzing complex phenotypic datasets; or development of computer modeling algorithms to extract

genotype-to-phenotype relationships. (**Iowa Corn Board on behalf of a consortia that includes the Illinois Corn Marketing Board, Minnesota Corn Research and Promotion Council, Nebraska Corn Board, and Kentucky Corn Promotion Council** representative: David Ertl, 515-225-9242 or dertl@iowacorn.org).

Applicants seeking funding through these commodity board co-funded priorities must provide a letter of support from the relevant commodity board directly to the NIFA Program Contact within 60 calendar days after the application submission deadline. To obtain a letter of support or for further questions, please contact the appropriate commodity board representative listed above. 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.

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 that are bred to be adapted to the soils, climates, and farming systems of farmers of all regions is encouraged.
- Applications to this program area priority must provide a description and budgeted plan for the release of research results (e.g., data, germplasm, cultivars, genetic resources) that is compliant with the *Research Terms and Conditions* that govern NIFA-funded projects in the areas of plant breeding, genetics and genomics; the terms and conditions can be found at http://nifa.usda.gov/resource/nifa-general-terms-and-conditions-grants-and-cooperative-agreements. The following sections are particularly relevant: Genetic Resources from Outside of the U.S (page 5); and Patents and Inventions including Plant Variety Protection, Release of Animal or Plant Genome Sequence Data and Distribution of Animal or Plant Genomic Resources, and the Release or Distribution of Plant Germplasm (pages 21-26).
- 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. Budget requests for conference grants in this program area priority must not exceed $25,000 total for the grant period.
- For plant breeding applications requiring $300,000 or less that develop and implement solutions to critical stakeholder-identified problems associated with Plant Health and Production and Plant Products Farm Bill priority such as variety development, applicants should consider submitting their proposals to the Critical Agricultural Research and Extension Program area 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 proposals to the Exploratory Research Program area described in this RFA.

Other Program Area Key Information applicable to <u>ALL</u> Plant Health and Production and Plant Products priority areas:
- All applications must adhere to the requirements beginning in Part IV.
- Collaboration with international partners is encouraged where appropriate; however, applications must be submitted by eligible U.S. institutions. Applications may include subcontracts to international partners or other institutions. Adequate justification for subcontracts to international partners is required with demonstration of the benefit to the U.S.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.

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. They contribute significantly to the nation's economy, global food production and food security. Our competitiveness depends on understanding the critical biological and physiological mechanisms underlying nutrition, growth, reproduction, and health in livestock, poultry, equine, and aquaculture species. Research at the genetic, genomic, molecular, cellular and organ systems levels is essential. We need to expand our knowledge using basic and applied research to reduce animal health and production costs, control and prevent animal diseases, enhance nutritional quality of animal products, and minimize environmental impacts. This information is required to develop 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 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 (sub priorities 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).

In FY 2016, AFRI invites applications for <u>Research Projects</u> that support <u>Standard, Conference and FASE Grant types</u> relevant to the six priority areas of the Animal Health and Production and Animal Products Program Area described below.

Letter of Intent not required for this Program Area
Total Program Funds – Approximately $31 million
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 (Strengthening Standard, New Investigator, Seed, Equipment and Sabbatical) Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding the budgetary guidelines will not be reviewed.

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
   Program Area Priority Contact – Dr. Mark Mirando (202) 401-4336 or
   <u>mmirando@nifa.usda.gov</u>
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 14, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –
   Cellular, molecular, genomic/genetic or whole-animal aspects of animal reproduction, 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).

2. **<u>Animal Nutrition, Growth and Lactation</u>**
   Program Area Priority Code – A1231
   Program Area Priority Contact – Dr. Steven Smith (202) 401-6134 or
   <u>sismith@nifa.usda.gov</u>
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 14, 2016 (5:00 p.m. Eastern Time)

   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
- NIFA is partnering with Ireland and Northern Ireland under the United States – Ireland Research and Development Partnership to solicit collaborative research applications in the Animal Nutrition, Growth and Lactation program area priority. The goal of this pilot partnership is to leverage fiscal, physical and intellectual resources to facilitate coordinated research that addresses any of the priorities listed above that are relevant to stakeholders in all three countries. The Irish components of successful applications will be funded by the Department of Agriculture and Rural Development in Northern Ireland or the Department of Agriculture, Food and the Marine in Ireland. To be considered for inclusion in this pilot program, scientists from all three nations must be part of the project team. All applications prepared jointly by United States, Ireland and Northern Ireland researchers will be submitted concurrently to the relevant funding agency in each jurisdiction. More information about the United States – Ireland Research and Development Partnership can be found at www.intertradeireland.com/randd/.

3. **Animal Well-Being**
   Program Area Priority Code – A1251
   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
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 14, 2016 (5:00 p.m. Eastern Time)

   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.

   NOTE: Proposals that address animal welfare with a significant 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).

4. **Animal Health and Disease**
   Program Area Priority Code – A1221
   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
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 14, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –

Cellular, molecular, genomic/genetic or whole-animal aspects of animal health and disease, especially focusing on one or more of the following:
- Maintenance of homeostasis, including influences of microbiomes on health and disease;
- Disease prevention (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 <u>and</u> aquacultured species into <u>one multi-species network</u> 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 <u>UK Veterinary Vaccinology Research Network</u>) 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);
    - facilitate gap analysis, identification of high impact research priorities, and discussion of new technologies; and/or
    - 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.
- <u>NOTE</u>: 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
- NIFA is partnering with Ireland and Northern Ireland under the United States – Ireland Research and Development Partnership to solicit collaborative research applications in the Animal Health and Disease program area priority. The goal of this pilot partnership is to leverage fiscal, physical and intellectual resources to facilitate coordinated research that addresses any of the priorities listed above that are relevant to stakeholders in all three countries. The Irish components of successful applications will be funded by the Department of Agriculture and Rural Development in Northern Ireland or the Department of Agriculture, Food and the Marine in Ireland. To be considered for inclusion in this pilot program, scientists from all three nations must be part of the project team. All applications prepared jointly by United States, Ireland and Northern Ireland researchers will be submitted concurrently to the relevant funding agency in each jurisdiction. More information about the United States – Ireland Research and Development Partnership can be found at www.intertradeireland.com/randd/.

5. **Tools and Resources - Animal Breeding, Genetics and Genomics**
   Program Area Priority Code – A1201
   Program Area Priority Contact – Dr. Lakshmi Kumar Matukumalli (202) 401-1766 or
   lmatukumalli@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – August 3, 2016 (5:00 p.m. Eastern Time)

MUST READ: This year, the AFRI Foundational program is piloting "Distributed Peer Review" a modified peer-review process for three select program area priorities, which include Tools and Resources – Animal Breeding, Genetics and Genomics. Submission of a Standard, Strengthening Standard or New Investigator grant application for this program area priority will imply your willingness to participate in the modified process as outlined in Part V, B., of this RFA. Please read Part V, B., thoroughly before deciding to submit a Standard, Strengthening Standard or New Investigator grant application to Tools and Resources – Animal Breeding, Genetics and Genomics in 2016.

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:
- Improvement of genome assembly;
- Novel quantitative genetic methods including selection theory and modeling; or
- Functional annotation of animal genomes (FAANG).

Program Area Priority Additional Information:
- This Program Area Priority is limited to the development of tools and resources. Proposals 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 animal breeding, breed development, or applied quantitative genetics should be directed to Program Area Priorities 1, 2, 3, or 4 identified above.
- Projects related to FAANG must follow the guidelines developed by the FAANG community for selecting animals, tissues, assays, experimental protocols, data sharing and

data analysis (http://www.faang.org/). Applicants should address major knowledge gaps and avoid duplication of efforts.

6. <u>**Tools and Resources** - **Immune Reagents for Agricultural Animals**</u>
   Program Area Priority Code – A1223
   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
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 14, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –
   Development of publicly accessible immunological reagents which can be used to study challenges affecting the health, management, and production of agriculturally-relevant animals. Examples include but are not limited to: monoclonal or polyclonal antibodies to host immune cells (T and B lymphocytes, neutrophils, NK cells, macrophages, dendritic cells, etc.); antibody classes; bioactive recombinant cytokines and chemokines; antibodies to and receptors for cytokines and chemokines, etc. Reagents should not be applicable to the study of only one disease (*i.e.,* no pathogen-specific reagents).
   Applicants must:
   - Address <u>one</u> of the following two species groups:
     o Ruminants, with primary focus on bovine-specific reagents, or
     o Poultry.
     <u>NOTE:</u> Applications addressing swine, equine, and aquaculture species will NOT be accepted in FY2016 because funding to develop reagents for those three species groups was awarded in either FY2014 or FY2015.
   - Clearly outline the methods that the project team will use to determine the U.S. immunology research communities' highest priority needs for the chosen species group.
   - Describe a strong management and implementation plan that (i) includes standard operating procedures, (ii) addresses quality control and quality assurance of developed reagents to ensure sensitivity and specificity, and (iii) describes distribution and maintenance of the developed reagents, including a mechanism that guarantees the sustainability and avoids loss of developed reagents.
   - Make all reagents publicly available, reasonably priced, and readily accessible.
   - Describe how the project management structure will connect with principal national stakeholders and/or partners for the particular species group (such as through an Advisory Committee). Strong linkages with the larger community will help ensure a high degree of accountability for community needs, facilitate synergies, and avoid unnecessary duplication. International linkages are encouraged when appropriate.

   Program Area Priority Additional Information:
   - A maximum of one award (either bovine or poultry) is anticipated in FY2016.
   - To foster mutual learning and synergies among projects, AFRI will facilitate networking among current awardees each year through one Project Director meeting at a location to be determined and three video conferences. Each award team will share their progress to date (*e.g.,* timeline metrics, including any ongoing challenges and problems solved) and next steps, and also consider collaboration opportunities among award teams for mutual benefit.

Other Program Area Key Information applicable to <u>ALL</u> Animal Health and Production and Animal Products priority areas:

- All applications must adhere to the requirements beginning in Part IV.
- Collaboration with international partners is encouraged where appropriate; however, applications must be submitted by eligible U.S. institutions. Applications may include subcontracts to international partners or other institutions. Adequate justification for subcontracts to international partners is required with demonstration of the benefit to the U.S.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly 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-aquacultured species as models will not be considered.
- When statistical evaluations are used to determine the significance of treatment effects, applicants must include appropriate power analyses. Studies comparing treatment groups must describe the experimental design, identify the experimental unit, and explain how the experimental unit will be replicated. Sample size for each experimental group, considering the magnitude of the treatment difference and variance for the response variable, power, and level of significance (*i.e.,* α, the probability of making a Type I error), should be identified.
- Applicants must provide a validation plan if diagnostic tests are developed.
- Applicants must include a statement addressing Minimum Information about Microarray Experiment (MIAME) compliance (see http://fged.org/projects/miame) if microarray studies are included.
- Applicants must provide a plan to release research results to the public in a timely manner.
- Applicants must provide a description and budgeted plan for the release of research results (*e.g.,* sequence data, germplasm, genetic resources) that is compliant with the terms and conditions that govern USDA-NIFA funded projects in the Animal Health and Production and Animal Products Program Area, where applicable**,** especially page 5 (Genetic Resources from Outside of the US); pages. 6-8 (Patents and Inventions including Plant Variety Protection); and pages 10-12 (Release of Animal or Plant Genome Sequence Data and Distribution of Animal or Plant Genomic Resources, Release or Distribution of Animal Quantitative Trait Loci, and the Release or Distribution of Plant Germplasm). Terms and conditions can be found at www.nsf.gov/pubs/policydocs/rtc/agencyspecifics/nifa_413.pdf.
- Applicants are encouraged to take advantage of molecular and biotechnology approaches to accelerate improvements in animal production and health, where appropriate.
- Applications with primary focus on the following should <u>not</u> be submitted to the Animal Health and Production and Animal Products program area:
  - *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*.
  - *Secondary effects or indirect effects of disease* (*e.g.,* on reproduction, muscle growth, lactation).
  - *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 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 Ecology and Evolution of Infectious Diseases (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5269) and the Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species (http://nifa.usda.gov/funding-opportunity/agriculture-and-food-research-initiative-dual-purpose-dual-benefit-research) collaborative interagency programs.
- 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 proposal to the Exploratory Program described in this RFA.

c. Food Safety, Nutrition, and Health

Background
Human health is significantly affected by the safety, quality, and nutritional value of food. Knowledge generated from the AFRI Food Safety, Nutrition, and Health program area will enhance the microbial, chemical, and physical safety of foods by improving control strategies for foodborne hazards, improving processing and packaging technologies that enhance food quality, improving our understanding of antimicrobials used in the food chain, and investigating the bioavailability of nutrients during digestion and absorption as they relate to human health. In addition, knowledge generated from this program will help us develop better management strategies for both conventional and organic production systems, and improve our understanding of the food production, handling, and consumption related behaviors of growers, producers, processors, and consumers and how they are influenced by 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 (sub-priorities 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).

In FY 2016, AFRI invites Research Project applications for Standard, Conference, and FASE Grant types relevant to the four priority areas of the Food Safety, Nutrition, and Health Program Area described below. In addition, AFRI invites Research Project applications for Standard and FASE (Strengthening Standard and New Investigator) Grant types that address the Commodity Board priority listed below.

Letters of Intent not required for this Program Area
Total Program Funds – Approximately $19 million
Proposed Budget Requests –
- 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 (Strengthening Standard, New Investigator, Seed, Equipment and Sabbatical) Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding the budgetary guidelines will not be reviewed.

Program Area Priorities – Each application must address at least one of the following four Program Area Priorities:
1. **Improving Food Safety**
   Program Area Priority Code – A1331
   Program Area Priority Contact – Dr. Isabel Walls (202) 401-6357 or iwalls@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – August 10, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –
   Applicants 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 hazards (viable or infectious human pathogens, chemicals, microbial toxins, or engineered inorganic nanoparticles) from foods or environmental samples related to food production, harvesting, processing, transportation and storage. This can include irrigation and processing water, soil, manure, and food contact surfaces. Proposals addressing the development and validation of methods that are effective in multiple matrices and for multiple foodborne pathogens are encouraged.
   - Develop or improve and validate foodborne hazard detection methods. 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 hazard are required.
   - Control foodborne hazards in foods using a risk-based approach to evaluate or develop economical and adoptable control strategies aimed at reducing the incidence of the foodborne hazard(s) during production, harvest, post-harvest storage, or processing.
   - Identify and characterize emerging or under-researched hazards that are known or expected to cause foodborne disease.

   In addition to the priority listed above, NIFA and the National Peanut Board are seeking to co-fund projects that improve diagnostic methods for peanut and food allergies. Proposals must address the following priority:
   - Improved diagnostic methods for peanut and food allergies.

   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. 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:
- A discussion and justification of the foodborne hazard(s) to be studied as a food safety threat should be included in the Project Narrative.
- New methods may also include new technologies for the concentration, purification or detection of foodborne hazards for this program.
- Applications addressing the development of control strategies, identifying and promoting the development of economic and other incentives that lead to behavioral changes that promote food safety are encouraged.

2. **Improving Food Quality**
   Program Area Priority Code – A1361
   Program Area Priority Contacts – Dr. Jodi Williams (202) 720-6145 or
   jwilliams@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 14, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –
   Applicants must address one of the following sub-priorities:
   - 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 and/or sensory attributes of food.
   - Develop innovative technologies and materials for food processing, packaging, and food quality monitoring. Application of these technologies should be used to improve food security by reducing post-harvest losses and waste of foods and precisely indicating and communicating the shelf-life of foods.

   Program Area Priority Additional Information:
   - Post-harvest project applications that have a food safety component may be submitted, but the primary emphasis must be on improving food quality.
   - Applications focused on processing and packaging development are strongly encouraged to consider economic feasibility, sustainability, and other factors that might potentially inhibit adoption of these technologies.
   - Applications focused on post-harvest interventions are supported by this program.
   - This program does not support applications addressing animal feed trials, and plant and animal breeding projects to improve food quality.

3. **Understanding Antimicrobial Resistance**
   Program Area Priority Code: A1362
   Program Area Priority Contact – Dr. Mervalin Morant (202) 401-6602 or
   mmorant@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – August 17, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –

Applicants must address the following:

- Conduct research to improve our knowledge and understanding of the basic science that underpins the development and functionality of alternatives to traditional antimicrobials currently used in agriculture. This will mitigate the emergence of antimicrobial resistance in crops and animals or the spread of antimicrobial resistance across the food chain.

Program Area Priority Additional Information

- While development of vaccines that prevent certain diseases can be one way to decrease antimicrobial resistance, this program does not support research on the development of vaccines for controlling animal diseases. If your work focuses on vaccine development for animal diseases, you are encouraged to consider the Animal Health and Disease program area priority (A1221) in the "Animal Health and Production and Animal Products" program area in this Foundational RFA.
- The human health impact of alternative strategies on traditional antimicrobials must be considered. For example, strategies should not create selection pressure favoring the development of antimicrobial resistance to medically-relevant human antibiotics.

4. **Function and Efficacy of Nutrients**
Program Area Priority Code – A1341
Program Area Priority Contacts – Dr. Deirdra Chester (202) 401-5178 or
dnchester@nifa.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline – July 14, 2016 (5:00 p.m. Eastern Time)

Program Area Priority –
Applicants 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. .

Other Program Area Key Information applicable to ALL Food Safety, Nutrition, and Health Program priority areas:

- All applications must adhere to the requirements beginning in Part IV.
- Collaboration with international partners is encouraged where appropriate; however, applications must be submitted by eligible U.S. institutions. Applications may include

subcontracts to international partners or other institutions. Adequate justification for subcontracts to international partners is required with demonstration of the benefit to the U.S.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.
- Use of trans-disciplinary teams, including social and behavioral scientists and economists, is encouraged, where appropriate.
- Grants must include a data management plan that clearly describes how the data will be disseminated and accessible to the public.
- 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 RFA, applicants should consider applying to the AFRI Exploratory Program (http://nifa.usda.gov/funding-opportunity/afri-foundational-exploratory-research). Exploratory projects must be transformational and may include: 1) New and emerging innovative ideas that have high potential impact; 2) The application of new knowledge or new approaches to unsolved challenges that have high potential impact; 3) The development of tools required to promote a paradigm shift in the field; or 4) Rapid response to natural disasters and similar unanticipated events.

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

Background
This program area supports research on 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 production systems, and pasture, 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 feedstock crops for the sustainable production of biofuels, biopower, chemicals and other biobased products need to be integrated into these agro-ecosystem landscapes in ways that enhance, or not disrupt other production systems. Projects funded through this program area contribute use-inspired foundational knowledge needed for sustainable production of agro-ecosystems while retaining needed ecosystem services.

Healthy agro-ecosystems and the maintenance of supporting natural resources are essential to the sustained long-term productivity of agricultural goods and services. The sustainability of U.S. agriculture is threatened by the degradation and/or loss of ecosystem services[1] through natural processes or anthropogenic (human) interventions such as reduced biological diversity, water and air pollution by excess nutrients, and loss of soil quality. Emerging biomass feedstock crop systems need to be studied to assess their impact on crop rotation, agro-ecosystem management, soil nutrients, water availability and quality, and biodiversity.

Sustainable management of agro-ecosystems requires improved understanding of interactions among physical, chemical, and biological processes and their response to changing conditions. It requires scientific knowledge that integrates the complex interactions between management practices and natural processes in order to anticipate and avoid critical thresholds of irreversible damage or loss.

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[1] *Ecosystem services are the benefits to society from agro-ecosystems including carbon storage, water filtration, and habitat for wildlife and cultural values such as landscape views, and hunting and fishing.* Millennium Ecosystem Assessment http://www.unep.org/maweb/en/index.aspx, 2005

Research outcomes will model promising agricultural systems that have balanced human social needs[2] with natural systems to produce more food, bioenergy and biobased products in more sustainable ways, and contribute to foundational research that adds to the understanding of sustainable production of agro-ecosystems while retaining needed ecosystems services.

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, rangelands, and/or forests. All systems under study must be strongly justified in terms of importance to sustainability. Sustainability implies the interactions among societal, economic, and environmental, including productivity, dimensions working across disciplines, looking long-term across multiple scales, understanding responses in terms of resilience and adaptation, and on the synergies among responses. This program anticipates funding projects that reflect diverse spatial and temporal scales across geographic diversity.

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 (sub priorities 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).

In FY 2016, AFRI invites <u>Research Project</u> applications for <u>Standard, Conference, and FASE</u> <u>Grant types</u> relevant to the four priority areas of the Bioenergy, Natural Resources and Environment Program Area described below:

Letter of Intent not required for this Program Area
Total Program Funds – Approximately $15 million
Proposed Budget Requests –
- Standard Research 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 (Strengthening Standard, New Investigator, Seed, Equipment and Sabbatical) Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding the budgetary guidelines will not be reviewed.

Program Area Priorities – Each application must address one of the following four Program Area Priorities:
1. **<u>Nitrogen and Phosphorus Cycling</u>**
   Program Area Priority Code – A1401
   Program Area Priority Contacts – Dr. Nancy Cavallaro (202) 401-5176 or <u>ncavallaro@nifa.usda.gov</u>
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 21, 2016 (5:00 p.m. Eastern Time)

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[2] *ESCOP social science "gap analysis," and the NSF analysis (12/11) "Rebuilding the Mosaic," (http://www.nsf.gov/news/news_summ.jsp?cntn_id=122464), the framing of the NSF LTER (and other work at NSF) as coupled human/social and ecological systems, etc.*

Program Area Priority –
This Program Area Priority seeks projects that evaluate the physical and biogeochemical (including microbial) processes affecting the flow, fate and transport, transformation, movement, and storage of nitrogen (N) and phosphorus (P). The Nitrogen and Phosphorus Cycling Program encourages high-risk/high reward projects that demonstrate a transformative approach to the problem (not an incremental improvement over current practices) while also making a case for feasibility. This program seeks projects that offer new approaches to increasing the efficiency of nitrogen and/or phosphorous assimilation in plant and/or animal systems by at least 50% over current levels that may be measured by nutrient use efficiency criteria in the production value chain or by improvements in impaired natural resources.

Applicants must address one of the following:
- Management/conservation practices and/or processes, including multi-cropping, across soil-air-water interfaces that will lead to substantial improvements in nutrient use efficiency or improvements to impaired natural resources within a managed plant and/or animal production system. Applicants should focus on the interactions between the social and human dimensions with environmental and economic dimensions and must explain how a better understanding of the fundamental processes will help sustain ecosystem services.
- Foundational research that supports decision-support tools for assessment of ecosystem services including: 1) control technologies to mitigate nitrogen and phosphorus movement or impairment in plant and/or animal production systems; or 2) process-based models to assess nitrogen and phosphorus life cycles in actively managed agro-ecosystems, rangelands, and forests.

2. **Agro-ecosystem Management**
   Program Area Priority Code – A1451
   Program Area Priority Contacts – Dr. Michael Bowers (202) 401-4510 or mbowers@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 21, 2016 (5:00 p.m. Eastern Time)

Program Area Priority –
This Program Area Priority seeks projects that develop and evaluate innovative agro-ecosystem management practices and systems for their potential to enhance ecosystem services. The Agro-ecosystem Management Program encourages high-risk/high reward projects that demonstrate a transformative approach to the problem (not an incremental improvement over current practices) while also making a case for feasibility.

Applicants must address one of the following:
- The connection of system diversity to production system functionality, productivity, socioeconomic viability, sustainability, biodiversity, and the production of other ecosystem services. System diversity is defined here in a broad context to include natural resource diversity, genetic diversity, crop and/or landscape diversity over space and/or time, and/or species diversity in both the managed and unmanaged components of the agro-ecosystem. The focus can be at the field, farm or landscape level, however, the relevance of the project to management practices and systems must be made very clear.
- New approaches that significantly increase the output and/or value of at least three ecosystem services each compared with the current management system for the region.

Applicants are expected to select ecosystem services from at least two categories (provisioning, regulating, supporting or cultural). The approach may be genetic, management, technology or a combination.

3. **Cover Crops for Bioenergy and Biobased Products**
   Program Area Priority Code – A1412
   Program Area Priority Contacts – Dr. William Goldner (202) 401-1719 or
   <div align="center">wgoldner@nifa.usda.gov</div>
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 21, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –
   This Program Area Priority seeks projects that develop and evaluate the regional/sub-regional use and system management of new and innovative cover crops and/or double cropping systems specifically for use in the production of biofuels, biopower, or biobased products. The Cover Crops for Bioenergy and Biobased Products Program Area Priority encourages high-risk/high reward projects that demonstrate a transformative approach to the problem (not an incremental improvement over current practices) while also making a case for economic feasibility. The crops selected for study should have clear potential for harvest and use in the production of liquid transportation fuels (e.g. alternative aviation fuel), power, and/or non-food, non-feed biobased products, including, but not limited to: lubricants, chemicals, and absorbents. The approach may be genetic, management, technology or a combination.

   Applicants must address at least one of the following:
   - Managing and evaluating cover crops/double cropping systems to synchronize seed set to maximize seed yield at harvest of the secondary crop for use in bioenergy or bioproduct production.
   - Managing and evaluating cover crops/double cropping systems to maximize biomass/oil seed yield of the secondary crop for use in bioenergy or bioproduct production, without reducing yield or quality of primary crops.

   Program Area Priority Additional Information:
   - Projects that focus primarily on economics should apply instead to the Agricultural Economics and Rural Communities (AERC) Program Area in this RFA.

4. **Socioeconomic Implications and Public Policy Challenges of Bioenergy and Bioproducts Market Development and Expansion**
   Program Area Priority Code – A1413
   Program Area Priority Contacts – Dr. Fen Hunt (202) 720-4114 or fhunt@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 21, 2016 (5:00 p.m., Eastern Time)

   Program Area Priority –
   Emerging bioenergy markets and advances in the development of various bioproducts promise many opportunities and challenges. The bioenergy and bioproducts industries have created new economic opportunities for rural communities with the potential to strengthen and diversify our agricultural and forestry sectors. These opportunities may also come at a cost in terms of environmental impacts, land-use change, and other unintended effects or unaccounted for

consequences. Additionally, there is limited understanding of how aggressive targets for and the integration of advanced biofuels affecting our economy. As with all technological innovations and growth of new industries, questions must be asked as to what are the full range of short- and long-term costs and benefits or other societal implications of such expansion. By improving and integrating socioeconomic approaches to enhance the understanding of the bioenergy and bioproducts supply chain, while taking into consideration the value of ecosystem services, we can effectively provide science-based knowledge informing policy choices on the bioeconomy systems.

Applicants must address one of the following:
- identify best practices that contribute to the economic, social, environmental sustainability of emerging bioenergy and bioproduct markets;
- address various policy or socio-economic dimensions of bioenergy or bioproducts systems, e.g., landscape-based accessibility to land, tradeoffs in ecosystem services, food and energy security, or rural economic development;
- explore policy or socioeconomic implications of the bioeconomy;
- examine the forces or barriers to the expansion of bioenergy or bioproducts production;
- design or evaluate policy instruments to stimulate market expansion and development;
- develop policies to address the prevention or mitigation of external or negative consequences of bioenergy or bioproducts markets;
- assess other socioeconomic issues and public policy challenges, such as:
  - technology adoption; social acceptability; income and welfare effects;
  - implications for small-scale and minority producers;
  - effects on rural economic diversification and development;
  - public health, employment and human capital issues;
  - the role of agricultural cooperatives;
  - up- or down-stream supply-chain risk and uncertainty management;
  - linkages and market dynamics among food, feed, fiber, biofuels, and bioproducts; or
  - the U.S. role in global food, feed, or other bioproduct markets.

Project outcomes are intended to strengthen science-based knowledge, informing policy- or decision-makers in the emerging bioeconomy.

Program Area Priority Additional Information:
- Projects must show direct relevance to a current or projected regional bioenergy system for advanced liquid transportation fuels or biobased products. See examples at http://nifa.usda.gov/resource/sustainable-advanced-biofuels-across-united-states.

Other 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.
- Collaboration with international partners is encouraged where appropriate; however, applications must be submitted by eligible U.S. institutions. Applications may include subcontracts to international partners or other institutions. Adequate justification for subcontracts to international partners is required with demonstration of the benefit to the U.S.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged. This program encourages

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 highly encouraged 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) 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 are highly encouraged to 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 are encouraged to focus on developing and accessing models and approaches for applying adaptive management strategies for more efficient and faster responses to shifting climate and other unforeseen natural or man-made events that affect agriculture and food production.
- 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.
- Logic models are encouraged and may be useful for clarification of project goals, objectives, and expected outputs and impacts.

e. Agriculture Systems and Technology

Background
This Program Area emphasizes the interrelationships between agricultural system components to develop the next generation of engineered systems, products, processes, and technologies. It blends biological, physical, and social sciences. This approach will lead to sustainable, competitive, and innovative solutions for United States and global agriculture and food systems, encompassing both conventional and organic production. Some key disciplinary contributors may include: engineering; physics; chemistry; microbiology; materials sciences; soil science; animal and plant sciences; veterinary medicine; genetics; social sciences; agricultural economics; behavioral sciences; food safety; and toxicology. 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).

In FY 2016, AFRI invites <u>Research Project</u> applications for <u>Standard, Conference, and FASE Grant types</u> relevant to the three priority areas of the Agriculture Systems and Technology Program Area described below.

Letter of Intent not required for this Program Area
Total Program Funds – Approximately $11 million
Proposed Budget Requests –
- 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 (Strengthening Standard, New Investigator, Seed, Equipment and Sabbatical) Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding the budgetary guidelines will not be reviewed.

Program Area Priorities – Each Application must address at least one of the following three Program Area Priorities:

1. **Agricultural Engineering**
   Program Area Priority Code – A1521
   Program Area Priority Contacts – Dr. Daniel Schmoldt (202) 720-4807 or
   dschmoldt@nifa.usda.gov, Ms. Charlotte Kirk Baer (202)
   720-5280 or [cbaer@nifa.usda.gov,](mailto:cbaer@nifa.usda.gov) and Dr. Steven
   Thomson (202) 401-6301 or
   steven.j.thomson@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 13, 2016 (5:00 p.m. Eastern Time)

   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 economical structures, technologies, machines, processes, and systems*. Some broad research emphasis areas include, but are not limited to:
   - Enable engineering, 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;
   - 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 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.

2. **Bioprocessing and Bioengineering**
   Program Area Priority Code – A1531
   Program Area Priority Contacts – Dr. Daniel Schmoldt (202) 720-4807 or dschmoldt@nifa.usda.gov, Ms. Charlotte Kirk Baer (202) 720-5280 or cbaer@nifa.usda.gov and Dr. Steven Thomson (202) 401-6301 or steven.j.thomson@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 13, 2016 (5:00 p.m. Eastern Time)

> **MUST READ:** This year, the AFRI Foundational program is piloting "Distributed Peer Review," a modified peer-review process for three select program area priorities, which include Bioprocessing and Bioengineering. Submission of a Standard, Strengthening Standard or New Investigator grant application for this program area priority will imply your willingness to participate in the modified process as outlined in Part V, B., of this RFA. Please read Part V, B., thoroughly before deciding to submit a Standard, Strengthening Standard or New Investigator grant application to Bioprocessing and Bioengineering in 2016.

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 is defined as *the application of scientific and mathematical principles to practical ends such as the design, manufacture, and operation of efficient and economical structures, technologies, machines, processes, and systems*. 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; or
- Refine the 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.

3. **Nanotechnology for Agricultural and Food Systems**
   Program Area Priority Code – A1511
   Program Area Priority Contacts – Dr. Hongda Chen (202) 401-6497 or hchen@nifa.usda.gov, Dr. Daniel Schmoldt (202) 720-4807 or dschmoldt@nifa.usda.gov and Dr. Mervalin Morant (202) 401-6602 or mmorant@nifa.usda.gov

Letter of Intent not required for this Program Area Priority
Application Deadline – July 13, 2016 (5:00 p.m. Eastern Time)

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:

- Novel uses and high value-added products of nano-biomaterials of agricultural and forest origins for food and non-food applications (projects involving intentional addition of engineered nanoparticles or nanostructured materials into foods for human consumption are not being solicited this year);
- Nanoscale-based sensing mechanisms and smart sensors for reliable and cost-effective early detection of insects, diseases, pathogens, chemicals, and contaminants;
- Monitoring physiological biomarkers for optimal crop or animal productivity and health;
- Intelligent and precision agriculture technologies for applications of agricultural inputs (e.g., fertilizer and chemicals) and water resources;
- 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;
- Assessment and analysis of the perceptions and social acceptance of nanotechnology and nano-based food or non-food products by the public and agriculture and food stakeholders, using appropriate social science tools; 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/). 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, and synthetic biology.
- Applications, especially those with potential near term commercial impact, are encouraged to include economic analyses of anticipated benefits to agriculture, food, and society.
- 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) of this RFA.

Other Program Area Key Information applicable to <u>ALL</u> Agriculture Systems and Technology priority areas:

- 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 are not limited to precision agriculture, cyber-physical systems, information management, and nanotechnology. These technologies should be smarter, more user friendly, and readily adapt 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, but with a focus on their application to agricultural and food systems.
- All applications must adhere to the requirements beginning in Part IV.
- Collaboration with international partners is encouraged where appropriate; however, applications must be submitted by eligible U.S. institutions. Applications may include subcontracts to international partners or other institutions. Adequate justification for subcontracts to international partners is required with demonstration of the benefit to the U.S**.**
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.
- 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.

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 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 research 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 priorities of the 2014 Farm Bill: D. Bioenergy, Natural Resources, and Environment (sub priorities ii. biological and physical bases of sustainable production system; and v. forestry); and F. Agriculture Economics and Rural Communities – Markets, trade and policy (sub priorities 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).

In FY 2016, AFRI invites Research Project and Integrated Project applications for Standard, Conference and FASE Grant types relevant to the five priority areas of the Agriculture Economics and Rural Communities Program Area described below. Integrated projects must include a research component and at least one of the following: education and/or extension.
Only Research Project applications are invited in the Program Area Priorities 1, 2, and 3 below, whereas Integrated Project applications are invited only in the Program Area Priority 4. Program Area Priority 5 invites either Research only or Integrated Project applications.

Letter of Intent not required for this Program Area
Total Program Funds – Approximately $17 million
Proposed Budget Requests –
- Standard Grants, Standard Strengthening Grants and New Investigator Grants must not exceed **$500,000 total per project (including indirect costs) for project periods of up to 4 years**.
- Standard Grants, Standard Strengthening Grants and New Investigator Grants for Program Area Priority, Behavioral and Experimental Economic Applications for Agri-Environmental

Policy Design (A1652) must not exceed **$250,000 <u>total per project</u> (including indirect costs) for project periods up to 2 years**.

- Conference and FASE (Strengthening Standard, New Investigator, Seed, Equipment and Sabbatical) Grants must adhere to the guidelines outlined beginning in Part II, D.
- Requests exceeding the budgetary guidelines will not be reviewed

Program Area Priorities for <u>Research Projects</u> – Applicants must address one of the following three Program Area Priorities: (NOTE: Refer to Part II, C., for Research Project Type definitions and Part III, A., for eligibility information).

1. **<u>Economics, Markets and Trade</u>**
   Program Area Priority Code – A1641
   Program Area Priority Contact – Dr. Robbin Shoemaker (202) 720-5468 or
   rshoemaker@nifa.usda.gov and Dr. Fen Hunt (202) 720-4114 or fhunt@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – August 11, 2016 (5:00 p.m. Eastern Time)

MUST READ: This year, the AFRI Foundational program is piloting "Distributed Peer Review," a modified peer-review process for three select program area priorities, which includes Economic, Markets, and Trade (A1641). Submission of a <u>Standard</u>, <u>Strengthening Standard</u>, or <u>New Investigator</u> grant application to this program area priority will imply your willingness to participate in the process as outlined in Part V, B., of this RFA. Please read Part V, B., thoroughly before deciding to submit a Standard, Strengthening Standard or New Investigator grant application to Economic, Markets, and Trade (A1641) in 2016.

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. The Program Area Priority scope includes, but is not limited to:

- The economics of coexistence--strategies and models of coexistence of multiple crop technologies throughout the supply chain;
- What are the differences in production costs and scale economies among different sized organic producers and what are the sources of those scale economies? Do the differences in scale economies and source vary between conventional and organic producers?
- Behavioral economics approaches to address consumer financial decision making, consumption, or savings behavior, producer production and technology adoption behavior, and policy design and implementation, (for environmental issues, see below: Pilot program on Behavioral and Experimental Economics for Agri-Environmental Policy Design, A1652);
- 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 economics of food waste and loss within the supply chain, i.e., processing, transportation, marketing, and consumption and the design of incentive mechanism 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 scientific effort, outputs and outcomes for effective quantitative and qualitative research evaluation; or
- Economics implications of changes in trade and immigration policy.

2. **Environmental and Natural Resource Economics**
   Program Area Priority Code – A1651
   Program Area Priority Contact – Dr. Fen Hunt (202) 720-4114 or fhunt@nifa.usda.gov and
   Dr. Robbin Shoemaker (202) 720-5468 or
   rshoemaker@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – August 18, 2016 (5:00 p.m. Eastern Time)

   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. Research topics 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.

3. **Behavioral and Experimental Economic Applications for Agri-Environmental Policy Design**
   Program Area Priority Code – A1652
   Program Area Priority Contact –Dr. Robbin Shoemaker (202) 720-5468 or
   rshoemaker@nifa.usda.gov and Dr. Daniel Hellerstein (202)
   694-5613 or danielh@ers.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – July 14, 2016 (5:00 p.m. Eastern Time)

   Program Area Priority –
   The pilot program for Behavioral Economic Applications for Environmental and Natural Resource Economics is a new program jointly funded by NIFA and the Economic Research Service,

(ERS). Awards funded by each agency will be administered by the respective agencies but will be jointly reviewed (see below).

USDA administers a number of programs designed to enhance the provision of ecosystem services from the nation's rural and agricultural lands. These programs all depend on voluntary participation by rural landowners. USDA agencies administering programs that effect the provision of ecosystem services face the complex policy challenge of developing program options that influence participation choices and improve program effectiveness in the face of declining agency budgets. They also face incomplete information on the effects of program features on participation and performance measures. For example, USDA provides incentives for farmers to adopt conservation practices, yet many farmers do not participate.

Behavioral and experimental economics (BE) can provide rich insights into factors influencing individual choices, including perceived risk, the description of options (referred to as framing), the decision or choice environment, and the propensity of people (including farmers) to over-discount the future consequences of current decisions such as the choice of payment schedules.

Greater insight on what drives decisions about conservation practice adoption could help identify circumstances in which conservation incentives are most likely to make a difference, leading to better use of limited resources available for conservation incentives. Drivers can include field-specific conservation needs, conservation program incentives, the characteristics of farms, and the behavioral tendencies of farmers. These insights will feed directly into USDA efforts to document and enhance conservation program benefits.

The joint initiative seeks to fund research that will apply behavioral and experimental techniques to agri-environmental issues. Research can involve laboratory or field experiments. For example, field experiments in collaboration with government (e.g., USDA) agencies, that systematically vary a policy modification in order to create treatment and control groups, could be especially productive.

This program area priority is intended to advance the application of BE to conservation policy design and implementation. This program will emphasize:
- The creation and development of new and novel means of applying BE to agri-environmental concerns, and
- The enhancement and determination of "best practices" of BE for use with conservation policy design and implementation.

Program Area Priority Additional Information
- Proposed Budget must not exceed $250,000 (including indirect costs) for the project periods up to 2 years.
- Individuals from ERS are ineligible to submit applications to this program area priority.
- All applications are submitted to NIFA via Grants.gov and subject to standard AFRI submission, review and funding procedures. Applications will be reviewed together in a single panel, and ERS and NIFA will independently fund grants.

Program Area Priority for <u>Integrated Projects only</u> – Applicants must address the following Program Area Priority that integrates research with extension and/or education: (NOTE: Refer to Part II, C., for Integrated Project Type definitions and Part III, A., for eligibility information).

4. <u>**Small and Medium-Sized Farms**</u>
    Program Area Priority Code – A1601
    Program Area Priority Contact – Dr. Denis Ebodaghe (202) 401-4385 or
                                    debodaghe@nifa.usda.gov; and Dr. Jill Auburn
                                    (202)-720-2635 or jauburn@nifa.usda.gov
    Letter of Intent not required for this Program Area Priority
    Application Deadline – August 25, 2016 (5:00 p.m. Eastern Time)

    Program Area Priority –
    This Program Area Priority focuses 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-sized dairy, poultry, livestock, crop, forestry, and other operations. The Program Area Priority scope includes, but is not limited to:
    - Research and 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;
    - Research and 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;
    - Research on 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;
    - Research and 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 are not limited to production contracts, cooperative marketing, local/regional marketing (direct or intermediated), and engaging in export markets.

Program Area Priority for <u>Research only or Integrated Projects</u> – Applicants must address the following Program Area Priority. The integrated projects must address research with extension and/or education: (NOTE: Refer to Part II, C., for Integrated Project Type definitions and Part III, A., for eligibility information).

5. <u>**Innovation for Rural Entrepreneurs and Communities**</u>
    Program Area Priority Code – A1661
    Program Area Priority Contact – Dr. Robbin Shoemaker (202) 720-5468
                                    rshoemaker@nifa.usda.gov, Dr. Jill Auburn (202) 720-2635
                                    or jauburn@nifa.usda.gov
    Letter of Intent not required for this Program Area Priority
    Application Deadline – August 31, 2016 (5:00 p.m. Eastern Time)

Program Area Priority –
Rural businesses and communities in the United States are facing new and emerging opportunities and challenges arising from, for example, bioenergy and natural gas developments, dramatic demographic shifts, and advances in technology and communication. This Program Area Priority is designed to support rigorous conceptual and theoretical research and extension activities to develop and apply new knowledge to advance economic opportunity and improve the well-being of people involved in agriculture, food systems and rural communities. Projects may evaluate the institutional, sociological, or economic factors affecting decision making and the adoption of private strategies and public policy options to enhance the well-being and resilience of agricultural and food businesses and 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 and Mathematics (STEM/STEAM), in rural areas. This program focuses mainly on entrepreneurs and small businesses (2-99 employees) who are important sources of employment, and/or on other issues "beyond the farm gate" (for projects that focus mainly on farms, see program area priority, Small and Medium-Sized Farms, A1601).

The emphasis areas of this Program Area Priority include, but are not limited to:
- Improve the understanding of the factors and conditions that enhance economic opportunities for food, agricultural and rural businesses through tools from the various social sciences, (i.e., sociology, demography, economics, geography, etc.);
- 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? or
- Examine the role of regional and multi-agency collaborative strategies in addressing rural economic development, (e.g., Promise Zones, Great Regions, Partnership for Sustainable Communities, the Jobs and Innovation Accelerator Challenge program, Stronger Economies Together, and other regional strategies.) 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.

Other 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.

- Collaboration with international partners is encouraged where appropriate; however, applications must be submitted by eligible U.S. institutions. Applications may include subcontracts to international partners or other institutions. Adequate justification for subcontracts to international partners is required with demonstration of the benefit to the United States.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly 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.
- All proposed Integrated projects must include research and at least one other function (i.e., education, extension, or both)
- 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 proposals for new technologies and business development.
- Applications that propose to develop, test and/or apply decision-support aids or tools are welcomed.

g. Critical Agricultural Research and Extension (CARE)

Background
This program area addresses critical challenges and opportunities 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.

In FY 2016, AFRI invites Integrated Research and Extension Project applications for Standard and FASE (Strengthening Standard and New Investigator) Grant types relevant to the Farm Bill priorities of the CARE Program Area as described below. In addition, AFRI invites either Integrated Research and Extension or Research project applications for Standard and FASE (Strengthening Standard and New Investigator) Grant types that address one of the Commodity Board priorities listed below.

Letter of Intent not required for this Program Area
Total Program Funds – Approximately $3 million

Proposed Budget Requests –
- Standard Grants, Strengthening Standard Grants and New Investigator Grants must not exceed **$300,000 total per project (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.

Program Area Priority Code – A1701
Program Area Priority Contact – Dr. Mary Purcell-Miramontes, (202) 401-5168 or
                              mpurcell@nifa.usda.gov and Ms. Charlotte Kirk Baer (202)
                              720-5280 or cbaer@nifa.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline – July 14, 2016 (5:00 p.m. Eastern Time)

Program Area Priorities –
Applications must develop and implement solutions to critical stakeholder-identified problems associated one or more of the Farm Bill priorities listed below. Emphasis will be placed on achieving results that 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 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 identified above, NIFA and various commodity boards are seeking to co-fund Research Projects or Integrated Research and Extension Projects relevant to the respective commodity board. Each application must address one of the following priorities:
- Develop near-term solutions that can be implemented by peanut producers to mitigate drought, improve water use efficiency and improve environmental footprint of peanut production using approaches such as conventional breeding to develop drought tolerant varieties or the development of agronomic methods that reduce water use while maintaining yield and quality (**National Peanut Board** representative: DeMarquine Wilson, dhwilson@nationalpeanutboard.org).
- Evaluate compounds as alternatives to antibiotics to treat and prevent disease in pork production (**National Pork Board** representative: Jennifer Koeman, jkoeman@pork.org).
- Identify factors associated with potato soils, including beneficial organisms, that can be fostered to reduce the impact of soil borne pathogens and plant-parasitic nematodes; develop best management practices for fumigation or other treatments, based on the biological

profile and physical characteristics of soil; or develop effective and economically viable alternative management strategies that can reduce the impact of soil borne pathogens and nematodes, including target-specific pesticides (**Washington State Potato Commission** representative: Matthew Blua, mblua@potatoes.com).

Applicants seeking funding through these commodity board co-funded priorities must provide a letter of support from the relevant commodity board directly to the NIFA Program Contact within 60 calendar days after the application submission deadline. To obtain a letter of support or for further questions, please contact the appropriate commodity board representative listed above. 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.

Other Program Area Requirements:
- 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.
- 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.

h. Exploratory Research Program

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 develop proof of concept for untested ideas that will lead to creative and positive disruption of the agricultural norm.

Projects must be potentially transformational 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.

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.

In FY 2016, AFRI invites <u>Research Project</u> applications for <u>Standard Grant type</u> relevant to the priority of the Exploratory Program Area described below.

Letter of Intent required for this Program Area
Total Program Funds – Approximately $2 million
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.

Program Area Code – Provided upon invitation to submit the proposal after acceptance of the Letter of Intent.
Program Area Code Name – Exploratory Research Program
Program Area Contact – 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
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 – Full proposal submission is dependent on the encouragement to submit a proposal based on assessment of the Letter of Intent and availability of funds. Upon receiving encouragement to submit a full proposal, applicants must submit the proposal within 60 days.

Program Area Priorities –
Applications must be relevant to one of the six Farm Bill priorities for AFRI:
   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; or
   F. Agriculture Economics and Rural Communities.

Other 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.
- Collaboration with international partners is encouraged where appropriate; however, applications must be submitted by eligible U.S. institutions. Applications may include subcontracts to international partners or other institutions. Adequate justification for subcontracts to international partners is required with demonstration of the benefit to the U.S.
- Applications from, and collaborations with, small to mid-sized institutions, minority serving institutions, and/or EPSCoR states are strongly 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.
- A budget justification and curriculum vitae of the primary and collaborating investigators are required.
- 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.
- It is anticipated that beginning in FY 2017, the Exploratory Research Program Area will only accept new applications for review and will not accept resubmitted applications.

Program Area Additional Information:
Review criteria for the Exploratory Research Program 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

In FY 2016, approximately $130 million will be made available to support new awards within the AFRI Foundational Program. The amount available to support the AFRI program in FY 2016 will be approximately $350 million. Of this amount, 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 anticipated that no less than 15 percent of the FY 2016 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.

In FY 2016, approximately $130 million will be available to support the AFRI Foundational Program Areas that are designed to help solve critical problems across the United States for projects up to 5 years (FY 2016 – FY 2020).

Funding of projects beyond FY 2016 is contingent upon the availability of funds, and the best interests of the U.S. government. Funding in FY 2016 does not obligate NIFA to any future-year commitments.

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

Awards issued as a result of this RFA will have designated the Automated Standard Applications for Payment System (ASAP), operated by the Department of Treasury's Bureau of the Fiscal Service, as the payment system for funds. For more information see http://fms.treas.gov/aboutfms/index.html.

B. Types of Applications

In FY 2016, 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 competitively using the selection process and evaluation criteria described in Part V—Application Review Requirements.

(2) Renewal application. 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). Renewal applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in the appropriate area to which they are assigned, and will be reviewed according to the same evaluation criteria 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). Resubmitted applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in appropriate area to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications. A renewal application that was submitted previously but not funded and is being resubmitted is considered a 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 http://nifa.usda.gov/afri-request-applications/Project_Types_NIFA.pdf. <u>Please note</u> that ONLY program area priorities within the Agriculture Economics and Rural Communities Program Area and the CARE Program Area in this RFA (see PART I, C) are soliciting integrated projects.

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 http://nifa.usda.gov/afri-request-applications/Grant Type - FY 2016 AFRI RFA.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 the FY 2016 RFA. Grant recipients may subcontract to organizations not eligible to apply provided such organizations are necessary for the conduct of the project. An applicant's failure to meet an eligibility criterion by the time of an 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.

1) **Research Projects**
   Eligible applicants for Research 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.

   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) **Hispanic-serving Agricultural Colleges and Universities**
   Section 7101 of the Food, Conservation, and Energy Act of 2008 (Pub. L. 110-246) amended section 1404 of NARETPA (7 U.S.C. 3103) to create a definition for a new group of cooperating institutions: Hispanic-serving Agricultural Colleges and Universities (HSACUs). HSACUs are colleges and universities that qualify as Hispanic-serving Institutions (HSIs) and offer associate, bachelors, or other accredited degree programs in agriculture-related fields. HSACUs do not include 1862 land-grant institutions.

   Pursuant to section 406 of the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA) (7 U.S.C. 7626), which authorized the Integrated Research, Education, and Extension Competitive Grant Program, all four-year HSIs are eligible to apply for

integrated projects as identified in the FY 2016 AFRI RFA. Two-year HSIs may also be eligible to apply but only if the institution has been certified as a HSACU for the fiscal year in which funding is being provided.

A list of the institutions certified and therefore eligible to apply as HSACUs for grants under FY 2016 RFAs, including this RFA, will be made available at http://nifa.usda.gov/resource/official-list-hispanic-serving-agricultural-colleges-and-universities-hsacu. Institutions appearing on this list are granted HSACU certification by the Secretary for the period starting October 1, 2015, and ending September 30, 2016. Certifications are valid for FY 2016 only. Additional questions on HSACU eligibility can be emailed to hsacu@nifa.usda.gov.

4) **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
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, E), the applicant must submit to NIFA, documentation supporting the request. This documentation must be submitted as part of the requestor's Letter of Intent and the application package, and must be received by NIFA 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 qualify as a minority group for the purpose of receiving a Strengthening Grant under this program**.**

The Request for Determination as a minority-serving institution must be attached with the Letter of Intent and the final application. The following information must be provided 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.

All institutions grouped under one main campus as listed in Table 1, following Part VIII, 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 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 and the completed application.

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 VIII, E for the definition of applied research.

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. Centers 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 be recognizing and providing priority in the receipt of funding to applications from "centers of excellence" that have been established for purposes of carrying out research, extension, and education activities relating to the food and agricultural sciences. In July of 2014, NIFA held listening sessions and accepted written comments from stakeholders to inform NIFA's implementation of the centers of excellence provision. Information from the webinars and a summary of the input gathered are available on NIFA's website at http://nifa.usda.gov/centers-excellence.

A center of excellence is composed of 1 or more of the following entities that provide financial or in-kind support to the center of excellence. Therefore, an eligible applicant who wishes to be considered as a center of excellence must be one of the following entities that provides financial or in-kind support to the Center being proposed, as described in the grant application.
(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 2 or more of the entities described in (A) through (H).

Only standard grant and Coordinated Agricultural Project (CAP) grant applications may be considered for COE designation. See Part IV, C., of this RFA for additional requirements that eligible applicants must meet to be considered for center of excellence.

PART IV—APPLICATION AND SUBMISSION INFORMATION

A. Letter of Intent (LOI) Instructions

Exploratory Research Program Area within this RFA requires a Letter of Intent and when required, a Letter of Intent is a prerequisite for submission of an application. Refer to the Program Area Description for the Exploratory Research in Part I, C., for Letter of Intent deadline. 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 an overview of the Grants.gov application process see http://www.grants.gov/web/grants/applicants/apply-for-grants.html.

New Users of Grants.gov

Prior to preparing an application, we recommend that the Project Director/Principal Investigator (PD/PI) first contact an Authorized Representative (AR, also referred to as Authorized Organizational Representative or AOR) 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), then the one-time registration process must be completed **PRIOR** to submitting an application. It can take as long as 2 weeks to complete the registration process so it is critical to begin as soon as possible. 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".

Steps to Obtain Application Package Materials

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-005843

in the appropriate box and click "Download Package." From the search results, click "Download" to access the application package.

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 a.m. - 9 p.m. Eastern Time). Get help now!

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** needed to prepare 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 (e.g., PDF) in Part III, section 3., of the guide. <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 that 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 a.m. – 5 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 Section 2.18 of the NIFA Application Guide which provides that the applicant's electronic signature on the SF-424 affirms its agreement with Federal representations and assurances (e.g., Prohibition against FY 16 Appropriations Act Funding under Grants and Cooperative Agreements with Entities Requiring Certain Internal Confidentiality Agreements…).

2. SF 424 R&R Project/Performance Site Location(s)
Information related to the questions on this form is dealt with in detail in Part V, 3., of the NIFA Grants.gov Application Guide.

3. R&R Other Project Information Form
Information related to the questions on this form is dealt with in detail 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 Priorities in this RFA. See Part V., 4.7., of NIFA Grants.gov Application Guide for further instructions and a link to the required form. If relevant, applicants also 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.

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 (<u>containing the previous proposal number in the first line</u>) 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) Project Narrative
 (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. 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. A description of the activities proposed and the sequence in which the activities are to be performed;
  2. Methods to be used in carrying out the proposed project, including the feasibility of the methods;
  3. Expected outcomes;
  4. Means by which results will be analyzed, assessed, or interpreted;
  5. How results or products will be used;
  6. Pitfalls that may be encountered;
  7. Limitations to proposed procedures;
  8. A full explanation of any materials, procedures, situations, or activities related to the project that may be hazardous to personnel, along with an outline or precautions to be exercised to avoid or mitigate the effects of such hazards; and
  9. A timeline for attainment of objectives and for production of deliverables that includes annual milestones with specific, measurable outcomes.

➢ *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. In some Program Area Priorities require all three functions of the agricultural knowledge system.
  • 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 Integrated Projects that are suitable for 4-H audiences and stakeholder groups while meeting identified program priorities. The 4-H Youth Development is the programmatic outreach of the Land Grant Universities and Institutions to our youngest citizens in their communities and provides opportunities for youth to develop skills, practical knowledge, and wisdom with an emphasis on practical application of knowledge or "learning by doing." By engaging 4-H in AFRI projects, applicants engage young people as citizen scientists; increase their awareness of the role of agriculture; and prepare young people for higher education and the 21st century work environment. 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://www.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 applications 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**. **Required for all Integrated Project applications. Encouraged for Research Projects. 2-Page Limit**. 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 http://nifa.usda.gov/resource/integrated-programs-logic-model-planning-process

3) Management Plan – **PDF Attachment. Required for Integrated Project Grants. Encouraged for Research Projects. 3-Page Limit.** 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. Required for Research Project and Integrated Project Grants. 2-Page Limit.** 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 must not exceed the two-page limit and should contain the following components depending on the type of research being conducted.

a. Expected Data Type
Describe the type of data (e.g. digital, non-digital) and how they will be generated (lab work, field work, surveys, etc.). Are these primary or metadata?

b. Data Format
For scientific 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 appropriate for the type of research conducted. Regardless of the format used (notebook, samples, images, spreadsheet, etc.), that data set should contain enough information to allow independent investigators to understand, validate, and use the data.

c. Data Storage and Preservation

Scientific 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 – see Part III, B.

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

Information related to the questions on this form is dealt with in detail in Part V, 5., of the NIFA Grants.gov Application Guide. This section of the Guide includes information about the people who require a 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.

   The Conflict of Interest list <u>should not </u>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. However, NIFA strongly encourages applicants to provide the requested information to help NIFA identify and address any inequities based on gender, race, ethnicity, or disability of its proposed PDs/PIs and co-PDs/PIs. Information not submitted will seriously undermine the statistical validity, and therefore the usefulness, of information received from others. The information you submit will be kept confidential and will be used only for tracking and statistical purposes necessary to meet the demands of the agency and will not be part of the review process.

6. R&R Budget
Information related to the questions on this form is dealt with in detail 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. The same level of details required to be provided for Federal funds should be provided for any required matching. 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 OMB Circular A-21 (2 CFR Part 220), Cost Principles for Educational Institutions, 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 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 all years 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 (the standard rate is $77.00 per hour), 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 signed by the Authorized Representative 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 USDA 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.

If a funded project 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.

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.

The value of applicant contributions to the project shall be established in accordance with applicable cost principles. Applicants should refer to OMB Circular A-21 (2 CFR Part 220), Cost Principles for Educational Institutions, for further guidance and other requirements relating to matching and allowable costs.

7. <u>Supplemental Information Form</u>
Information related to the questions on this form is dealt with in detail 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). <u>It is extremely important that the Program (Area Priority) Code Name and Program (Area Priority) Code are spelled correctly and match this RFA.</u> 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**. 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

Prior to electronic submission of the application via Grants.gov, it is strongly recommended that an administrative review be conducted to ensure that an application complies with all application preparation instructions. An application checklist is included in Part VII, of the NIFA Grants.gov Application Guide to assist with this review.

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

1. **Letter of Intent**
   The Letter of intent 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.

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.

We send email correspondence to the AR regarding the status of submitted applications. Therefore, applicants are strongly encouraged to provide accurate e-mail 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 applicable 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, this number should be cited 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 (or 42.857 percent of total direct costs) under each award. Therefore, when preparing budgets, you should limit your request for 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 http://nifa.usda.gov/indirect-costs for indirect cost options.

Funds made available for grants under the AFRI program shall not be used for the construction of a new building or facility or the acquisition, expansion, remodeling, or alteration of an existing building or facility (including site grading and improvement, and architect fees).

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.

See Part V., Section 4.12. of the NIFA Grants.gov Application Guide (Field 12 on the Form) for instructions regarding mandatory Felony Convictions or Tax Delinquent Status.

<u>Multiple submissions</u>
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 2-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 technically evaluates applications that meet these requirements, using either a review panel or, for <u>only</u> three select program area priorities in the <u>Foundational Program</u>, the Distributed Peer Review process. Detailed application review requirements, as well as a description of the Distributed Peer Review process are outlined at <u>Review_Criteria_NIFA.docx</u>.

This year, the AFRI Foundational program is piloting a modified peer-review process, Distributed Peer Review, for three select program area priorities (see below). The National Science Foundation piloted this same process in 2014, with NIFA participation (see <u>Science Insider</u>).

1. Agriculture Systems & Technology – Bioprocessing & Bioengineering (A1531);
2. Animal Health and Production and Animal Products - Tools and Resources for Animal Breeding, Genetics, and Genomics (A1201); and
3. Agriculture Economics and Rural Communities - Economics, Markets and Trade (A1641).

Submission of a <u>Standard, Strengthening Standard or New Investigator grant</u> application to any of these three program area priorities will imply your willingness to participate in the process. Please note that conference, seed, sabbatical, and equipment grant applications will not be part of this pilot, so if submitting one of those project types, you will <u>not</u> be participating in this process, and your application will be reviewed using AFRI standard peer-review mechanism.

NOTE: This is a pilot test of an alternative approach to application review. It applies only to the program area priorities listed above and only for applications submitted to the FY 2016 RFA. If you do not wish to have your applications reviewed by the approach described above, please do not submit an application to any of the three listed program area priorities in 2016.

For those PDs who wish to participate in this pilot test and who would like more information about the process, see <u>https://nifa.usda.gov/resource/distributed-peer-review-pilot-foundational-program</u>.

B. Evaluation Criteria

Detailed evaluation criteria for each project types, grant types, exploratory projects and center of excellence are outlined at <u>Review_Criteria_NIFA.docx</u>.

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 <u>http://www.nifa.usda.gov/business/competitive_peer_review.html</u> 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 on a one time basis, with updates on an as needed basis. This requirement is part of the responsibility determination 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 preaward 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 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:

(1) Legal name and address of performing organization or institution to which the director has issued an award under the terms of this request for applications;

(2) Title of project;

(3) Name(s) and institution(s) of PDs chosen to direct and control approved activities;

(4) Identifying award number and the Federal Agency Identification Number assigned by NIFA;

(5) Project period, specifying the amount of time NIFA intends to support the project without requiring recompetition for funds;

(6) Total amount of financial assistance approved for the award;

(7) Legal authority(ies) under which the award is issued;

(8) Appropriate Catalog of Federal Domestic Assistance (CFDA) number;

(9) Applicable award terms and conditions (see http://www.nifa.usda.gov/business/awards/awardterms.html to view NIFA award terms and conditions);

(10) Approved budget plan for categorizing allocable project funds to accomplish the stated purpose of the award; and

(11) Other information or provisions deemed necessary by NIFA to carry out its respective awarding activities or to accomplish the purpose of a particular award.

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
Please 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 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
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 Liang-Shiou Lin (202) 401-5045; llin@nifa.usda.gov Mary Purcell-Miramontes (202) 401-5168; mpurcell@nifa.usda.gov Mathieu Ngouajio (202) 401-4895;mngouajio@nifa.usda.gov Robert Nowierski (202) 401-4900; rnowierski@nifa.usda.gov Jeffrey Steiner (202) 734-1067; jeffrey.steiner@nifa.usda.gov
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
Food Safety, Nutrition, and Health	Deirdra Chester (202) 401-5178; dnchester@nifa.usda.gov Mervalin Morant (202) 401-6602; mmorant@nifa.usda.gov Isabel Walls (202) 401-6357; iwalls@nifa.usda.gov Jodi Williams (202) 720-6145; jwilliams@nifa.usda.gov
Bioenergy, Natural Resources, and Environment	Michael Bowers (202) 401-4510; mbowers@nifa.usda.gov Nancy Cavallaro (202) 401-5176; ncavallaro@nifa.usda.gov William Goldner (202) 401-1719; wgoldner@nifa.usda.gov Fen Hunt (202) 720-4114; fhunt@nifa.usda.gov
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 Daniel Schmoldt (202) 720-4807; dschmoldt@nifa.usda.gov Steven Thomson (202) 401-6301; steven.j.thomson@nifa.usda.gov
Agriculture Economics and Rural Communities	Jill Auburn (202)-720-2635; jauburn@nifa.usda.gov Daniel Hellerstein (202) 694-5613; danielh@ers.usda.gov Denis Ebodaghe (202) 401-4385; debodaghe@nifa.usda.gov Fen Hunt (202) 720-4114; fhunt@nifa.usda.gov Robbin Shoemaker (202) 720-5468; rshoemaker@nifa.usda.gov
Critical Agricultural Research and Extension	Mary Purcell-Miramontes (202) 401-5168; mpurcell@nifa.usda.gov Charlotte Kirk Baer (202) 720-5280; cbaer@nifa.usda.gov
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: Awards Management Division, Branch I
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: Awards Management Division, Branch II
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. Access to Review Information

We will send copies of reviews, not including the identity of reviewers, and a summary of the panel comments to the applicant PD after the review process has been completed.

B. 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 Project Plans</u>

a. The permissible changes by the awardee, PD(s), or other key project personnel in the approved project shall be limited to changes in methodology, techniques, or other similar aspects of the project to expedite achievement of the project's approved goals. If the awardee or the PD(s) is uncertain as to whether a change complies with this provision, the question must be referred to the Authorized Departmental Officer (ADO) for a final determination. The ADO is the signatory of the award document, not the program contact.

b. The awardee must request, and the ADO must approve in writing, all changes in approved goals or objectives prior to effecting such changes. In no event shall requests be approved for changes that are outside the scope of the original approved project.

c. The awardee must request, and the ADO must approve in writing, all changes in approved project leadership or the replacement or reassignment of other key project personnel, prior to effecting such changes.

d. The awardee must request, and the ADO must approve in writing, all transfers of actual performance of the substantive programmatic work in whole or in part and provisions for payment of funds, whether or not federal funds are involved, prior to instituting such transfers, unless prescribed otherwise in the terms and conditions of the award.

e. The project period may be extended without additional financial support, for such additional period(s) necessary to complete or fulfill the purposes of an approved project, but in no case shall the total project period exceed any applicable statutory limit or expiring appropriation limitation. The terms and conditions of award include information about no-cost extensions of the award and when ADO's prior approval is necessary.

f. Changes in Approved Budget: Unless stated otherwise in the terms and conditions of award, changes in an approved budget must be requested by the awardee and approved in writing by the ADO prior to instituting such changes, if the revision will involve transfers or expenditures of

amounts requiring prior approval as set forth in the applicable Federal cost principles, Departmental regulations, or award.

C. 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 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. The original copy of an application that does not result in an award will be retained by the Agency for a period of three years. Other copies will be destroyed. 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.

D. 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.

E. 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:

Director means the Director of the National Institute of Food and Agriculture (NIFA) and any other officer or employee of NIFA to whom the authority involved is delegated.

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.

Integrated project means a project incorporating two or three functions of the agricultural knowledge system (research, education, and extension) around a problem or activity.

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 and Coordinated Agricultural Project Grant types as well as Seed Grants, Equipment Grants, and Sabbatical Grants.

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 http://nifa.usda.gov/afri-request-applications/Grant Type - FY 2016 AFRI RFA.pdf.

TABLE 1. Most Successful Universities and Colleges
Any institution listed in Table 1 (Table 1 - Most Successful Institutions - FY 2016 AFRI RFAs.docx)) 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 used to determine eligibility for possible waiver of matching funds requirement for Equipment Grants (Table 2 - Least Successful Institutions - FY 2016 AFRI RFAs.docx

FIGURE 1. Flow Chart for Strengthening Grant Eligibility

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

Yes   No

Yes → Are you eligible for EPSCoR Funds?

No → Not Eligible

Are you eligible for EPSCoR Funds?
- Yes → Eligible
- No → Are you at a minority-serving institution? See Part VIII, H for a definition.

Are you at a minority-serving institution? See Part VIII, H for a definition.
- Yes → Is your institution among the most successful (see Table 1)?
- No → Is your institution small or mid-sized (total enrollment < 17,500)?

Is your institution among the most successful (see Table 1)?
- Yes → Not Eligible
- No → Eligible

Is your institution small or mid-sized (total enrollment < 17,500)?
- Yes → Is your institution among the most successful (see Table 1)?
- No → Not Eligible

Is your institution among the most successful (see Table 1)?
- Yes → Not Eligible
- No → Eligible