Agriculture and Food Research Initiative Competitive Grant Program

FOUNDATIONAL PROGRAM

FY 2015 Request for Applications

LETTER OF INTENT DEADLINE: Varies by Program Area

APPLICATION DEADLINE: Varies by Program Area

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 (ET) on the deadline date indicated in the Program Area Descriptions section beginning in Part I.C (see Part IV A. 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.

As part of the National Institute of Food and Agriculture's (NIFA) strategy to successfully implement the 2014 Farm Bill, NIFA is soliciting stakeholder input on NIFA's centers of excellence strategy. Between January and March 2015 NIFA will hold webinars to collect stakeholder input about the centers of excellence strategy in fiscal year (FY) 2015. Upcoming dates for the webinars will be announced on the NIFA website. The full transcript of the webinars will also be available on the NIFA website. NIFA will also request to receive input through an advertised call-in number, fax and email. All comments and suggestions for the FY 2015 centers of excellence should be received by March 30, 2015.

EXECUTIVE SUMMARY: AFRI is a competitive grant program to provide 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 2015. Because the global agricultural output needs to expand by at least 70 percent to meet the food needs of the population expected in 2050, 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 2015, 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. Renewable energy, natural resources, and environment;
5. Agriculture systems and technology; and
6. Agriculture economics and rural communities.

The amount available for support of this program in FY **2015** is approximately **$116 million**.

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

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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) amends 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, renewable energy, 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. 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 are asked to keep in mind that while international activities supported by AFRI may contribute to global food security, as described in the U.S. Government's Feed the Future global food security initiative (www.feedthefuture.gov), **any international activity proposed under AFRI such as partnerships, exchanges, training, trips, etc., must first and foremost support AFRI's domestic program goals.** Activities focused solely on agricultural development in other countries should not be submitted to AFRI. Applicants must clearly describe and demonstrate how international activities proposed in applications submitted to AFRI will contribute to and support advances in American agriculture.

If international activities (*e.g.*, partnerships, exchanges, travel, etc.) are proposed, applicants must describe indicators that will be used to assess those activities. Appropriate indicators include but are not limited to those posted at the U.S. Government's Feed the Future global food security initiative Web site (www.feedthefuture.gov/progress). Additional guidance and suggested examples for possible international partnerships linked to this AFRI RFA can be addressed to Michael McGirr (mmcgirr@nifa.usda.gov) or (202) 205-3739.

Supporting the many components of agriculture under the constraints of a growing population, pressure on natural resources, and the challenges of climate variability and change, 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 http://www.nifa.usda.gov/funding/afri/afri.html.

Background

AFRI is one of NIFA's major programs through which to address 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 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 following challenges:

1. Keep American agriculture competitive while ending world hunger
2. Improve nutrition and end child obesity
3. Improve food safety for all Americans
4. Secure America's energy future through bioenergy production

5. Mitigation and adaptation of agriculture to climate variability and change
6. Solve critical water resource problems in rural and agricultural watersheds across the United States

The AFRI Foundational Program Area for 2015 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. The foundational program RFA 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 Plan. AFRI Foundational area aligns with the 2012 USDA Research, Education, and Economics (REE) Action Plan (http://www.ree.usda.gov/ree/news/USDA_2014_REE_Action_Plan_08-2014_Final.pdf). The AFRI Foundational program draws 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 and www.nifa.usda.gov/fo/funding.cfm.

C. Program Area Descriptions

A. Plant Health and Production and Plant Products

Background

Plant protection, plant production and the development of new plant products are critical to the sustainability and competitiveness of U.S. agriculture, and the success and growth of the Nation's economy. Future improvement of production systems will require an increased 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. Increased knowledge of plant systems and the various factors that affect plant productivity will allow U.S. agriculture to 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. The choice of organism or system must be justified in terms of importance to agriculture. Understudied organisms and systems (e.g., alfalfa, forages and organic systems) are also appropriate for this program.

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. Renewable Energy, 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).

The AFRI Plant Health and Production and Plant Products program area directly aligns with the USDA Research, Education, and Economics Action Plan (http://www.ree.usda.gov/ree/news/USDA_2014_REE_Action_Plan_08-2014_Final.pdf) and specifically addresses: Goal 1 – Local and Global Food Supply and Security, Sub goals 1A, 1B, and 1C (which focus on Crop Production, Health, Genetics, Genomics, Genetic Resources, and Biotechnology); and Goal 2 - Responding to Climate and Energy Needs, Sub goals 2A and 2B (which focus on Climate Variability, Bioenergy/Biofuels and Bio based Products) by developing and extending approaches to enhance local and global food supply and security, while also responding to climate and energy needs. The AFRI Plant Health and Production and Plant Products program area also supports the 2014-2018 USDA. Strategic Plan, especially Objective 2.2 - Lead Efforts to mitigate and adapt to climate change, drought, and extreme weather in agriculture and forestry; Objective 3.1 - Ensure U.S. agricultural resources contribute to enhanced global food security; and Objective - 4.4 Protect agricultural health by minimizing major diseases and pests to ensure access to safe, plentiful, and nutritious food.

In FY 2015, AFRI invites Research Project applications for Standard, Conference and Food and Agricultural Science Enhancement (FASE) Grant types relevant to the six priority areas of the Plant Health and Production and Plant Products Program Area described below.

Letter of Intent not required for this Program Area below
Total Program Funds – Approximately $30 million
Proposed Budget Requests -

- Standard Grants must not exceed $500,000 total (including indirect costs) for project periods of up to 5 years.
- Conference and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- 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. Plant Breeding for Agricultural Production

Program Area Priority Code – A1141
Program Area Priority Contact – Dr. Ed Kaleikau, (202) 401-1931 or ekaleikau@nifa.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline – April 08, 2015 (5:00 p.m. ET)

This program area supports public breeding to improve crop productivity, efficiency, quality, performance, and/or adaptation, and includes:

- Pre-breeding and germplasm enhancement, cultivar development, selection theory, applied quantitative genetics, and participatory breeding;
- Development and application of tools to predict phenotype from genotype to accelerate breeding of finished varieties;
- Development of content linked to the research areas described above and suitable for delivery through the existing eXtension "Plant Breeding and Genomics Community of Practice" (http://www.extension.org/plant_breeding_genomics) to amplify outreach and education to plant breeders, seed industry professionals, and practitioners. If an application proposes to do this, a letter of acknowledgement from eXtension and a letter of support from "Plant Breeding and Genomics Community of Practice" are required. For detailed guidance on how to "enhance an existing community of practice", go to http://create.extension.org/node/2057 and http://pbgworks.org/node/1066. Applicants must plan ahead and allow additional time to develop this partnership; or
- Conference grants related to public-private collaboration in plant breeding, and/or plant breeding education, training and recruitment of the next generation of plant breeders.

Program Area Priority Additional Information:

- Choice of crops and objectives for this program area priority must be justified in terms of importance to US agricultural food and fiber production systems.
- Research that incorporates training of field-based plant breeders is encouraged.
- Plant breeders are encouraged to submit applications.
- Relevance to cultivar development should be clear, demonstrable and specific.
- Applications to Program Area Priority, Plant Breeding for Agricultural Production (A1141) 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 **USDA NIFA- funded projects in the areas of plant breeding, genetics and genomics,** especially p. 5 (Genetic Resources from Outside of the U.S); pp. 6-8 (Patents and Inventions including Plant Variety Protection); and pp. 10-12 (Release of Animal or Plant Genome Sequence Data and Distribution of Animal or Plant Genomic Resources, and the Release or Distribution of Plant Germplasm). These terms and conditions can be found at: http://www.nsf.gov/pubs/policydocs/rtc/agencyspecifics/nifa_1113.pdf

2. Growth and Development, Composition and Stress Tolerance

Program Area Priority Code – A1101
Program Area Priority Contact – Dr. Liang-Shiou Lin (202) 401-5045 or llin@nifa.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline –April 14, 2015 (5:00 p.m. ET)

This program area priority supports projects that use molecular, biochemical, cellular and/or whole-plant approaches to:

- Improve plant productivity through studies of plant growth and developmental processes
- Improve plant chemical composition, including nutritional quality of food or feed; or
- Reduce loss of plant productivity through understanding the mechanisms of plant response to abiotic stresses.

3. Photosynthesis and Nutrient Use in Agricultural Plants

Program Area Priority Code – A1151
Program Area Priority Contact – Dr. Shing Kwok (202) 401-6060 or skwok@nifa.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline – April 24, 2015 (5:00 p.m. ET)

This program area priority supports projects to understand the molecular, biochemical, cellular and/or whole-plant mechanisms to:

- Increase agricultural plant productivity through studies of photosynthetic efficiency, carbon assimilation, and/or source-sink relationship; or
- Increase agricultural plant productivity through studies to improve nutrient (e.g., nitrogen, phosphorus) uptake, assimilation, accumulation, and/or utilization in crops or studies of plant-microbe interactions.

NOTE: Microbial studies for nutrient utilization must show relevance to improving plant production.

4. Plant-Associated Microbes and Plant-Microbe Interactions

Program Area Priority Code – A1121
Program Area Priority Contact – Dr. Ann Lichens-Park (202) 401-6460 or apark@nifa.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline – March 31, 2015 (5:00 p.m. ET)

This Program Area Priority supports projects on mechanisms of plant-microbe interactions; microbe-microbe interactions; communication within microbial populations and/or between plants and microbes; and studies of epidemiological characteristics of agriculturally important microbes. Proposals may focus on fungi, oomycetes, bacteria, viruses and/or the plants associated with them. Systems studied must be strongly justified in terms of relevance to agriculture. Studies of model plants alone are not appropriate for this priority area. The major focus of the proposed work must be on a host plant of importance to U.S. agriculture for attributes other than status as a model organism. The program encourages the use of functional genomics approaches. Research focus areas must include one or more of the following

- Elucidation of molecular mechanisms used by microorganisms to interact with plant hosts and/or with other microorganisms associated with plants. Applications may address pathogenic and/or beneficial interactions. Interactions addressed may be

physical interactions, such as mechanisms used by microbial effector proteins to enter plant hosts and/or chemical interactions, such as chemical signaling;
- Elucidation of molecular mechanisms used by plants to respond to or interact with microorganisms; or
- Studies examining epidemiological factors that influence disease spread.

Program Area Priority Additional Information:
- Studies of plant-microbe interactions that improve plant nutrient uptake or utilization are not appropriate for this program area sub-priority.
- Studies of plant-microbe interactions that focus on human food safety pathogens are not appropriate for this program priority area.
- Applicants who wish to submit projects focusing on interactions between plants and human food safety pathogens are directed to the AFRI Foundational program priority area on "Improving Food Safety" (Program Area Priority Code A1331).

5. <u>Controlling Weedy and Invasive Plants</u>
Program Area Priority Code – A1131
Program Area Priority Contact – Dr. Michael Bowers (202) 401-4510 or mbowers@nifa.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline – April 13, 2015 (5:00 p.m. ET)

This priority area supports projects that focus on compelling scientific questions underlying current issues in weed and invasive plant management in crops, managed forests and rangeland including:
- Ecological processes related to bio control and/or integrated pest management;
- The evolution, spread and mitigation of herbicide resistance based on an understanding of ecological fitness and gene flow; or
- Other ecological or evolutionary studies that would inform weed management strategies, including links between agronomic practices and weed problems.

6. <u>Plant-Associated Insects and Nematodes</u>
Program Area Priority Code – A1111
Program Area Priority Contacts – Dr. Mary Purcell-Miramontes (202) 401-5168 or mpurcell@nifa.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline – April 10, 2015 (5:00 p.m. ET)

This priority area supports projects to increase fundamental and applied knowledge of biological and environmental processes that affect the abundance and spread of plant-associated pest and beneficial insects or nematodes in agricultural systems (including managed forests and rangelands). Research on factors associated with the decline of insect pollinators, disruption of natural enemies, and development of solutions to mitigate these problems is particularly emphasized. While realizing the value of discovery-oriented research, this priority area will emphasize hypothesis-driven research. Projects that include an

evaluation of pest or pollinator management are strongly encouraged to include an economic analysis. Research focus areas must include one or more of the following:

- Interactions of insects or nematodes with other insects or nematodes, plants or microbes. Both organismal and molecular level approaches are appropriate;
- Mechanisms of plant response to insects or nematodes. Elucidation of signaling mechanisms between plants and insects or nematodes are encouraged;
- Fundamental research that leads to biologically-based pest management approaches to managing insects and nematodes; or
- Strategies to mitigate abiotic and biotic factors threatening managed bees including meta-analysis that synthesizes results from various independent studies with the aim of determining trends and to prioritize the most important factors influencing bee declines.

Program Area Priority Additional Information:

- Projects in this Program Area Priority may develop integrated pest management or other ecologically-based management programs (either in the short or long term).
- Projects on pests of livestock or nuisance pests in urban systems are not supported by this program area priority.

Other Program Area Key Information applicable to ALL Plant Health and Production and Plant Products priority areas:

- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.
- For projects related to this Program Area that require $100,000 or less and address 1) new and emerging problems with high potential impact; 2) applications of new knowledge or new approaches to unsolved challenges that have high potential impact; 3) develop necessary tools to have a paradigm shift in the field; and or, 4) provide a rapid response to natural disasters or similar unanticipated events, applicants should consider the Exploratory Program in this RFA.

B. Animal Health and Production and Animal Products

Background

Animal production and health 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 production and health costs, 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).

The Animal Health and Production and Animal Products program area directly aligns with the Research, Education, and Economics Action Plan (http://www.ree.usda.gov/ree/news/USDA_2014_REE_Action_Plan_08-2014_Final.pdf) and specifically addresses: Goal 1. Local and Global Food Supply and Security; Goal 2. Responding to Climate and Energy Needs; and, Goal 3. Sustainable Use of Natural Resources.

In FY 2015, AFRI invites Research Project applications that support Standard, Conference and FASE Grant types 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 $28 million
Proposed Budget Requests –

- Standard Grants must not exceed $500,000 total (including indirect costs) for project periods of up to 5 years.
- Conference and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

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

1. **Animal Reproduction**
   Program Area Priority Code – A1211
   Program Area Priority Contact – Dr. Mark Mirando (202) 401-4336 or mmirando@nifa.usda.gov

Letter of Intent not required for this Program Area Priority
Application Deadline – April 16, 2015 (5:00 p.m. ET)

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. **Animal Nutrition, Growth and Lactation**
Program Area Priority Code – A1231
Program Area Priority Contact – Dr. Steven Smith (202) 401-6134 or sismith@nifa.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline – April 16, 2015 (5:00 p.m. ET)

Cellular, molecular, genomic/genetic or whole-animal aspects of nutrition, growth and lactation, especially focusing on:

- Nutrient utilization and efficiency;
- 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.

3. **Animal Well-Being**
Program Area Priority Code – A1251
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 – April 10, 2015 (5:00 p.m. ET)

Evaluation of current management practices and development of new management practices that reduce animal stress and optimize sustainable production efficiency. Areas of focus may include but are not limited to:

- 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: Engineering, Products, and Processes (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 – April 10, 2015 (5:00 p.m. ET)

Cellular, molecular, genomic/genetic or whole-animal aspects of animal health and disease, especially focusing on:

- Maintenance of homeostasis;
- Disease prevention (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).

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 – April 23, 2015 (5:00 p.m. ET)

Development of community genetic and genomic resources and tools including software, experimental protocol/methods for breeding, advancing basic biology and applied animal health and nutritional focus such as:

- Improvement of genome assembly and annotation;
- Discovery and analysis of genetic diversity within and across breeds or populations (*e.g.*, detection of signatures of selection);
- Application of genome-wide methods for identification of gene regulatory regions;
- Novel quantitative genetic methods including selection theory and modeling;
- User-friendly web interfaces and data visualization tools having knowledge exchange capabilities between federated databases within and across species; or
- Development of cyber-infrastructure tools, that will benefit agricultural animals through customization and addition of new software tools, for genotype-phenotype associations from analysis of large-scale sequence and/or genotype data, databases, and user-friendly web-interface.

Program Area Priority Additional Information:

- The emphasis of this Program Area Priority is on the development of tools and resources. Proposals that apply genome variation (*e.g.*, selecting within a breed for a specific trait of interest) and relevance to function and phenotype for improved animal production or health, conventional animal breeding, breed development, or applied

quantitative genetics should be directed to Program Area Priorities 1, 2, 3, or 4 identified above.

6. **Tools and Resources - Immune Reagents for Agricultural Animals**
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 – April 10, 2015 (5:00 p.m. ET)

Development of publicly accessible immunological reagents for agriculturally-relevant animal species. Some example reagents might include: monoclonal antibodies to leukocyte subpopulations (T and B lymphocytes, NK cells, macrophages, dendritic cells, neutrophils), antibody classes, and production of bioactive recombinant cytokines and chemokines, as well as antibodies to them and their receptors for these species. Reagents should not be applicable to the study of only one disease (e.g., no pathogen-specific reagents).
Applicants must:

- Address one of the following five species groups (ruminants: primary focus on bovine; swine; poultry; equine; or, aquaculture: primary focus on catfish and salmonids (equal effort for both species is not required in the same proposal, but both species should be in a single proposal). Applications should clearly outline the methods that the project team will use to determine the US immunology research communities' highest priority needs for the species; NOTE: Priority will be given to those species that were not funded in FY2014 from either "A1223, Tools and Resources: Immune reagents" or "A1224, US-UK Collaborative: Immune reagents" and do not have an active AFRI immune reagent award;
- Describe a strong management and implementation plan that includes standard operating procedures and addresses the following: quality control and quality assurance of developed reagents to ensure sensitivity and specificity; distribution and maintenance of the developed reagents, including a mechanism to avoid future reagent loss that guarantees the sustainability of developed reagents;
- Make all reagents publicly available, reasonably priced, and readily accessible; and
- 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, etc.). Strong linkages with the larger community (international linkages are encouraged, when appropriate) will help assure a high degree of accountability for community needs; synergies are facilitated and unnecessary duplication can be avoided.

Program Area Priority Additional Information:

- A maximum of one award per species is anticipated for a maximum total of five awards. If an award is made in FY 2014 for a species, that species will not be eligible for a second immune reagent award from the FY 2015 RFA.

- To foster mutual learning and synergies among projects, AFRI will facilitate networking among species 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 those solved) and next steps, and also consider collaboration opportunities among one or more award teams for mutual benefit.

****Note: US-UK Collaborative Projects: Animal Health and Disease, and Immune Reagents for Agricultural Animals are not offered in FY 2015**

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

- All applications must adhere to the requirements beginning in Part IV.
- All applications may include subcontracts to other institutions, including foreign. Adequate justification for foreign subcontracts is required with demonstration of the benefit to the US.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.
- Applicants must justify model systems (*e.g.*, use of laboratory animals, 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 identify the experimental design, the experimental unit, and how the experimental unit will be replicated resulting from the power analysis. 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 www.mged.org) 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 U.S); 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 not be submitted to Animal Health and Production and Animal Products:

- *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, postparturient 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://nifa.usda.gov/fo/ecologyandevolutionofinfectiousdiseases.cfm) and the Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species (http://grants.nih.gov/grants/guide/pa-files/PAR-13-204.html) collaborative interagency programs. Additional information can be found under Part I, B.
- For animal-related projects that require $100,000 or less and address 1) new and emerging problems with high potential impact; 2) applications of new knowledge or new approaches to unsolved challenges that have high potential impact; 3) develop necessary tools to have a paradigm shift in the field; and or, 4) provide a rapid response to natural disasters or similar unanticipated events, applicants should consider the Exploratory Program in this RFA.

C. Food Safety, Nutrition, and Health

Background

Human health is significantly affected by the safety, quality, and nutritive value of food. Knowledge generated from this program will enhance the microbial, physical, and chemical safety of foods, and provide information on the function and efficacy of foods, nutrients, and other bioactive components in promoting health. In addition, knowledge generated will improve processing, packaging and storage technologies to enhance the safety, quality and shelf life of foods. This knowledge will improve our understanding of human behaviors 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).

The AFRI Food Safety, Nutrition, and Health program area directly aligns with the Research, Education, and Economics Action Plan (http://www.ree.usda.gov/ree/news/USDA_2014_REE_Action_Plan_08-2014_Final.pdf). It specifically addresses: Goal 1. Local and Global Food Security Chain; Goal 4. Nutrition and Childhood Obesity; and Goal 5. Food Safety.

In FY 2015, AFRI invites Research Project applications for Standard, Conference, and FASE Grant types relevant to the three priority areas of the Food Safety, Nutrition and Health Program Area described below.

Letter of Intent not required for this Program Area; See details under each Program Area Priority below
Total Program Funds – Approximately $14 million
Proposed Budget Requests-

- Standard Grants must not exceed $500,000 total (including indirect costs) for project periods of up to 4 years.
- Conference and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- 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. **<u>Improving Food Safety</u>**
   Program Area Priority Code – A1331
   Program Area Priority Contact – Dr. Jeanette Thurston, (202) 720-7166 or jthurston@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – April 3, 2015 (5:00 p.m. ET)

   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 viable or infectious human pathogens from foods or environmental samples related to food production, harvesting and processing (for example, irrigation and processing water, soil, manure, food contact surfaces). Projects that include the development and validation of methods that are effective in multiple matrices and for multiple pathogens are encouraged;

- Elucidate physical or molecular mechanisms that allow foodborne hazards (e.g., pathogens, chemicals, microbial toxins, or engineered nanoparticles) to internalize into fresh and fresh-cut produce, or nuts;
- Investigate the fate or dissemination of foodborne hazards in or on fresh produce, fresh-cut produce, nuts or food contact surfaces associated with produce production or processing;
- Identify and characterize emerging or under-researched foodborne hazards (e.g., pathogens, chemicals, microbial toxins, or engineered nanoparticles); or
- Develop control strategies for known foodborne hazards on previously unrecognized food vehicles or on foods that are not commonly associated with a particular foodborne hazard.

Program Area Priority Additional Information:

- The study of multiple hazards is encouraged, where appropriate.
- The study of multiple fresh fruits, vegetables, or nuts is encouraged, where appropriate.
- As an addition to one or more of the above program focus areas, the identification or development of control strategies to reduce foodborne hazards is encouraged.
- For projects 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 is encouraged.
- Inclusion of other disciplines, where appropriate, is encouraged.

2. <u>Improving Food Quality</u>

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 – April 2, 2015 (5:00 p.m. ET)

Applicants must address one of the following sub-priorities:

- Improve our knowledge and understanding of the physical, chemical, 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; or
- Develop innovative food processing and packaging materials and technologies. Application of those technologies should be used to reduce post-harvest losses in foods and extend the shelf-life of foods.

Program Area Priority Additional Information:

- Post-harvest projects that have a food safety component may be submitted, but the primary emphasis must be on improving food quality.
- Projects focused on processing and packaging development are strongly encouraged to consider economic feasibility, sustainability, and other factors that might potentially inhibit adoption.

3. **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 – April 2, 2015 (5:00 p.m. ET)

Applicants must address the following sub-priority:

- 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.
- 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 priority areas:

- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.
- Applicants should consider applying to the Exploratory Program in this RFA for improving food safety, improving food quality , or function and efficacy of nutrients project ideas that address: 1) new and emerging innovative ideas that have high potential impact; 2) include application of new knowledge or new approaches to unsolved challenges that have high potential impact; 3) develop tools required to promote a paradigm shift in the field; or 4) provide a rapid response to natural disasters and similar unanticipated events but exclude the above mentioned subpriorities under each program area priority

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

Background

This program area supports research on healthy agroecosystems and their underlying natural resources that are essential to the sustained long-term production of agricultural goods and services. Agroecosystems 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. Projects funded

through this program area contribute use-inspired foundational knowledge needed for sustainable production of agroecosystems 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.

Sustainable management of agroecosystems 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.

Research outcomes will model promising agricultural systems that have balanced human social needs[2] with natural systems to produce more food, bioenergy and bio-based 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 program aligns with the 2012 Research, Education, and Economics Action Plan and specifically addresses Goal 3, Sustainable Use of Natural Resources, Landscape Scale Conservation and Management to: 1) improve fertilizer recommendations, optimize production and environmental goals, as well as management technologies and improved models to evaluate nitrogen's life cycle for agricultural system needed to enhance crop nitrogen use and to mitigate nitrogen losses, and 2) develop new types of cropping systems and integrated crop-livestock systems that utilize biodiversity and generate a broader set of ecosystem services.

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[1] *Ecosystem services are the benefits to society from agroecosystems 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.

[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.*

The AFRI Bioenergy, Natural Resources, and Environment addresses the following priorities within the 2008 Farm Bill: D. Natural resources and the environment (subpriorities i. fundamental structures and functions of ecosystems; ii. biological and physical bases of sustainable production systems; iv. the effectiveness of conservation practices and technologies designed to address nutrient losses and improve water quality; and vii. biological diversity).

In FY 2015, AFRI invites Research Project applications for Standard, Conference, and FASE Grant types relevant to the two priority areas of the Bioenergy, Natural Resources and Environment Program Area.

Letter of Intent not required for this Program Area
Application Deadline – June 10, 2015 (5:00 p.m. ET)
Total Program Funds – Approximately $13 million
Proposed Budget Requests

- Standard Research Grants must not exceed $500,000 total (including indirect costs) for project periods of up to 4 years.
- Standard Grants for Summit and Synthesis under this Program Area Priority must not exceed $350,000 total (including indirect costs) for project periods of up to 3 years.
- Conference and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

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

1. **Nitrogen and Phosphorus Cycling**
   Program Area Priority Code – A1401
   Program Area Priority Contacts – Dr. Ray Knighton (202) 401-6417
   rknighton@nifa.usda.gov
   Letter of Intent not required for this Program Area Priority
   Application Deadline – June 10, 2015 (5:00 p.m. ET)

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 agroecosystems, rangelands, and forests.
- A national multi-sectoral, multi-stakeholder summit on sustainable nutrient management is solicited to focus on identifying research areas for integrated plant and animal agriculture using a "systems approach" that better supports the production and conservation of nutrients, increases use efficiency and, decreases total reactive nitrogen and phosphorous loading in the environment. Applicants must adequately define the boundaries of the system. Areas of focus will include, but are not limited to: technical solutions such as new fertilizer products, improved management practices, synthetic biology and breeding to improve uptake efficiency for example, incentives and barriers to producer adoption, public policy options and instruments, monitoring and assessment, and technology transfer and outreach. A synthesis of NIFA-funded projects within the last decade is required to identify research gaps and recommend new areas of investment for public and private research on N and P cycling. Domestic, as well as international research findings, should inform the recommendations. The summit results and synthesis shall be widely communicated among all stakeholders including the international nutrient management community. Applicants may request up to $350,000 for the synthesis and summit activities over a three year maximum time period.

2. <u>Agroecosystem Management</u>
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 – June 10, 2015 (5:00 p.m. ET)

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 Agroecosystem 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 biodiversity to production system functionality, productivity, socioeconomic viability, sustainability and the production of other ecosystem services. Biodiversity is defined here in a broad context to include 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.

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 solicitation.

Other Program Area Key Information applicable to ALL Bioenergy, Natural Resources and Environment (BNRE) Priorities:

- 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 Priority 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.
- 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.
- Collaboration with international partners is encouraged where appropriate; however, applications must be submitted by eligible U.S. institutions.
- Logic models are encouraged and may be useful for clarification of project goals, objectives, and expected outputs and impacts.

- Letters of intent must identify the specific priority area, sub-priority area, and planned indicators to evaluate success.

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 U.S. and global agriculture and food production. Some key disciplinary contributors may include: engineering; agricultural economics; chemistry; microbiology; soil science; animal and plant sciences; veterinary medicine; genetics; social sciences; behavioral sciences; food safety; physics; materials science; 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).

The Agriculture Systems and Technology program area directly aligns with the Research, Education, and Economics Action Plan (http://www.ree.usda.gov/ree/news/USDA_2014_REE_Action_Plan_08-2014_Final.pdf) and specifically addresses: Goal 1. Local and Global Food Supply and Security and Goal 3. Sustainable Use of Natural Resources.

In FY 2015, AFRI invites Research Project applications for Standard, Conference, and FASE Grant types relevant to the two priority areas of the Agriculture Systems and Technology Program Area described below.

Total Program Funds: Approximately $10 million
Proposed Budget Requests –

- Standard Grants must not exceed $500,000 total (including indirect costs) for project periods of up to 5 years.
- Conference and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.

- Requests exceeding the budgetary guidelines will not be reviewed.

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

1. **Engineering, Products, and Processes**
   Program Area Priority Code – A1521
   Program Area Priority Contacts – Dr. Daniel Schmoldt (202) 720-4807 or dschmoldt@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: April 14, 2015 (5:00 p.m. ET)

   This Program Area Priority focuses on engineering, 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:
   - Enable engineering, computing, and information systems for forestry and natural resources or for plant and animal production, processing, and distribution;
   - Improve the efficiency of energy and water use;
   - Minimize and/or utilize waste and byproducts generated in agricultural and food systems;
   - Develop and test risk assessment and mitigation measures applicable to agriculture (in particular, reduce hazards to agricultural workers); and
   - Refine the sustainability of agricultural and forestry systems that balance 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. **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: May 04, 2015 (5:00 p.m. ET)

   Nanoscale science, engineering, and technology embrace opportunities in a broad 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 (applications involving intentional addition of 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;
- Minimally invasive field survey tools for agricultural production;
- Precision agriculture technologies including applications of agricultural chemicals and water resources;
- 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; and
- Discovery and characterization of nanoscale phenomena, processes, and structures relevant to agriculture and food.

Program Area Priority Additional Information:

- To ensure responsible development and deployment of nanotechnology and reap the benefits, applications should consider incorporating proper risk assessment studies as appropriate. These may include characterization of hazards and exposure levels, transport and fate of nanoparticles or nanomaterials in crops, soils (and soil biota), and livestock. This may also include animal feed formulations and processes that utilize novel materials or develop new nanostructured materials or nanoparticles that are bio-persistent in digestive pathways. Finally, all the applications, especially those with potential commercial impact, are encouraged to include economic analyses of anticipated benefits to agriculture, food, and society.
- 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 specifically dealing with engineered nanoparticles that internalize into fresh and fresh-cut produce, including nuts, should be submitted to the Improving Food Safety priority (A1331) of the Food Safety, Nutrition, and Health Program Area in this RFA.

Other Program Area Key Information applicable to ALL Agricultural Systems and Technology priorities:

- While this Program Area encourages conference grant applications on any topic related to the program area priorities above, this Program Area is particularly interested in conference or workshop applications that bring together stakeholders, researchers, extension specialists, educators, and technology providers to
  - Create a roadmap for developing and delivering the next generation of agricultural technologies, including but not limited to precision agriculture, 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.
  - 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.
- 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 interagency program.

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 projects involving rigorous research and analysis that informs decision making to enhance the sustainability of agricultural 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 will support two types of project applications in the support of social science research: a) research only projects and (b) integrated projects (project components must include research and at least one of the following: education and/or extension). The research only program areas include: Economics, Markets and Trade and Environmental, and Natural Resource Economics. The Small and Medium-sized Farms requires integrated projects only. The program area Innovation for Rural Entrepreneurs and Communities will accept either research only *or* integrated projects. The Innovation for Rural Entrepreneurs and Communities program area combines two previous program areas, Entrepreneurship, Technology and Innovation (A1621) and Rural Communities and Regional Development (A1631), and retains the priority areas of each previous program but now permits research only projects that may involve the various social science disciplines.

The AERC Program Area addresses the following 2014 Farm Bill priority areas: 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).

The AERC Program Area directly aligns with the Research, Education, and Economics Action Plan http://www.ree.usda.gov/ree/news/USDA_2014_REE_Action_Plan_08-2014_Final.pdf) and specifically addresses: Goal 1. Local and Global Food Supply and Security and Goal 7. Rural Prosperity/Rural-Urban Interdependence.

In FY 2015, AFRI invites Research Project and Integrated Project applications for Standard, Conference and FASE Grant types relevant to the four priority areas of the Agriculture Economics and Rural Communities Program Area described below. Research Project applications are invited only in Program Area Priorities 1, 2, and 3 below, whereas Integrated Project applications are invited only in Program Area Priorities 3 and 4.

Letter of Intent not required for this Program Area
Application Deadline – April 30, 2015 (5:00 p.m. ET)

Total Program Funds – Approximately $16 million

Proposed Budget Requests –

- Standard Grants must not exceed $500,000 total (including indirect costs) for project periods of up to 4 years.
- Conference and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed

Program Area Priorities for <u>Research Projects</u> – Applicants must address one of the following two Program Area Priorities: (NOTE: Refer to Part II, C and Part III, A for Research Project Type definitions and 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 – April 30, 2015 (5:00 p.m. ET)

   This priority research area encourages the development of theories, methods and applications of economic and other social science disciplines. This Priority Area 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:

   - Examine the economic impacts of local markets on food supply, demand and quality;
   - Strategies and models of coexistence of multiple crop technologies throughout the supply chain;
   - The role of behavioral economics or mechanism design in nutrition and food safety and other public policy issues;
   - The design, evaluation, and impact of public policies, including food, agricultural, environmental, rural, and science;
   - 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 productivity growth, including incentives for collaboration between the public and private sectors for advancing food, agricultural and environmental sciences; or
   - Measuring and evaluating scientific effort, outputs and outcomes for effective quantitative and qualitative research evaluation.

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 – April 30, 2015 (5:00 p.m. ET)

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;
- Economic incentive mechanisms and policies designed to promote resource conservation and sustainability; or
- The role of behavioral economics in natural resource management.

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

3. **Small and Medium-Sized Farms**
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@nif.usda.gov
Letter of Intent not required for this Program Area Priority
Application Deadline – April 30, 2015 (5:00 p.m. ET)

This Program Area Priority focuses on work that develops and/or fosters adoption of new disciplinary or multidisciplinary 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 commodity operations. The Program Area Priority scope includes, but is not limited to:

- 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;
- Research and develop effective strategies and tools to assist small and medium-sized farmers in making decisions about participating in livestock or crop production contracts;
- Research and develop effective strategies to aid in the development of efficient local and regional food systems
- Evaluate and implement strategies to enhance access to markets by small and medium-sized farms;
- Examine and undertake outreach activities regarding private and public options or strategies that can inform relevant public policy to enhance small and mid-sized farms' well-being; or
- Research and outreach efforts that develop new tools to ensure that the next generation of small and medium-sized farmers have access to the information and resources they need to operate their farms on a sustainable and profitable basis.

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

4. Innovation for Rural Entrepreneurs and Communities

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 – April 30, 2015 (5:00 p.m. ET)

This Program Area Priority is designed to enhance economic opportunity and well-being of entrepreneurs in agriculture, food systems and rural communities (beyond the farm gate) and to enhance the adoption of private strategies and public policy options to benefit the well-being and resilience of agricultural and rural communities. Projects may enhance the development of rural entrepreneurship and innovation in supply chains for food and agriculture and other sectors of importance to rural America, and enhance technology transfer from colleges, universities and other research facilities to rural businesses. 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 rural communities. These strategies should protect the rural environment and promote economic development, health and well-being while alleviating poverty and

enhancing rural quality of life. 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 or social opportunities for food and agricultural and rural businesses;
- Identify or evaluate the implications and impact of private decision-making and public policies and development strategies to support small businesses that, in turn, contribute to the sustainability of small and medium-sized farms and rural communities;
- Develop enhanced means for transferring new knowledge and innovations from the lab to the entrepreneur;
- Develop research and education strategies to examine and advance factors contributing to a "wealth-based" approach to rural economic development and implement education and/or extension strategies to enhance wealth creation;
- Develop, model and apply innovative development policies and practices, networks of regional assets or factors, (e.g., firms, organizations, and communities and infrastructure), and the links among them that enhance rural economic development and community well-being; or
- Explore strategies to promote community and regional innovation in workforce development and address 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; or
- Examine transportation, energy, and other infrastructure-related decisions and their implications for agricultural and rural communities.

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.
- 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)
- <u>This program area funds the study of entrepreneurship and business development, but it will not fund the development of new businesses 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.</u>
- Applications that propose to develop, test and/or apply decision-support aids or tools are welcomed.

G. Critical Agricultural Research and Extension (CARE)

Background
Despite prior investments in basic and applied research, critical problems continue to impede the efficient production and protection of agriculturally-important plants and animals. 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 needs. Finding and implementing solutions to these critical problems require partnership and close coordination among researchers, extension experts, and producers. Funded projects will quickly yield solutions or practices that can be rapidly implemented by producers.

The 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. Renewable Energy, Natural Resources, and Environment; E. Agriculture, Systems and Technology; and F. Agriculture Economics and Rural Communities

The AFRI CARE program area directly aligns with the Research, Education, and Economics Action Plan (http://www.ree.usda.gov/ree/news/USDA_2014_REE_Action_Plan_08-2014_Final.pdf and specifically addresses: Goal 1 – Local and Global Food Supply and Security; Goal 2 - Responding to Climate and Energy Needs; Goal 3 – Sustainable Use of Natural Resources; Goal 5 – Food Safety; Goal 6 – Education and Science Literacy; and Goal 7 – Rural-Urban Interdependence and Prosperity.

In FY 2014, AFRI invited Integrated Research and Extension Project applications for Standard and FASE Grant types relevant to the priority of the CARE Program Area described below.

Letter of Intent Deadline – March 18, 2015 (5:00 p.m. ET); see Part IV, A for instructions
Program Area e-mail address for Submission of Letter of Intent– CriticalAg@nifa.usda.gov
Application Deadline – June 24, 2015 (5:00 p.m. ET)
Total Program Funds – Approximately $5 million

Proposed Budget Requests -

- Standard Grants must not exceed $200,000 total (including indirect costs) for project periods of up to 3 years and are not renewable.
- Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

Program Area Priorities – Each application must address the following Program Area Priority:

CARE
Program Area Priority Code – A1701
Program Area Priority Contact – Dr. Martin Draper (202) 401-1990 or mdraper@nifa.usda.gov

Each application must address the following:

- Develop and implement solutions to critical producer problems associated with animal and crop production, protection, or product quality. Emphasis will be placed on achieving results that can be applied by the producer as quickly as possible following project completion. Applications should include justification of why the issue is critical and how project outcomes will rapidly impact the stakeholder community. The project must include stakeholders.

Other Program Area Requirements:

- Producers and/or producer group engagement is required during development of the application to ensure that funded projects are designed to provide solutions to stakeholder needs. Further, these stakeholders should also be involved in the implementation of the project.
- Strict focus on a short to medium-term application of results is an important component of this program area. Projects must demonstrate outcomes within the project period.
- Projects will focus on critical problems faced by producers, including those implementing innovative production methods.
- Projects must have a high degree of coordination between research and extension components. Both functions should be engaged from inception through implementation of the project.
- Project applicants must identify if their project is extension-led or research-led.
- All applications must include a logic model detailing the activities, outputs, and outcomes of the proposed project. See Part IV C.3g for details on how to create a logic model and how to attach this information to your application.
- Project budgets should reflect how the research and extension activities will be achieved, including how they are integrated.
- Priority will be given to applications that demonstrate collaboration with recognized stakeholder groups and submitted by investigator(s) with experience in using local, regional, or national resources and in conducting time-critical research and extension.
- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.

SPECIAL NOTE: Applications to this program should fit uniquely into this program and should not be eligible for submission to other existing AFRI program areas or priority areas.

H. Exploratory Research

Background

This program area encourages development of innovative ideas that will position US Agriculture at the global forefront. These developments will lead to quantum leaps in the agricultural fields. They will address the challenges that have never been addressed before or challenges that have been addressed, but where a novel approach with new ideas could promise high potential impact. This program area priority provides support for research projects that develop proof of concept for untested novel ideas that will lead to a significant change in the areas of food security, climate

change, environmental quality and natural resources, nutrition, obesity, food safety, strong families and vibrant communities, and thriving youth.

The Exploratory Program Area addresses the following priorities of the Agricultural Act of 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. Renewable Energy, Natural Resources, and Environment; E. Agriculture, Systems and Technology; and F. Agriculture Economics and Rural Communities. The AFRI Exploratory Research Program Area also directly aligns with the Research, Education, and Economics Action Plan (www.ree.usda.gov/ree/news/USDA_REE_Action_Plan_02-2012_2.pd and specifically addresses: Goal 1 – Local and Global Food Supply and Security; Goal 2 - Responding to Climate and Energy Needs; Goal 3 – Sustainable Use of Natural Resources; Goal 4 – Nutrition and Childhood Obesity; Goal 5 – Food Safety; Goal 6 – Education and Science Literacy; and Goal 7 – Rural Prosperity/ Rural-Urban Interdependence.

In FY 2015, AFRI invites Research Project applications for Standard Grant type relevant to the priority of the Exploratory Program Area described below.

Letter of Intent Deadline – accepted anytime between March 1, 2015 and August, 31 2015; See Part IV, A for instructions.

Program Area e-mail address for Submission of Letter of Intent – exploratory@nifa.usda.gov. Include the program area priority 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 acceptance of the Letter of Intent and availability of funds. Upon receiving an invitation to submit a full proposal, applicants must submit the proposal within 60 days, with September 30, 2015 being the final deadline for proposal submission.

Total Program Funds – Approximately $2 million

Proposed Budget Requests -

- Standard Grants must not exceed $100,000 total (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 Priority – Each application must address topics within the following Program Areas: A. Plant Health and Production and Plant Products; B. Animal Health and Production and Animal Products; C. Food Safety, Nutrition and Health; D. Renewable Energy, Natural Resources, and Environment; E. Agriculture, Systems and Technology; and F. Agriculture Economics and Rural Communities.

Exploratory Research

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

Program Area Priority Contact – Ms. Charlotte Kirk Baer (202) 720-5280 or cbaer@nifa.usda.gov

This Program Area Priority addresses the overall priorities of AFRI and provides support for research projects that develop proof of concept for untested novel ideas. This includes "high-risk, high-impact" work that will lead to a significant change in US agriculture. A key in evaluating these projects is if they are potentially transformational not incremental.

Each application must address one of the following:

- New and emerging innovative ideas that have high potential impact;
- Application of new knowledge or new approaches to unsolved challenges that have high potential impact;
- Tools required to have a paradigm shift in the field; and/or
- Rapid response to natural disasters and similar unanticipated events.

Other Program Area Priority Requirements:

- The project narrative is restricted 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.
- The proposal must include a clear description as to why it is appropriate for Exploratory Research Program Area Priority, and not appropriate for the existing program area priorities under AFRI.
- A budget justification and curriculum vitae of the primary and collaborating investigators are required.
- The proposal preparation instruction deviates from the standard proposal preparation instructions contained in this RFA; other than that, the proposal must follow the instructions in this RFA and in the NIFA Grant.gov Application Guide.

Program Area Priority Additional Information:

- The Exploratory Research Program is an appropriate mechanism to develop "proof of concept" of unproven methods or ideas that could lead to the submission of more comprehensive and more competitive proposals to the various AFRI program area priorities. The Exploratory Research mechanism is not for projects that are appropriate for submission as competitive grants proposals to the various AFR program area priorities. It is not the purpose of Exploratory Research program area priority funds to supplement formula-funded or special grant projects.
- Additional review criteria for the Exploratory Research Program include:
  - The scientific merit of the proposed activity;
  - The potential impact on US agriculture;
  - Appropriateness of the proposed research for developing proof of concept of new and untested ideas including high risk research that leads to a transformative change in the field;

- 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.

- It is anticipated that beginning in FY 2016, the Exploratory Program Area will only accept new applications for review and will not accept resubmitted applications.

Other Program Area Key Information applicable to Exploratory Research Priority Area:

- All applications must adhere to the requirements beginning in Part IV unless specific instructions are given under this program area priority and by the program area priority contact.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.

PART II—AWARD INFORMATION

A. Available Funding

In FY 2015, approximately $116 million will be made available to support new awards within the AFRI Foundational Program Area. The amount available to support the AFRI program in FY 2015 will be approximately $325 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 10 percent of the FY 2015 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.

NIFA anticipates $116 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 2015 – FY 2019).

Funding of projects beyond FY 2015 is contingent upon the availability of funds, and the best interests of the US government. Funding in FY 2015 does not obligate NIFA to any future-year commitments.

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 Financial Management Service, as the payment system for funds. For more information see http://www.nifa.usda.gov/business/method_of_payment.html.

B. Types of Applications

In FY 2015, you may submit applications to the Foundational Program Area as one of the following four types of requests:

(1) New application. This is a project application that has not been previously submitted to the Foundational Program. 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 area to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications.

(3) Resubmitted application. This is an application that had previously been submitted to the Foundational Program 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.

(4) Resubmitted renewal application. This is a project application that requests additional funding for a project beyond the period that was approved in the original award. In addition, this is an application that had previously been submitted for renewal to the Foundational Program but not funded. Therefore, PDs must provide a Progress Report as required under the Project Narrative, Part IV, and must respond to the previous review panel summary as required under Response to Previous Review, Part IV. Resubmitted renewal applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in the areas to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications.

C. Project Types

Applications must propose one of the project types specified with the relevant Program Area(s) description and select the appropriate grant type for the application within the constraints of the grant types solicited. The project and grant types solicited in the AFRI Foundational Program RFA are indicated in the table below and described in the Program Area Description beginning in Part I, C.

Project and Grant Types Solicited by this RFA

		Grant Type										
						Food and Agricultural Science Enhancement (FASE) Grants[1]						
							Strengthening Grants					
		Standard	CAP	Other (Collaborative)	Conference	New Investigator	Sabbatical	Equipment	Seed	Standard	CAP	Conference
Project Type	Research	✓			✓	✓	✓	✓	✓	✓		✓
	Education											
	Extension											
	Integrated[2]	✓			✓	✓	✓	✓	✓	✓		✓

[1] FASE Grants have special eligibility requirements. Refer to Part II, D. 3 for eligibility and additional information.

[2] Incorporates a minimum of two of the three components (Research, Education and Extension)

***Note:** ONLY the Agriculture Economics and Rural Communities Program Area (see Part I, C.6) and the Critical Agricultural Research and Extension Program Area (see Part I, C.7) are soliciting integrated projects in this RFA.

The work proposed for all project types must address a specific-Program Area Priority described under Program Area Descriptions beginning in Part I, C., and the application must be submitted directly to that program area by the designated deadline date. Additionally, applicants must adhere to the Application and Submission Information beginning in Part IV when preparing applications unless otherwise instructed.

1. Research Projects

Single-function Research Projects support fundamental or applied research conducted by individual investigators, co-investigators within the same discipline, or multidisciplinary teams.

Fundamental research means research that (i) increases knowledge or understanding of the fundamental aspects of phenomena and has the potential for broad application and (ii) has an effect on agriculture, food, nutrition or the environment.

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

Multi-disciplinary projects are those in which investigators from two or more disciplines collaborate closely to address a common problem. These collaborations, where appropriate, may integrate the biological, physical, chemical, or social sciences.

2. Integrated Research, Education, and/or Extension Projects

NOTE: Integrated projects are only solicited under Agriculture, Economics and Rural Communities Program Area (Part I, C. 6) and Critical Agricultural Research and Extension Program Area (Part I, C. 7) in this RFA.

An Integrated Project includes at least **two** of the three functions of the agricultural knowledge system (*i.e.*, research, education, and extension) within a project, focused around a problem or issue. The functions addressed in the project should be interwoven throughout the life of the project and act to complement and reinforce one another. The functions should be interdependent and necessary for the success of the project and <u>no more than two-thirds of the project's budget may be focused on a single component</u>.

a) The proposed **Research** component of an integrated project should address knowledge gaps that are critical to the development of practices and programs to address the stated problem.

b) The proposed **Education** (teaching and teaching-related) component of an Integrated Project should develop human capital relevant to overall program goals for U.S. agriculture. An education or teaching activity is formal classroom instruction, laboratory instruction, and practicum experience in the food and agricultural sciences and other

related matters such as faculty development, student recruitment and services, curriculum development, instructional materials and equipment, and innovative teaching methodologies.

Educational activities may include any of the following: conducting classroom and laboratory instruction and practicum experience; faculty research internships for curricula development; cutting-edge agricultural science and technology curriculum development; innovative teaching methodologies; instructional materials development; education delivery systems; student experiential learning (student led-research; internships; externships; clinics); student learning styles and student-centered instruction; student recruitment and retention efforts; career planning materials and counseling; pedagogy; faculty development programs; development of modules for on-the-job training; providing knowledge and skills for professionals creating policy or transferring to the agriculture workforce; faculty and student exchanges; and student study abroad and international research opportunities relevant to overall program goals for U.S. agriculture. Educational activities must show direct alignment with increasing technical competency in AFRI priority area(s) to ensure that U.S. agriculture remains globally competitive in the knowledge age.

Educational components must address one or two of the following key strategic actions:

- Train students for Associate, Baccalaureate, Master's or Doctoral degrees; and/or
- Prepare K-12 teachers and higher education faculty to understand and present food and agricultural sciences.

These projects should synthesize and incorporate a wide range of the latest relevant research results. Note that routine use of graduate students and postdoctoral personnel to conduct research is not considered education for the purposes of this program.

c) The proposed **Extension** component of an Integrated Project should conduct programs and activities that deliver science-based knowledge and informal educational programs to people, enabling them to make practical decisions. Program delivery may range from community-based to national audiences and use communication methods from face-to-face to electronic or combinations thereof. Extension Projects may also include related matters such as certification programs, in-service training, client recruitment and services, curriculum development, instructional materials and equipment, and innovative instructional methodologies appropriate to informal educational programs.

Extension activities may address, but are not limited to, the following key strategic actions:

- Support informal education to increase food, agricultural, and health literacy of youth and adults;
- Promote science-based agricultural literacy by increasing understanding and use of food and agricultural science data, information, and programs;
- Build science-based capability in people to engage audiences and enable informed decision making;

- Develop new applications of instructional tools and curriculum structures that increase technical competency and ensure global competitiveness;
- Offer non-formal learning programs that increase accessibility to new audiences at the rate at which new ideas and technologies are tested and/or developed at the community-scale; and
- Develop programs that increase public knowledge and citizen engagement leading to actions that protect or enhance the nation's food supply, agricultural productivity, environmental quality, community vitality, food security and/or public health and well-being.

These projects should synthesize and incorporate a wide range of the latest relevant research results. Please note that research-related activities such as publication of papers or speaking at scientific meetings are not considered extension for the purposes of this program.

Integrated Projects aim to resolve today's problems through the application of science-based knowledge and address needs identified by stakeholders. Integrated Projects clearly identify anticipated outcomes and have a plan for evaluating and documenting the success of the project. These projects should lead to measurable, documented changes in learning, actions, or conditions in an identified audience or stakeholder group.

Integrated Project applicants are encouraged to review www.nifa.usda.gov/funding/integrated/integrated.html for additional information on integrated programs, including tips for writing Integrated Project applications and an example of an integrated application. Those interested in submitting Integrated Project applications are encouraged to contact the Program Contact to discuss the anticipated project parameters and outcomes to ensure the application content appropriately meets the requirements of an Integrated Project.

D. Grant Types

Applications must propose one of the project types specified and select the appropriate grant type for the application within the constraints of the grant types solicited.

1. **Standard Grants**
   Standard Grants support targeted original scientific Research, Education, Extension, or Integrated Projects.

2. **Other Grants (Collaborative)**
   The Collaborative Project Grant is a type of Research, Education, Extension, or Integrated Project that allows AFRI programs to partner resources with other funding organizations to address high priority mission areas of mutual interest, without either organization transferring funds to the other. For AFRI programs soliciting Collaborative Project Grants, a single proposal is submitted to the program; it must contain all of the requisite sections for an AFRI application, in addition to information that may be outlined

in the specific program description. The overall project must demonstrate an integrated, collaborative approach; the specific contributions and responsibilities of the AFRI and partner agency teams to the objectives must be set out clearly in the proposal's project narrative and reflected in the budget justifications. The advantages of the multi-organizational effort must be clearly described in the Project Narrative, as well as the specific managerial arrangements to assure strong coordination among teams. Work proposed to be supported by AFRI cannot duplicate what would be funded by the partners, and vice-versa. To be competitive for funding, a Collaborative Project Grant must clearly demonstrate a substantial and meaningful collaboration between the AFRI and non-AFRI funded teams. Work proposed to be funded by each agency (and therefore each agency's budget) must be integral to the success of at least one of the application objectives. If a Collaborative Project Grant is funded, AFRI makes an award to support objectives done by the AFRI Project Director and/or co-Project Directors. A separate award is made by the partner agency that supports objectives done by its team of Project Director and/or co-Project Directors. While Collaborative Project Grants are solicited in a limited number of areas, all AFRI applications may continue to include subcontracts to other institutions for work also supported by AFRI.

3. Conference Grants

Conference Grants support scientific meetings that bring together scientists to identify research, education, and/or extension needs, update information, or advance an area of science. These activities are recognized as integral parts of scientific efforts. Support for a limited number of meetings covering subject matter encompassed by this solicitation will be considered for partial or, if modest, total support. Individual conference grants are not expected to exceed $50,000 for one year and are not renewable. Indirect costs are not permitted on Conference Grant awards

4. Food and Agricultural Science Enhancement Grants

FASE Grants strengthen science capabilities in research, education, and/or extension programs. FASE Grants are designed to help institutions develop competitive projects, and to attract new scientists and educators into careers in high-priority areas of National need in agriculture, food, and environmental sciences. The FASE Grants provide support for Pre- and Postdoctoral Fellowships which will be solicited in a separate NIFA Fellowships Grant Program, New Investigators, and Strengthening Grants. Specific eligibility requirements for these grants are described below.

a. Pre- and Postdoctoral Fellowship Grants

The current AFRI – Food, Agriculture, Natural Resources and Human Sciences Education and Literacy Initiative (ELI) was formerly known as AFRI NIFA Fellowships Grant Program to provide fellowships to undergraduate, predoctoral, and postdoctoral students in the agricultural sciences. The program goals are (1) to promote research and extension experiential learning for undergraduates such that upon graduation they may enter the agriculture workforce with exceptional skills and (2) to prepare the next generation of scientists through doctoral and post-doctoral

fellowships. Program information, including the anticipated release date, is available at www.nifa.usda.gov/funding/afri/afri.html.

b. New Investigator Grants

An individual who is beginning his/her career, does not have an extensive scientific publication record, and has less than five years postgraduate, career-track experience is encouraged to submit an application for a New Investigator Grant for research, education, and/or extension activities. The new investigator may not have received competitively awarded Federal research funds with the exception of pre- or postdoctoral grants or USDA or AFRI Seed Grants. The application must contain documentation that lists all prior Federal support. The work proposed for New Investigator Grants must address a specific Program Area Priority described under Program Area Descriptions in Part I, C.

c. Strengthening Grants

These funds are expected to enhance institutional capacity with the goal of leading to future funding in the project area, as well as strengthen the competitiveness of the investigator's research, education, and/or extension activities. Strengthening Grants consist of CAP, Seed Grants, Equipment Grants, Sabbatical Grants and Conference grants. The work proposed for Strengthening Grants must address specific Program Area Priorities described under Program Area Descriptions in Part I, C. All applications submitted for Strengthening Grants must fulfill the eligibility requirements described below.

1) Strengthening Grant Eligibility

Strengthening grants are limited to 1) small and mid-sized or minority-serving degree-granting institutions that previously had limited institutional success for receiving Federal funds or 2) State Agricultural Experiment Stations or degree-granting institutions eligible for USDA Experimental Program to Stimulate Competitive Research (EPSCoR) funding and are eligible for reserved strengthening funds for Research, Education, Extension, and Integrated Project grants. See Figure 1 following Part VIII to assist with determining eligibility for Strengthening Grants.

2) Strengthening Grant Eligibility Definitions

a) EPSCoR States

Every year, NIFA determines the states that are eligible for USDA EPSCoR funding. This list includes states having a funding level no higher than the 38th percentile of all States based on a 3-year rolling average of AFRI funding levels, excluding FASE Strengthening funds granted to EPSCoR States and small-mid-sized and minority-serving degree-granting institutions. Since the complete award data is not available for FY 2013, the eligibility determinations are based on the data obtained from grants made through the AFRI program from FY 2010 through FY 2012. For FY 2015, the following States meet the requirements for this category:

FY 2015:
This is the seventh year of the AFRI program and while significant FY 2014 funds are unobligated, the eligibility determinations are based on the data obtained from grants made through the AFRI program from 2011 through 2013. For FY 2015, the following States meet the requirements for this category:

FY 2015 USDA EPSCoR States		
Alabama	Mississippi	South Carolina
Alaska	Montana	South Dakota
Arizona	Nevada	Utah
Connecticut	New Hampshire	Vermont
Idaho	New Mexico	Wyoming
Kentucky	North Dakota	
Maine	Rhode Island	

Other entities eligible for USDA EPSCoR funds in FY 2015 include the following United States commonwealths, territories, possessions and their successors, and the District of Columbia:

Other Entities eligible for USDA EPSCoR Funds	
American Samoa	Northern Mariana Islands
District of Columbia	Puerto Rico
Guam	Virgin Islands of the U.S.
Micronesia	

b) **Small and mid-sized institutions** are academic institutions with a current total enrollment of 17,500 or less, including graduate and undergraduate as well as full- and part-time students. An institution in this instance is an organization that possesses a significant degree of autonomy as defined by being independently accredited in the current version of the Higher Education Directory, published by Higher Education Publications, Inc., 1801 Robert Fulton Drive, Suite 340, Reston, Virginia 20191 (Phone: (888) 349-7715; www.hepinc.com).

c) **Minority-serving institutions** are academic institutions whose enrollment of a single minority group or a combination of minority groups (as defined in Part VIII, H) exceeds 50 percent of the total enrollment, including graduate and undergraduate as well as full- and part-time students.

Applicants applying under this category should indicate the current percentage of applicable minority students enrolled at the institution in a cover letter. An institution in this instance is an organization that possesses a significant degree of autonomy as defined by being independently accredited in the current version of the Higher Education Directory, published by Higher Education Publications, Inc., 1801 Robert Fulton Drive, Suite 340, Reston, Virginia 20191 (Phone:

(888) 349-7715; www.hepinc.com). A list of post-secondary minority-serving institutions can be found at www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html.

d) **Limited institutional success** is defined as institutions that are not among the most successful universities and colleges for receiving Federal funds for science and engineering research and development. See Table 1 following Part VIII for an alphabetical list of the most successful institutions.

All institutions grouped under one main campus as listed in Table 1 following Part VIII, unless located in an EPSCoR state, are excluded from eligibility for all strengthening funds. The institution may petition for an exemption to this rule as described in Part III, B.

3) Strengthening Grant Types

An individual applicant may submit only one of the following types of strengthening applications (Sabbatical Grants, Equipment Grants, and Seed Grants) as PD this fiscal year. Investigators are encouraged to contact the Program Area Priority Contact of the appropriate program area priority, regarding suitability of project topics to verify that their submission is appropriate to the program area priority. For Equipment Grants, investigators are also encouraged to contact the appropriate Program Area Priority Contact regarding appropriateness of requested equipment for topics within program area priority requirements.

a) Coordinated Agricultural Projects (CAP)

Refer to Part II, D. 1 for an explanation of CAP grants and refer to Part I, C for Program Area Description.

b) Sabbatical Grants

Sabbatical Grants are to provide an opportunity for faculty to enhance their research, education, and/or extension capabilities by funding sabbatical leaves. Collaborative arrangements are encouraged. Grants will be limited to one year of salary and funds for travel and supplies, where justified, and are not renewable.

NIFA also encourages and will support the concept of "mini-sabbaticals" for faculty and researchers desiring short-term training to learn new techniques that will improve their competitiveness. These short-term training opportunities generally follow all of the sabbatical requirements described beginning in Part IV, C., but for a shorter duration. These grants may be used to participate in short courses offered at various research institutions.

c) Equipment Grants

Equipment Grants are designed to strengthen the research, education, and/or extension capacity of institutions by funding the purchase of one major piece of

equipment. These grants are not intended to replace requests for equipment in individual project applications. Rather, they are intended to help fund items of equipment that will upgrade infrastructure. Requests for computer equipment are allowed only if the equipment is to be used in an activity integral to the proposed project. Requests for computer equipment will not be permitted if the equipment will primarily serve as a word processor or perform administrative functions.

Each request shall be limited to one major piece of equipment within the cost range of $10,000-$250,000 and are not renewable. The amount of Federal funding requested shall not exceed 50 percent of the cost or $50,000, whichever is less. Unless a waiver is granted by NIFA using the criteria listed in Part III, C., it is the responsibility of the PD to secure 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 grants, nor may these costs be part of the matching funds. Indirect costs are not permitted on Equipment Grant awards.

d) Seed Grants

Seed Grants are to provide funds to enable investigators to collect preliminary data or perform other preliminary activities in preparation for applying for future grants from AFRI. The grants are not intended to fund stand-alone projects, but rather projects that will lead to further work applicable to one of the AFRI Program Areas. Seed Grant applications proposing an Integrated Project only need to include one of the three functions (research, education, extension) and justify how this Seed Grant will allow the applicant to become competitive for future Integrated Project funding.

Seed Grants are limited to a total of $150,000 (including indirect costs) for up to 2-years in duration and are not renewable.

e) Strengthening Conference Grants

Conference Grant applications that meet the eligibility requirements for Strengthening Grants are eligible for reserved strengthening funds as a Strengthening Conference Grant. The eligibility requirements only apply to the lead PD and are not required for co-PD(s) associated with the project.

E. Responsible and Ethical Conduct of Research

The responsible and ethical conduct of research (RCR) is critical for excellence, as well as public trust, in science and engineering. Consequently, we consider education in RCR essential to the preparation of future scientists. In accordance with sections 2, 3, and 8 of 7 CFR Part 3022, 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. Per award terms and conditions, grant recipients shall, upon request, make available to NIFA the policies, procedures, and to support the conduct of the training.

Note that the training referred to herein shall be either on-campus or off-campus training. The general content of the ethics training will, at a minimum, emphasize three key areas of research ethics: authorship and plagiarism, data and research integration, and reporting misconduct. Each institution will be responsible for developing its own training system, as schools will need flexibility to develop training tailored to their specific student needs. Grantees should consider the Collaborative Institutional Training Initiative (CITI) program for RCR (https://www.citiprogram.org/rcrpage.asp). Typically this RCR education addresses the topics of: Data Acquisition and Management - collection, accuracy, security, access; Authorship and Publication; Peer Review; Mentor/Trainee Responsibilities; Collaboration; Conflict of Interest; Research Misconduct; Human Subject Research; and Use of Animals in Research.

PART III—ELIGIBILITY INFORMATION

A. Eligible Applicants

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 2015 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. **Conference Projects**
   Eligible applicants include:1) State Agricultural Experiment Stations; 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 2015 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 2015 RFAs, including this RFA, will be made available at www.nifa.usda.gov/nea/education/in_focus/hispanic_if_hispanic_HSACU.html. Institutions appearing on this list are granted HSACU certification by the Secretary for the period starting October 1, 2014, and ending September 30, 2015. Certifications are valid for FY 2015 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. 3 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. 3. c), but does not serve one or more of the minority groups specified in the Definitions section of this RFA (see Part VIII, H), 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 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 EPSCoR state (listed in Part II, D. 3. c. 2 a.), 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 a funded **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.

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://www.nifa.usda.gov/about/offices/legis/cntr_ex_webinar_documents.html.

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 CAP grants and standard grant applicants may be considered for COE designation. See Part IV, C. of this RFA for additional requirements that eligible applicants must meet to be considered a center of excellence.

PART IV—APPLICATION AND SUBMISSION INFORMATION

A. Letter of Intent (LOI) Instructions

Applicants are encouraged to submit a "Letter of Intent to Submit an Application" by the Letter of Intent due date specified in this RFA. This does not obligate the applicant in any way, but will provide useful information to NIFA in preparing for application review.

Although a letter of intent is not required, is not binding, and does not enter into the review of a subsequent application, the information that it contains allows program staff to estimate the potential review workload and plan the review.

Please follow the guidelines below for LOI submission

1. The Letter of Intent must adhere to the following formatting guidelines:
   a. Font size must be at least 12 point
   b. Margins must be at least one inch in all directions
   c. Line spacing must not exceed six lines of text per vertical inch
   d. Page size must be letter (i.e., 8.5 inches × 11 inches)

2. The Letter of Intent is limited to **three pages** for CAP grants and **two pages** for all other grant types.
   a. On Page 1, provide **<u>only</u>** the following information:
      i. the name, professional title, department, institution, and *e*-mail address of the lead project director (PD) and name, professional title, department, and institution of all collaborating investigators
      ii. the Program Area or the Program Area Priority that is most closely addressed in the application
   b. On Page 2, include:
      i. a descriptive title
      ii. rationale
      iii. overall hypothesis or goal
      iv. specific objectives
      v. approach
      vi. potential impact and expected outcomes

3. When submitting LOI, NIFA will only accept LOI in the portable document format (PDF). Attach the PDF LOI to an e-mail addressed to the appropriate Program Area *e*-mail address for Submission of Letter of Intent indicated in this RFA. In the e-mail subject line, write: Letter of Intent [Program Area Code] _ [PDs Last Name].

4. A Letter of Intent is requested for all grant types, except Conference Grant applications.

5. Submission of more than one Letter of Intent to a program is discouraged.

6. Letters of Intent will be reviewed by scientific program staff in order to plan for appropriate expertise for the peer review panel and ensure that the proposed project fits appropriately within the Program Area Priorities.

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/grant-application-process.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 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/support/technical-support/software/adobe-reader-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/apply-for-grants.html. Under Step 1 click on "Download a Grant Application Package," and enter the funding opportunity number **USDA-NIFA-AFRI-004915** 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-resources.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. ET). 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

See http://www.nifa.usda.gov/funding/electronic.html for additional resources for applying electronically.

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. 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. 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).
Grants.gov provides online tools to assist if you do not own PDF-generating software. You will find PDF conversion software at http://test.grants.gov/web/grants/support/technical-support/software/pdf-conversion-software.html.

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. ET, excluding federal holidays.

1. <u>SF 424 R&R Cover Sheet</u>
Information related to the questions on this form is dealt with in detail in Part V, 2. of the NIFA Grants.gov Application Guide.

2. <u>SF 424 R&R Project/Performance Site Location(s)</u>
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. <u>R&R Other Project Information Form</u>
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. The summary should also include the relevance of the project to the goals of the Foundational Program area. See Part V. 4.7 of NIFA Grants.gov Application Guide for further instructions and a link to a suggested template.

b. Field 8. Project Narrative.

For Conference, New Investigator, Coordinated Agricultural Project (CAP), and Strengthening CAP and 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 **<u>not exceed a total of 7 pages</u>** 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. 4. g) 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 Attachment must include all of the following:

1) Response to Previous Review (if applicable)
   This requirement only applies to Resubmitted Applications and Resubmitted Renewal Applications as described in Part II, B. The Project Narrative attachment should include two components: 1) a one-page response to the previous review panel summary titled "Response to Previous Review" included as the first page of the attachment and 2) the 7- or 18-page Project Narrative, as required (see Part IV, C. 3. c 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 section d. 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
      The activities proposed or problems being addressed must be clearly stated and the approaches applied are to be clearly described. Specifically, this section must include:
      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.
- 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:
  - Stakeholder involvement in project development, implementation, and evaluation, where appropriate;
  - 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
  - A dissemination plan describing the methods that will be used to communicate findings and project accomplishments.
- AFRI encourages Integrated Projects that develop content suitable for delivery through eXtension. This content is for "end users" as opposed to staff development and must follow the eXtension Guiding Principles and guidelines for including eXtension in a proposal presented at http://about.extension.org/wiki/NIFA_RFA_Information. Funds may be used to 1) enhance an existing Community of Practice or 2) to establish a new Community of Practice, as appropriate.
- 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 www.national4-hheadquarters.gov 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.

- For Exploratory Research Grant Applications – In addition to the Project Narrative Requirements above, include in the rationale and approach section, a clearly articulated and compelling justification for the topic area, plans for seeking additional funding, and a clear description as to why it is appropriate to be considered as an Exploratory Research

application and not appropriate to submit as a standard competitive grant proposal to the various Agriculture and Food Research Initiative (AFRI) Program Area Priorities.

d. Center of Excellence Justification

Only CAP grants and standard grant applicants may be considered for 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, as part of their Project Narratives and within the page limits provided, 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).

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

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 a suggested template 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. 4. g. 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.

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

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

The Conflict of Interest list should not be included in the biographical sketch, but it must be provided as a separate document (see Part IV, C. 8. c 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.

c. ***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 recommended template 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 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. <u>R&R Personal Data</u> – 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.

6. <u>R&R Budget</u>

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. If you conclude that matching funds are not required as specified under Part III, B. 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, B., the Budget Narrative should include written verification of commitments of matching support (including both cash and in-kind contributions) from third parties. Written verification means:

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

2. For any third party in-kind contributions, a separate pledge agreement for each contribution, signed by the authorized representatives of the donor organization (and the applicant organization ONLY if provided after submission of the application), must

include: (1) The donor's name, address, and telephone number; (2) the name of the applicant organization; (3) the title of the project; (4) a good faith estimate of the current fair market value of the third party in-kind contribution and a description of how the fair market value was determined; and (5) a statement that the donor will make the contribution during the grant period.

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

Establish the value of applicant contributions in accordance with applicable cost principles. Refer to 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 0. 42857 of the total direct costs of an award. See Part IV, E for additional information.

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

All cumulative budget categories, with the exception of Indirect Costs, for which support is requested must be individually listed (with costs) in the same order as the cumulative budget. NOTE: For continuation awards, all budget categories for year one must also be fully justified. If consulting, collaborative, or subcontractual arrangements are included in the application, these arrangements should be fully explained and justified. The rate of pay for any consultant must be included, if known at the time of application. Please include a cost breakdown for the consultant, including the number of days in service, travel, and per diem, as well as the rate of pay. Letters of consent or collaboration and other evidence should be provided in the Documentation of Collaboration (see Part IV, C. 4. g. 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). It is extremely important that the Program (Area Priority) Code Name and Program (Area Priority) Code are spelled correctly and match this RFA. 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 a suggested template.

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.

A recommended template 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. ET 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 not 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 716 of the Consolidated and Further Continuing Appropriations Act, 2015 (H.R. 83) limits indirect costs to 30 percent of the total Federal funds provided under each award. 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.

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.

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 review panel will technically evaluate applications that meet these requirements.

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

When each peer review panel has completed its deliberations, the responsible program staff of the Foundational Program sub-priority area will recommend that the project: (a) be approved for support from currently available funds or (b) be declined due to insufficient funds or unfavorable review.

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

B. Evaluation Criteria

Projects supported under this program shall be designed, among other things, to accomplish one or more of the purposes of agriculture research, education, and extension, subject to the varying conditions and needs of States. Therefore, in carrying out its review, the peer review panel will take into account the following factors.

1. Research Project Applications

These evaluation criteria will be used for the review of all single-function Research Project applications.

a. Scientific Merit of the Application for Research

1. Novelty, innovation, uniqueness, and originality;
2. Where model systems are used, ability to transfer knowledge gained from these systems to organisms of importance to U.S. agriculture;
3. Conceptual adequacy of the research and suitability of the hypothesis, as applicable;
4. Clarity and delineation of objectives;
5. Adequacy of the description of the undertaking and suitability and feasibility of methodology;
6. Demonstration of feasibility through preliminary data; and
7. Probability of success of the project is appropriate given the level of scientific originality, and risk-reward balance.

b. Qualifications of Project Personnel, Adequacy of Facilities, and Project Management

1. Qualifications of applicant (individual or team) to conduct the proposed project, including performance record and potential for future accomplishments;
2. Demonstrated awareness of previous and alternative approaches to the problem identified in the application;
3. Institutional experience and competence in subject area;
4. Adequacy of available or obtainable support personnel, facilities, and instrumentation; and
5. Planning and administration of the proposed project, including: time allocated for systematic attainment of objectives; and planned administration of the proposed project and its maintenance, partnerships, collaborative efforts, and the planned dissemination of information for multi-institutional projects over the duration of the project.

c. Project Relevance

1. Documentation that the research is directed toward specific Program Area Priority identified in this RFA and is designed to accelerate progress toward the productivity and economic, environmental, and social sustainability of U.S. agriculture with respect to natural resources and the environment, human health and well-being, and communities.

d. Center of Excellence Status

1. All eligible applicants will be competitively peer reviewed (as described in Part V, A. and B. of this RFA), and ranked in accordance with the evaluation criteria. Those that rank highly meritorious and requested to be considered as a center of excellence will be further evaluated by the peer panel to determine whether they have met the standards to be centers of excellence (Part III D. and Part IV C.). In instances where they are found to be equally meritorious with the application of a non-center of excellence, based on peer review, selection for funding will be weighed in favor of applicants meeting the center of excellence criteria. NIFA will effectively use the center of excellence prioritization as a "tie breaker". Applicants that rank highly meritorious but who did not request consideration as a center of excellence or who are not deemed to have met the centers of excellence standards may still receive funding.

   In addition, the applicant's Notice of Award will reflect that, for the particular grant program, the applicant meets all of the requirements of a center of excellence. Entities recognized as centers of excellence will maintain that distinction for the duration of their period of performance or as identified in the terms and conditions of that award.

2. Integrated Project Applications

These evaluation criteria will be used for the review of all multi-function Integrated Project applications.

a. Merit of the Application for Science Research, Education, and/or Extension

1. Project objectives and outcomes are clearly described, adequate, and appropriate. All project components (i.e., research, education, extension) – at least two are required – are reflected in one or more project objectives;
2. Proposed approach, procedures, or methodologies are innovative, original, clearly described, suitable, and feasible;
3. Expected results or outcomes are clearly stated, measurable, and achievable within the allotted time frame;
4. Proposed research fills knowledge gaps that are critical to the development of practices and programs to address the stated problem or issue;
5. Proposed extension leads to measurable, documented changes in learning, actions, or conditions in an identified audience or stakeholder group; and
6. Proposed education (teaching) has an impact upon and advances the quality of food and agricultural sciences by strengthening institutional capacities and curricula to meet clearly delineated needs and train the next generation of scientists and educators.

b. Qualifications of Project Personnel, Adequacy of Facilities, and Project Management

1. Roles of key personnel are clearly defined;
2. Key personnel have sufficient expertise to complete the proposed project, and where appropriate, partnerships with other disciplines (e.g., social science or economics) and institutions are established;
3. Evidence of institutional capacity and competence in the proposed area of work is provided;
4. Support personnel, facilities, and instrumentation are sufficient;
5. A clear plan is articulated for project management, including time allocated for attainment of objectives and delivery of products, maintenance of partnerships and collaborations, and a strategy to enhance communication, data sharing, and reporting among members of the project team; and
6. The budget clearly allocates sufficient resources to carry out a set of research, education (teaching), and/or extension activities that will lead to desired outcomes, with no more than two-thirds of the budget focused on a single project component. Supporting funds for Community of Practice core functions and project-specific activities are included for partnerships with eXtension.

c. Project Relevance

1. Documentation that the project is directed toward specific Program Area Priority identified in this RFA and is designed to accelerate progress toward the productivity and economic, environmental, and social sustainability of U.S. agriculture with respect to natural resources and the environment, human health and well-being, and communities;
2. Project components (research, education, and/or extension) – at least two are required – are fully integrated and necessary to address the problem or issue;

3. The proposed work addresses identified stakeholder needs;
4. Stakeholder involvement in project development, implementation, and evaluation is demonstrated, where appropriate;
5. Plan and methods for evaluating success of project activities and documenting potential impact against measurable short and mid-term outcomes are suitable and feasible;
6. For extension or education (teaching) activities, curricula and related products will sustain education or extension functions beyond the life of the project; and
7. For extension or education (teaching) activities, the resulting curricula or products share information and recommendations based on knowledge and conclusions from a broad range of research initiatives.

d. Center of Excellence Status

All eligible applicants will be competitively peer reviewed (as described in Part V, A. and B. of this RFA), and ranked in accordance with the evaluation criteria. Those that rank highly meritorious and requested to be considered as a center of excellence will be further evaluated by the peer panel to determine whether they have met the standards to be centers of excellence (Part III D. and Part IV C.). In instances where they are found to be equally meritorious with the application of a non-center of excellence, based on peer review, selection for funding will be weighed in favor of applicants meeting the center of excellence criteria. NIFA will effectively use the center of excellence prioritization as a "tie breaker". Applicants that rank highly meritorious but who did not request consideration as a center of excellence or who are not deemed to have met the centers of excellence standards may still receive funding .

In addition, the applicant's Notice of Award will reflect that, for the particular grant program, the applicant meets all of the requirements of a center of excellence. Entities recognized as centers of excellence will maintain that distinction for the duration of their period of performance or as identified in the terms and conditions of that award.

3. Conference Grant Applications

1. Relevance of the proposed conference to agriculture and food systems in the U.S. and appropriateness of the conference in fostering scientific exchange;
2. Qualifications of the organizing committee and appropriateness of invited speakers to topic areas being covered; and
3. Uniqueness, timeliness of the conference, and appropriateness of budget requests.

4. Exploratory Research Applications

a. The scientific merit of the proposed activity;
b. Appropriateness of the grant for developing proof of concept of new and untested ideas including high risk research;
c. The applicant's previous experience and background along with the proposed activities; and
a. Relevance of the project to sustainable U.S. agriculture, the environment, human health and well-being, and rural communities.

5. New Investigator Grant Applications

Refer to the review criteria listed above for the applicable Project Type (Research or Integrated) to which you are applying.

6. **Sabbatical Grant, Equipment Grant, and Seed Grant Applications**
   a. The merit of the proposed activities or equipment as a means of enhancing the capabilities and competitiveness of the applicant and/or institution;
   b. The applicant's previous experience and background along with the appropriateness of the proposed activities or equipment for the goals proposed; and
   c. Relevance of the project to long-range improvements in and sustainability of U.S. agriculture, the environment, human health and well-being, and rural communities.

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. For the purpose of determining conflicts of interest, we determine the academic and administrative autonomy of an institution by reference to the current Higher Education Directory, published by Higher Education Publications, Inc., 1801 Robert Fulton Drive, Suite 555, Reston, VA, 20191. Phone: (888) 349-7715. Web site: http://www.hepinc.com.

Names of submitting institutions and individuals, as well as application content and peer evaluations, are kept confidential, except to those involved in the review process, to the extent permitted by law. In addition, the identities of peer reviewers will remain confidential throughout the entire review process, to the extent permitted by law; therefore, the names of the reviewers will not be released to applicants.

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 pre-award process. Although an applicant may be eligible based on its status as one of these entities, there are factors that may exclude an applicant from receiving federal financial and non-financial 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; however, withdrawn applications normally will not be returned. One copy of 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 re-competition 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 include, but are not limited to the ones listed below.

2 CFR Part 200 – Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

2 CFR Part 400 —USDA implementation of 2 CFR Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

2 CFR Part 415 – USDA General Program Administrative Regulations.

7 CFR Part 1, subpart A—USDA implementation of the Freedom of Information Act.

7 CFR Part 3—USDA implementation of OMB Circular No. A-129 regarding debt collection.

7 CFR Part 15, subpart A—USDA implementation of Title VI of the Civil Rights Act of 1964, as amended.

2 CFR Part 180 and Part 417--OMB Guidelines to Agencies on Government-Wide Debarment and Suspension (Nonprocurement) and USDA Nonprocurement Debarment and Suspension.

7 CFR Part 331 and 9 CFR Part 121—USDA implementation of the Agricultural Bioterrorism Protection Act of 2002.

2 CFR Part 416—USDA General Program Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments.

2 CFR Part 418—USDA implementation of Restrictions on Lobbying. Imposes prohibitions and requirements for disclosure and certification related to lobbying on recipients of federal contracts, grants, cooperative agreements, and loans.

2 CFR Part 421—USDA Implementation of Governmentwide Requirements for Drug-Free Workplace (Grants).

2 CFR Part 422—Research Institutions Conducting USDA-Funded Extramural Research; Research Misconduct.

7 CFR Part 3407—USDA procedures to implement the National Environmental Policy Act of 1969, as amended.

7 CFR 3430—Competitive and Noncompetitive Non-formula Financial Assistance Programs--General Award Administrative Provisions.

29 U.S.C. 794 (section 504, Rehabilitation Act of 1973) and 7 CFR Part 15b (USDA implementation of statute) —prohibiting discrimination based upon physical or mental handicap in federally-assisted programs.

35 U.S.C. 200 et seq. —Bayh Dole Act, controlling allocation of rights to inventions made by employees of small business firms and domestic nonprofit organizations, including universities, in federally-assisted programs (implementing regulations are contained in 37 CFR Part 401).

44 U.S.C. 3541 et seq. (Pub. L. 107-347) - Federal Information System Security Management Act of 2002 (FISMA), to improve computer and network security within the Federal Government. Applies to awardees if it will collect, store, process, transmit, or use information on behalf of NIFA.

D. Expected Program Outputs and Reporting Requirements

Grantees are to use REEport, NIFA's electronic, web-based inventory system to submit an initial project initiation which documents expected products and outcomes of the project. Additionally, annual progress report documenting realized project outcomes must be submitted to the electronic system. The web-based system facilitates an electronic workflow between grantees and NIFA for project accomplishments to be easily searchable and allows for public access to information on Federally-funded projects. The details of these reporting requirements, including those specific to the annual and final technical reports, are included in the award terms and conditions.

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. Dionne Toombs, Acting 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 Contacts:

Program Area	Program Area Contact:
Plant Health and Production and Plant Products	Dr. Michael Bowers (202) 401-4510; mbowers@nifa.usda.gov Dr. Ann Marie Thro (202) 401-6702; athro@nifa.usda.gov Dr. Shing Kwok (202) 401-6060; skwok@nifa.usda.gov Dr. Ann Lichens-Park (202) 401-6460; apark@nifa.usda.gov Dr. Liang-Shiou Lin (202) 401-5045; llin@nifa.usda.gov Dr. Mary Purcell-Miramontes (202) 401-5168; mpurcell@nifa.usda.gov
Animal Health and Production and Animal Products	Dr. Margo Holland (202) 401-5044; mholland@nifa.usda.gov Dr. Peter Johnson (202) 401-1896; pjohnson@nifa.usda.gov Dr. Lakshmi Kumar Matukumalli (202) 401-1766; lmatukumalli@nifa.usda.gov Dr. Mark Mirando (202) 401-4336; mmirando@nifa.usda.gov Dr. Steven Smith (202) 401-6134; sismith@nifa.usda.gov
Food Safety, Nutrition, and Health	Dr. Jeanette Thurston (202) 720-7166; jthurston@nifa.usda.gov Dr. Deirdra Chester (202) 401-5178; dnchester@nifa.usda.gov Dr. Jodi Williams (202) 720-6145; jwilliams@nifa.usda.gov
Bioenergy, Natural Resources, and Environment	Dr. Michael Bowers (202) 401-4510; mbowers@nifa.usda.gov Dr. Ray Knighton (202) 401-6417; rknighton@nifa.usda.gov
Agriculture Systems and Technology	Dr. Hongda Chen (202) 401-6497; hchen@nifa.usda.gov Ms. Charlotte Kirk Baer (202) 720-5280 or cbaer@nifa.usda.gov Dr. Mervalin Morant (202) 401-6602 or mmorant@nifa.usda.gov Dr. Daniel Schmoldt (202) 720-4807; dschmoldt@nifa.usda.gov
Agriculture Economics and Rural Communities	Dr. Jill Auburn (202)-720-2635 or jauburn@nifa.usda.gov Dr. Denis Ebodaghe (202) 401-4385 or debodaghe@nifa.usda.gov Dr. Fen Hunt (202) 720-4114 or fhunt@nifa.usda.gov Dr. Robbin Shoemaker (202) 720 - 5468; rshoemaker@nifa.usda.gov
Critical Agricultural Research and Extension	Dr. Martin Draper (202) 401-1990; mdraper@nifa.usda.gov
Exploratory Research	Ms. Charlotte Kirk Baer (202) 720-5280 or cbaer@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. Delegation of Fiscal Responsibility

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. Changes in Project Plans

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 7 CFR part 3015, subpart V (48 FR 29114, June 24, 1983), 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 Grant Programs--General Grant Administrative Provisions for the 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 in this RFA.

TABLE 1. Most Successful Universities and Colleges Receiving Federal Funds*.
Use to Determine Eligibility for Strengthening Grants

Arizona State University (all campuses)	Princeton University	University Maryland, College Park
Baylor College of Medicine	Purdue University (all campuses)	University Massachusetts, Amherst
Boston University	Rutgers, The State University New Jersey (all campuses)	University Massachusetts, Worcester
Brown University	Scripps Research Institute, The	University Miami
California Institute of Technology	Stanford University	University Miami (all campuses)
Carnegie Mellon University	State University of New York, Stony Brook (main campus)	University Minnesota (all campuses)
Case Western Reserve University	Texas A&M University (main campus)	University Missouri, Columbia
Colorado State University	Tufts University	University New Mexico (all campuses)
Columbia University	University Alabama, Birmingham	University North Carolina, Chapel Hill
Consortium for Ocean Leadership	University Alaska, Fairbanks	University of Medicine & Dentistry New Jersey
Cornell University (all campuses)	University Arizona	University Pennsylvania
Dartmouth College	University California, Berkeley	University Pittsburgh (all campuses)
Duke University	University California, Davis	University Rochester
Emory University	University California, Irvine	University South Florida
Florida State University	University California, Los Angeles	University Southern California
George Washington University, The	University California, San Diego	University Texas, Austin
Georgia Institute of Technology (all campuses)	University California, San Francisco	University Texas Health Science Center, Houston
Harvard University	University California, Santa Barbara	University Texas Health Science Center, San Antonio
Indiana University - Purdue University, Indianapolis	University Chicago	University Texas M. D. Anderson Cancer Center
Iowa State University	University Cincinnati (all campuses)	University Texas Medical Branch
Johns Hopkins University, The	University Colorado (all campuses)	University Texas Southwestern Medical Center
Louisiana State University (all campuses)	University Connecticut (all campuses)	University Utah
Massachusetts Institute of Technology	University Corporation for Atmospheric Research	University Virginia (main campus)
Medical College, Wisconsin	University Delaware	University Washington
Medical University, South Carolina	University Florida	University Wisconsin, Madison
Miami State University	University Georgia	Vanderbilt University
Mount Sinai School of Medicine	University Hawaii, Manoa	Virginia Commonwealth University

New York University	University Illinois, Chicago	Virginia Polytechnic Institute and State University
North Carolina State University	University Illinois, Urbana-Champaign	Wake Forest University
Northwestern University	University Iowa	Washington University, St. Louis
Ohio State University (all campuses)	University Kansas (all campuses)	Woods Hole Oceanographic Institution
Oregon Health & Science University	University Kentucky (all campuses)	Yale University
Oregon State University	University Maryland, Baltimore	Yeshiva University
Pennsylvania State University (all campuses)		

*****Data obtained from the table of Federal obligations for science and engineering research and development to the 100 universities and colleges receiving the largest amounts, ranked by total amount received in FY 2009 of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (National Science Foundation). Campuses that are part of a larger university system as listed in Table 1 may petition for an exemption to this rule (see Part III, B for information).

TABLE 2. Lowest One Third of Universities and Colleges Receiving Federal Funds*.
Use to Determine Eligibility for Possible Waiver of Matching Funds Requirement for Equipment Grants

A. T. Still University of Health Sciences	Hendrix College	Regis University
Abilene Christian University	HI Pacific University	Rhodes College
Agnes Scott College	Highline Community College	RI College
AK Pacific University	Hinds Community College	Ridgewater College
Albright College	Hood College	Roanoke College
Allegheny College	Houston Community College	Rocky Mountain College
American Indian Higher Ed. Consortium	Hudson Valley Community College	Rollins College
American University Puerto Rico	IL College of Optometry	Roosevelt University
Angelo State University	IL Wesleyan University	Saginaw Valley State University
Anne Arundel Community College	Immaculata University	Saint Augustine's College
Antioch University all campuses	IN University-Purdue University Ft. Wayne	Saint Cloud State University
AR Tech University	IN Wesleyan University	Saint Edward's University
Arapahoe Community College	Independent College Fund	Saint Lawrence University
Arizona Western College	Indian River State College	Saint Mary's College (Notre Dame, IN)
Arrowhead Community Colleges	Institute of American Indian and Alaska Native Culture and Arts Development	Saint Mary's College CA
Art Ctr. College of Design	Iona College	Saint Mary's College MD
Assumption College	Ithaca College	Saint Mary's University (San Antonio, TX)
Atlanta Metropolitan College	Ivy Tech Community College IN all campuses	Saint Mary's University MN
Atlantic College	John Brown University	Saint Michael's College
Augusta State University	John Carroll University	Saint Norbert College
Augustana College (Rock Island, IL)	Johnson & Wales University (Providence, RI)	Saint Vincent Catholic Medical Ctrs. NY
Augustana College (Sioux Falls, SD)	Juniata College	Saint Vincent College
Austin College	Kalamazoo College	Salem State University
Austin Community College	Kansas City KS Community College	Salisbury University
Avila University	Kansas City University of Medicine and Biosciences	Salve Regina University
Babson College	Kean University	San Diego Mesa College
Baker University	Keene State College	Sarah Lawrence College
Baltimore City Community College	Kenyon College	SC Sea Grant Consortium
Bard College	Knox College	Seattle Community Colleges all campuses
Bard College at Simon's Rock	Kutztown University PA	Seattle Pacific University
Bay Mills Community College	LA Universities Marine Consortium	Seminole State College
Beaufort County Community College	Lake Forest College	Seminole State College FL
Beloit College	Lake Superior State University	Shawnee State University
Benedictine University	Lakeshore Technical College	Simmons College
Bennett College	Landmark College	Skagit Valley College
Bennington College	Laramie County Community College	Slippery Rock University PA

Bentley University	Lasell College	Sojourner-Douglass College
Bethany College (Bethany, WV)	Le Moyne College	South Mountain Community College
Bethune-Cookman University	Lebanon Valley College	Southeast MO State University
Birmingham-Southern College	Lee College	Southeastern OK State University
Bismarck State College	Lehigh Carbon Community College	Southern CT State University
Bowie State University	LeMoyne-Owen College	Southern Polytechnic State University
Bridgewater State University	LeTourneau University	Southern UT University
Butler County Community College (Butler, PA)	Lewis-Clark State College	Southwest FL College
Butler University	Lock Haven University PA	Southwestern Assemblies of God University
Butte College	Longwood University	Southwestern College (Chula Vista, CA)
Cabrini College	Loras College	Southwestern Indian Polytechnic Institute
Calhoun Community College	Los Rios Community College District (all campuses)	Southwestern OK State University
Canisius College	Lyndon State College	Springfield College (Springfield, MA)
Capitol College	Lyon College	Springfield Technical Community College
Carl Albert State College	MA College of Liberal Arts	State University of New York College Old Westbury
Carroll College	Manhattan College	State University of New York College Oswego
Carroll University	Mansfield University PA	State University of New York College Potsdam
Central Arizona College	Marietta College	State University of New York Empire State College
Central College	Marist College	State University of New York Farmingdale
Central Community College	Martin University	State University of New York Fredonia
Central CT State University	Mary Baldwin College	State University of New York Institute of Technology Utica-Rome
Central OR Community College	Marygrove College	State University of New York New Paltz
Centre College	Maryville University Saint Louis	State University of New York Purchase College
Chadron State College	McNeese State University	Stevenson University
Chestnut Hill College	Mercyhurst College	Stonehill College
Christian Brothers University	Mesa State College	Suffolk University
Clarion University PA all campuses	Mesabi Range Community and Technical College	Susquehanna University
Clark State Community College	Metropolitan State College Denver	Sweet Briar College
CO College	Middle TN School of Anesthesia	Taylor University
CO State University all campuses	Mid-South Community College	Thiel College
Cochise College	Midwestern State University	Tohono O'odham Community College
Coe College	Midwestern University (Chicago, IL)	Tri-College University
College of Lake County	Millersville University PA	Troy University main campus
College of Saint Benedict	Millsaps College	Truckee Meadows Community College
College of Saint Elizabeth	Milwaukee School of Engineering	TX A&M University-Texarkana
College of Saint Scholastica	Misericordia University	TX College
College of the Atlantic	Mohave Community College	TX Wesleyan University

College Southern NV	Monmouth College	Tyler Jr. College
College Wooster	Montgomery County Community College	Union Graduate College
Columbia College (Columbia, MO)	Mountain State University	University AK System of Higher Ed.
Columbia College (Columbia, SC)	MS University for Women	University AR Monticello
Columbia College of Nursing	MT State University Billings	University Central MO
Columbus State University	MT Tech College of Technology	University Charleston
Commonwealth Medical College,The	MT University System all campuses	University Consortium for Geographic Information Science
Concord University	Mt. Saint Mary's University	University Dallas
Concordia College (Moorhead, MN)	Muhlenberg College	University Evansville
CUNY Bronx Community College	Nashville State Community College	University Hartford
CUNY Kingsborough Community College	National College of Natural Medicine	University Houston Clear Lake
Cuyahoga Community College all campuses	National-Louis University	University IL Springfield
Dakota State University	NE Indian Community College	University Indianapolis
Del Mar College	Neumann University	University Mary Washington
Dickinson State University	New England School of Acupuncture	University MD Ctr. for Environmental Science
Doane College	Nicholls State University	University MD University College
Dominican University	North GA College & State University	University ME Augusta
Drury University	North IA Area Community College	University NE Kearney
East Stroudsburg University PA	Northampton Community College	University North AL
Eastern Arizona College	Northeast Community College	University of Saint Mary
Eastern IL University	Northeast TX Community College	University of the Incarnate Word
Eastern Mennonite University	Northern MI University	University of the South
Eastern OR University	Northern WY Community College District	University Phoenix
Eastern University	Northwest FL State College	University PR, Cayey
East-West University	Northwest MO State University	University Puget Sound
Eckerd College	Northwestern Health Sciences University	University Redlands
Edison State College	Northwestern MI College	University Rio Grande
Edward Via College of Osteopathic Medicine	Northwestern OK State University	University Sagrado Corazón
El Camino College Compton Ctr.	Northwestern State University	University Tampa
Elgin Community College	NY Institute of Technology all campuses	University West GA
Elon University	NY Law School	University WI-Parkside
Emerson College	Ocean County College	University WI-River Falls
Emporia State University	OH Northern University	University WI-Whitewater
Essex County College	OH Wesleyan University	UniversityS. Naval Academy
Fairleigh Dickinson University all campuses	Orangeburg-Calhoun Technical College	VA Military Institute
Fayetteville Technical Community College	Otterbein University	Valdosta State University
Ferrum College	PA College of Technology	Victoria College
Fitchburg State University	Pace University all campuses	Viterbo University
FL State College Jacksonville	Pacific Lutheran University	VT Technical College
Florence-Darlington Technical College	Pacific States University	Wabash College
Fox Valley Technical College	Paine College	Warren Wilson College

Francis Marion University	Palau Community College	Washburn University
Franciscan University Steubenville	Pasadena City College	Washington and Lee University
Fresno City College	Pearl River Community College	Washington State Community College
Ft. Hays State University	Peninsula College	Waukesha County Technical College
Ft. Lewis College	Pepperdine University Malibu	Weber State University
GA Southwestern State University	Philadelphia College of Osteopathic Medicine	Western Carolina University
Gadsden State Community College	Philadelphia University	Western New England College
Gainesville State College	Philander Smith College	Western University of Health Sciences
Galveston College	Pikes Peak Community College	Westfield State College
Gateway Technical College	Pitzer College	Westminster College (New Wilmington, PA)
Gettysburg College	Plymouth State University	Westmont College
Gonzaga University	Polk State College	Wheaton College (Norton, MA)
Gordon College (Wenham, MA)	Portland Community College	Wheaton College (Wheaton, IL)
Goucher College	Presbyterian College	White Earth Tribal and Community College
Grand View University	Prescott College	Widener University all campuses
Greenville Technical College	Providence College	Wiley College
Hamilton College (Clinton, NY)	Quinsigamond Community College	William Carey University
Hamline University	Radford University	Winona State University
Haywood Community College	Red Rocks Community College	Wofford College
Heartland Community College	Reed College	Worcester State University

*****Data obtained from the table of Federal obligations, including American Recovery and Reinvestment Act obligations for science and engineering research and development to universities and colleges, ranked by total amount received, by agency from the FY 2009 Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (National Science Foundation).
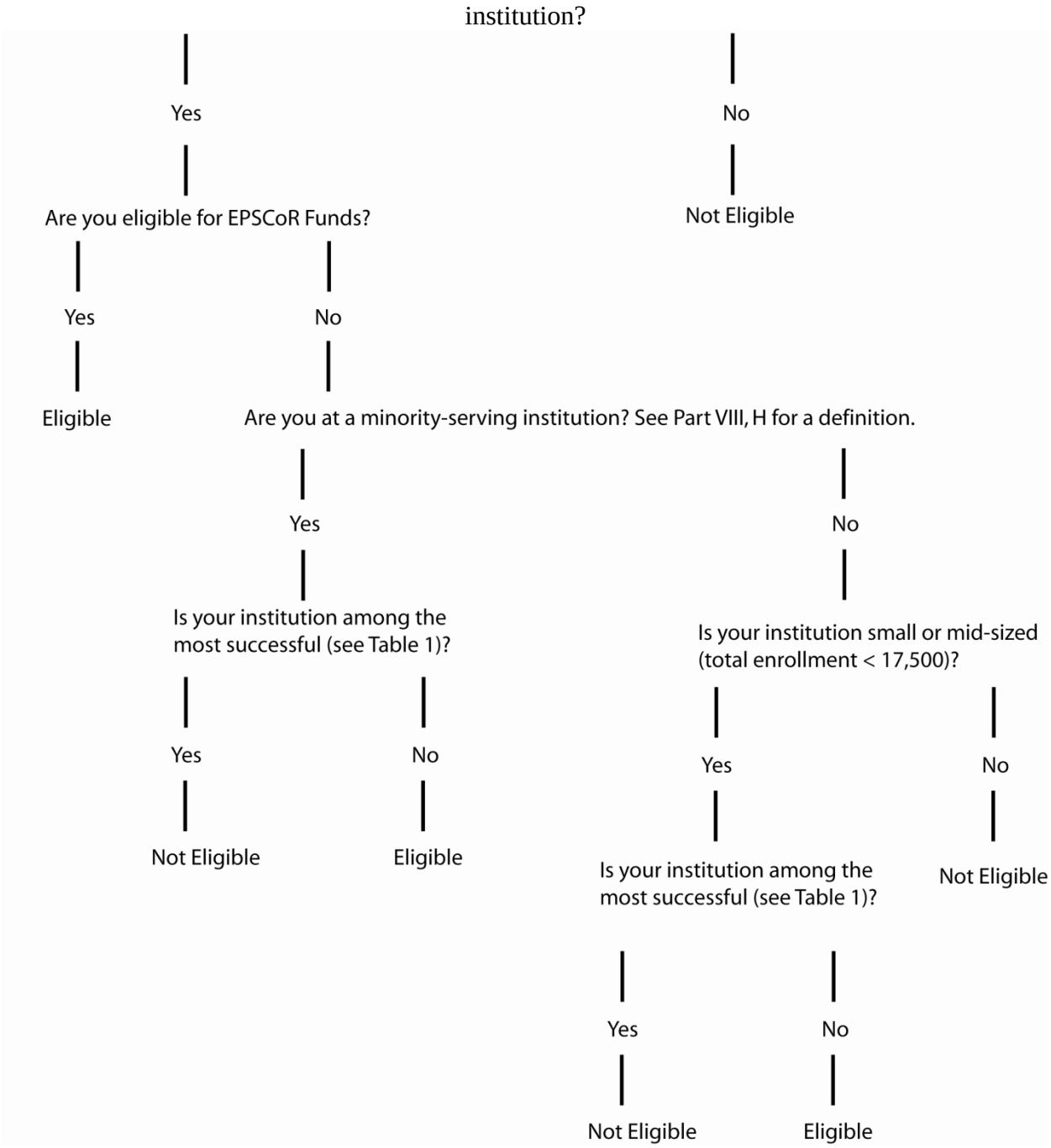
FIGURE 1. Flow Chart for Strengthening Grant Eligibility