

National Research Initiative Competitive Grants Program

FY 2005 Request for Applications

**U.S. Department of Agriculture, Cooperative State Research,
Education, and Extension Service**

**COOPERATIVE STATE RESEARCH, EDUCATION, AND
EXTENSION SERVICE; U.S. DEPARTMENT OF AGRICULTURE**

NATIONAL RESEARCH INITIATIVE COMPETITIVE GRANTS PROGRAM

INITIAL ANNOUNCEMENT

CATALOG OF FEDERAL DOMESTIC ASSISTANCE: This program is listed in the Catalog of Federal Domestic Assistance under 10.206.

STAKEHOLDER INPUT: The Cooperative State Research, Education, and Extension Service (CSREES) is requesting comments regarding this request for applications (RFA) from any interested party. These comments will be considered in the development of the next RFA for the program. Such comments will be used 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)). This section requires the Secretary to solicit and consider input on a current RFA from persons who conduct or use agricultural research, education and extension for use in formulating future RFAs for competitive programs. Comments should be submitted as provided in the **DATES** portion of this announcement.

Written stakeholder comments should be submitted by mail to: Policy and Program Liaison Staff; Office of Extramural Programs; USDA-CSREES; STOP 2299; 1400 Independence Avenue, S.W.; Washington, D.C. 20250-2299; or via e-mail to: RFP-OEP@csrees.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 National Research Initiative RFA.

DATES: All applications must be received by close of business (COB) (5:00 p.m. Eastern Time) on the dates indicated at the end of this announcement. Applications received after applicable deadlines will not be considered for funding. Comments regarding this RFA are requested within six months from the issuance of this notice. Comments received after that date will be considered to the extent practicable.

EXECUTIVE SUMMARY: CSREES requests applications for the National Research Initiative (NRI) Competitive Grants Program for fiscal year (FY) 2005 to support (1)

high priority fundamental and mission-linked research of importance in the biological, environmental, physical, and social sciences relevant to agriculture, food, and the environment and (2) competitively awarded research, extension, and education grants addressing key issues of national and regional importance to agriculture, forestry, and related topics. In FY 2005, CSREES anticipates that approximately \$150 million will be available for support of this program. Of this amount, no more than 20 percent will be made available to fund integrated projects (see Part I, A.). The remaining funds will be used to fund research projects.

This notice identifies program objectives for research projects and integrated projects. It describes separate eligibility criteria and matching requirements for each type of project, and instructs applicants regarding the submission and review of applications. CSREES additionally requests stakeholder input from any interested party for use in the development of the next RFA for this program.

IMPORTANT INFORMATION REGARDING NRI POLICIES AND PROCEDURES:

******* PLEASE READ *******

Changes in the FY 2005 RFA This RFA invites applications for research grants and integrated research, extension, and education grants. Eligibility, requirements for matching funds and types of projects are different for research grants compared to integrated research, extension, and education grants; thus, applicants are strongly encouraged to read the entire RFA and contact the appropriate National Program Leader with any questions. The NRI will use no more than 20 percent of available funds to support integrated research, extension, and education grants (see Part I. A.); these funds will not be distributed uniformly across all NRI programs.

Deadline Date Changes

Starting with FY 2003, research application submission deadline dates were changed from "postmarked by" dates to "received by" dates. Applications must be received in the Proposal Services Unit/CSREES by 5:00 p.m., Eastern Time, on or prior to the applicable deadline date indicated in this RFA.

Submitting Applications and Deadline Dates for Agricultural Research Enhancement Awards

Applicants for Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, or Seed Grants must submit their applications by the deadline date indicated for the appropriate NRI program. Place the program code for the program in Block 8 of the Proposal Cover Page (Form CSREES-2002) and check the appropriate box on the Project Summary (Form CSREES-2003).

Funding Limit Guidelines

The NRI has instituted funding limit guidelines for all application types submitted to this program. Applicants should consult individual programs for the guidelines that apply to each program and are strongly encouraged to adhere to these funding limit guidelines.

Waiver of Matching Funds Requirement for Equipment Grants

The requirement for matching funds may be waived if the award is to 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 and if the equipment to be acquired costs not more than \$25,000 and either has multiple uses within a single research project or is useable in more than one research project.

Current and Pending Support

Current and pending support information (on Form CSREES-2005) is now required only for the Project Directors as listed on the Proposal Cover Page (Form CSREES-2002). In addition to completing Form CSREES-2005, Project Directors also should include either a brief statement of objectives or project summaries for all projects listed in Current and Pending Support that could be deemed through the review process as potentially overlapping with the submitted application based on project title, including formula funding and other forms of intramural support.

Materials on the Internet

Please see Part VIII, F. for a list of NRI materials available on the Internet and instructions on how to access that information.

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PART I—FUNDING OPPORTUNITY DESCRIPTION

A. Legislative Authority and Background

The authority to support research projects through this program is contained in 7 U.S.C. 450i(b). Under this authority, subject to the availability of funds, the Secretary may award competitive research grants, for periods not to exceed five years, for the support of research projects to further the programs of the USDA.

In FY 2004, Section 733 of the General Provisions of the Consolidated Appropriations Act, 2004 (Pub. L. 108-199) provided CSREES with the authority to use up to twenty percent of the amount made available in the Act for the National Research Initiative Competitive Grants Program (NRI), to carry out a competitive grants program under the same terms and conditions as those provided in Section 401 of the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA) (7 U.S.C. 7621). In FY 2005, CSREES anticipates similar language; however, funding for integrated activities is contingent on the inclusion of the integrated authority in the FY 2005 Appropriations Act and the availability of appropriated funds.

Section 401 of AREERA authorizes the Secretary of Agriculture to establish a research, extension, and education competitive grants program to address critical emerging U.S. agricultural and rural issues related to future food production; environmental quality and natural resource management; farm income; or rural, economic and business and community development policy. In addition the Secretary of Agriculture is authorized to make grants that address priority mission areas related to: (1) agricultural genomics, (2) food safety, food technology and human nutrition, (3) new and alternative uses and production of agricultural commodities and products, (4) agricultural biotechnology, (5) natural resource management, including precision agriculture, and (6) farm efficiency and profitability, including the viability and competitiveness of small and medium sized dairy, livestock, crop and other commodity operations.

B. Purpose and Priorities

The purpose of the NRI Program is to support research, extension, and education grants that address key problems of national, regional, and multistate importance in sustaining all components of agriculture (farming, ranching, forestry including urban and agroforestry, aquaculture, rural communities, human nutrition, processing, etc.). Providing this support requires that NRI advance fundamental sciences in support of agriculture and coordinate opportunities to build on these discoveries. Building on these discoveries will necessitate new efforts in education and extension that deliver science-based knowledge to people, allowing them to make informed practical decisions. Hence, the NRI is accepting applications for fundamental research, mission-linked research, and integrated research, extension, and education projects. However, applicants should know that the NRI will use no more than 20 percent of available funds to support integrated projects (see Part I, A.) and that these funds will not be distributed uniformly, but targeted to specific priorities. Targeted priorities for integrated projects are clearly identified within the detailed descriptions of program offerings (see Part II, E.).

CSREES may also solicit applications for NRI funds through other announcements, including supplemental FY 2005 NRI RFAs, or in conjunction with multiagency programs. Such announcements will be made public in the same manner as this announcement.

The Competitive Programs (CP) unit, CSREES of USDA, administers the NRI. The purpose of the NRI is to support high priority fundamental and mission-linked research of importance in the biological, environmental, physical, and social sciences relevant to agriculture, food, and the environment. For this purpose, the following definitions apply:

1. Fundamental research

Research that tests scientific hypotheses and provides basic knowledge that allows advances in applied research and from which major conceptual breakthroughs are expected to occur.

2. Mission-linked research

Research on specifically identified agricultural problems that, through a continuum of efforts, provides information and technology that may be transferred to users and may relate to a product, practice, or process.

3. Multidisciplinary projects

Multidisciplinary projects are those (research or integrated) in which investigators from two or more disciplines are collaborating closely. These collaborations, where appropriate, may integrate the biological, physical, chemical or social sciences.

4. Integrated projects

“Integrated” means to bring together the three components of the agricultural knowledge system (research, education, and extension) around a problem or activity. In FY 2005, the NRI is seeking to support projects that bring together at least two of these components and address identified agricultural problems as described in this RFA.

The research programs described herein were developed within the context of the authorized purposes of USDA research, extension, and education, and within the framework of the CSREES Strategic Plan. In addition, the NRI obtains input from Congress, the National Agricultural Research, Extension, Education, and Economics Advisory Board and a number of university, scientific, and agricultural committees and organizations.

The program areas that appear in the following table are soliciting integrated project applications in particular in FY 2005:

Program Area	Program Code
Animal and Plant Biosecurity	20.0
Managed Ecosystems	23.1
Air Quality	28.0
Human Nutrition and Obesity	31.5
Animal Reproduction	41.0
Animal Protection: Animal Well-being	44.0 (part)
Biology of Weedy and Invasive Plants	51.9
Enhancing the Prosperity of Small Farms and Rural Communities	66.0
Improving Food Quality and Value	71.1

PART II—AWARD INFORMATION

A. Available Funding

There is no commitment by USDA to fund any particular application or to make a specific number of awards. Contingent on congressional action, in FY 2005, CSREES anticipates that approximately \$150 million will be available for support of this program. Of this amount, no more than 20 percent will be made available to fund integrated projects (see Part I, A.). The remaining funds will be used to fund research projects.

NRI funds may be used to fund applications submitted to supplementary NRI RFAs and/or solicitations for multiagency programs in which the NRI is participating. No less than 10 percent of the funds available to support research projects will be made available

for Agricultural Research Enhancement Awards (excluding New Investigator Awards), and no more than 2 percent will be made available for equipment grants. Further, no less than 30 percent of the funds available to support research projects shall be made available for grants for research to be conducted by multidisciplinary teams, and no less than 40 percent shall be made available for grants for mission-linked systems research.

B. Types of Applications

In FY 2005, applications may be submitted to the NRI Program 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 NRI Program. All new applications will be reviewed 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 and additionally must contain a Progress Report (see Project Description, Part IV, B., 1., f.(2) under Integrated and Standard Research Grant Applications). Renewal applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in the appropriate area to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications.

3. Resubmitted application

This is an application that had previously been submitted to the NRI Program but was not funded. Project Directors (PDs) must respond to the previous review panel summary (see Response to Previous Review, Part IV, B., 1., e. under Integrated and Standard Research Grant Applications). Resubmitted applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in the appropriate area to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications. The revised application should clearly indicate the changes that have been made in the proposed project. Applications which appear to be resubmissions (regardless of the designation) are regarded as such by the Program and the panel, and compete on the same basis with all other applications (new, renewal, and resubmissions) submitted to the program at the same time.

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 or amended award and that had previously been submitted for renewal to the NRI Program but was not approved. Therefore, PDs must

provide a Progress Report as required under the Project Description, Part IV, B., 1., f., (2) under Integrated and Standard Research Grant Applications), and must respond to the previous review panel summary as required under Response to Previous Review, Part IV, B., 1., e. under Integrated and Standard Research Grant Applications. Resubmitted renewal applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in the appropriate areas to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications.

C. Project Types

For applications proposing research projects, support will be provided through Standard Research Grants, Conferences, Postdoctoral Fellowships, New Investigator Awards, and Strengthening Awards.

In FY 2005, applications are being solicited for the project types:

1. Conventional projects

(a) Standard Research Grants

Research will be supported that is **fundamental** or **mission-linked**, and that is conducted by **individual** investigators, co-investigators within the same discipline, or **multidisciplinary** teams.

A new type of standard award was introduced in FY 2004, the Coordinated Agricultural Project (CAP) award. CAP awards support large-scale, multi-million dollar projects to promote collaboration, open communication and the exchange of information; reduce duplication of effort; and coordinate activities among individuals, institutions, States, and regions. Unit participants serve as a team that conducts targeted research in response to emerging or priority area(s) of national need. Applications articulate how a CAP will complement and/or link with existing programs or projects at the national level. A research CAP unit contains the needed science-based expertise, as well as expertise from principal stakeholders and partners to accomplish project goals and objectives. Applications outline the potential of the unit, the structure, coordination, and plan of implementation; and propose several research areas that will be evaluated during the study period.

In FY 2005, CSREES plans to award the second increment of funding to existing CAP grantees with approved project periods of 2-4 years if satisfactory progress has been achieved on the project. A continuation grant is a grant instrument by which the Department agrees to support a specified level of effort for a predetermined project period with a statement of intention to provide additional support at a future date, provided that performance has been satisfactory, appropriations are available for this purpose, and continued support would be in the best interest of the Federal government and the public. If CSREES seeks new CAP applications in FY 2005, the Agency will do so through a supplemental RFA.

(b) Conferences

Scientific meetings that bring together scientists to identify research needs, update information, or advance an area of research are recognized as integral parts of research efforts. Support for a limited number of such meetings covering subject matter encompassed by this solicitation will be considered for partial or, if modest, total support. These applications should be submitted to the appropriate program described under Part II, E., Program Opportunities. Applicants considering submitting conference applications are strongly advised to consult appropriate NRI staff before preparing their applications.

2. Agricultural Research Enhancement Awards (AREA)

To contribute to the enhancement of research capabilities in the research programs described herein, applications are solicited for Agricultural Research Enhancement Awards (AREA). These awards are designed to help institutions develop competitive research programs and to attract new scientists into careers in high-priority areas of national need in agriculture, food, and environmental sciences. The AREA program provides support for Postdoctoral Fellowships, research awards for New Investigators, and Strengthening Awards. Specific eligibility requirements for these awards are described below. Applications submitted by non-United States organizations will not be considered for support. However, United States citizens applying as individuals for Postdoctoral Fellowships may do all or part of the proposed work at a non-United States organization.

(a) Postdoctoral Fellowships

Individuals who have recently received or will soon receive their doctoral degree are encouraged to submit applications. **These applications may be submitted either directly by the individual or through the mentor's institution. The postdoctoral applicant must be the sole PD listed on the application.** The following requirements apply: (1) the doctoral degree must be received after January 1, 2002, and by June 15, 2005; (2) the individual must be a citizen of the United States; (3) the application must contain (A) documentation that arrangements have been made with an established investigator to serve as mentor; (B) documentation that arrangements have been made for the necessary facilities, space, and materials for conduct of the research; and (C) documentation from the host institution's authorized organizational representative (AOR) indicating that the host institution concurs with these arrangements; and (4) the research proposed must be solicited in and directly submitted to a program described under Part II, E., Program Opportunities, in this document. Although a proposed project may fit in the context of the mentor's existing research area, projects are specifically solicited that initiate the postdoctoral student's independent research program, rather than serve as extensions of ongoing projects in the mentor's laboratory. Postdoctoral awards are limited to a total award of \$125,000 and two years' duration and are not renewable. Funds should be requested primarily for salary support, although other expenditures (e.g., supplies, travel, and publication) are allowable costs if properly justified. Either an institutional allowance (not to exceed \$2,400/year) or indirect costs may be requested within the \$125,000 maximum award limit. **Applications should be submitted to the appropriate**

research program described in this solicitation by the designated deadline for that particular program. A separate peer review panel will not be assembled to review these applications.

An institution may provide compensation for non-research services. Compensation for services is not considered stipend supplementation. However, it is expected that compensated services will occur on a limited, part-time basis apart from the normal postdoctoral research activities, which require a minimum of 40 hours per week. Under no circumstances may the conditions of stipend supplementation or the services provided for compensation interfere with, detract from, or prolong the fellow's 2-year approved NRI postdoctoral fellowship.

Applicants are urged to contact program staff concerning questions related to eligibility, budget, and similar matters.

(b) New Investigator Awards

A new investigator is one who is beginning his/her research career, does not have an extensive research publication record, and has less than five years postgraduate, career-track research experience. The new investigator may not have received competitively awarded Federal research funds beyond pre- or postdoctoral research awards. The application must contain documentation that lists all prior Federal research support. **The PD and all co-PDs must meet all of the New Investigator eligibility requirements as described within this section. Research colleagues who do not meet eligibility requirements should be designated only as collaborators and should not be listed on the Proposal Cover Page (Form CSREES-2002).** Applications may be submitted by any State agricultural experiment station, college, university, other research institution or organization, Federal agency, national laboratory, private organization, corporation, or individual. Applications submitted by non-United States organizations will not be considered for support. The research proposed shall be appropriate to a program described under Part II, E., Program Opportunities, and **the application must be submitted directly to that program by the designated deadline date.** A separate peer review panel will not be assembled to review these applications.

(c) Strengthening Awards

Strengthening Awards consist of Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, Seed Grants, and Strengthening Standard Research Project Awards. **The NRI particularly encourages applications for Research Career Enhancement Awards (Sabbatical Awards).** All applications submitted for Strengthening Awards, in addition to fulfilling the requirements in this part, must be appropriate to one of the research programs described under the Program Opportunities part of this RFA.

Applications are solicited that request funds for Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, Seed Grants, or Strengthening Standard Research Project Awards. Research Career Enhancement Awards, Equipment Grants,

Seed Grants, and Strengthening Standard Research Project Awards will be available to ensure that (a) faculties of small and mid-sized academic institutions that are not among the most successful universities and colleges for receiving Federal funds for science and engineering research (see Table 1. at the end of this document for an alphabetical listing of the most successful institutions) and (b) PDs at institutions eligible for USDA EPSCoR (Experimental Program for Stimulating Competitive Research) funding receive a portion of the grants. When determining eligibility for these grant types, the following definitions apply:

(1) Small and mid-sized institutions are academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students. (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter.) An institution in this instance is an organization that possesses a significant degree of autonomy.

(2) Limited institutional success means institutions that are **not** among the most successful universities and colleges for receiving Federal funds for science and engineering research. See Table 1. at the end of this document for an alphabetical listing of the most successful institutions.

States eligible for **USDA-EPSCoR** funds are those States which have had a funding level from the NRI no higher than the 38th percentile of all States, based on total funding for a three year period (excluding strengthening set-aside funds). For FY 2005, the following States fall into this category:

Alabama	Hawaii	Mississippi	North Dakota	Vermont
Alaska	Idaho	Nevada	Oklahoma	West Virginia
Arkansas	Kentucky	New Hampshire	Rhode Island	Wyoming
Connecticut	Maine	New Mexico	South Dakota	

Other entities eligible for **USDA-EPSCoR** funds in FY 2005 include the following United States commonwealths, territories, possessions and their successors and the District of Columbia:

American Samoa	Micronesia	Virgin Islands of the U.S.
District of Columbia	Northern Mariana Islands	

All applicants for Strengthening Awards must meet the criteria described herein for the type of award for which the applicant applies. **An individual applicant may submit only one strengthening application (Research Career Enhancement Awards, Equipment Grants, Seed Grants) as PD or co-PD this fiscal year.** The PD and all co-PDs must meet **all** Strengthening eligibility requirements as described in these guidelines.

Research Career Enhancement Awards, Equipment Grants, Seed Grants, and Strengthening Standard Research Project Award applications shall be appropriate to a program described under Part II, E., Program Opportunities, and the application must be submitted directly to that program by the designated deadline date. A separate peer review panel will not be assembled to review these applications.

Investigators are encouraged to contact the National Program Leader of the appropriate research program described in Part II, E., Program Opportunities, regarding questions about suitability of research topics or research topics for which equipment would be used and to verify eligibility.

See Part IV, B., 3., (c) for detailed instructions regarding what to submit for a particular type of strengthening award.

In addition to being appropriate for and submitted to one of the research program areas described under Part II, E., Program Opportunities, applications for Strengthening Awards must fit within one of the following specified areas:

Research Career Enhancement Awards (Sabbatical Awards)

The purpose of these awards is to provide an opportunity for faculty to enhance their research capabilities by funding sabbatical leaves. CSREES also encourages and will support the concept of “mini-sabbaticals” for faculty desiring short-term training to learn new techniques that will improve their competitiveness. These short-term training opportunities generally follow all of the sabbatical items described below but with a shorter duration. These awards also could be used to participate in short courses offered at various research institutions. These awards will be limited to individual faculty who have appointments at small and mid-sized degree-granting institutions that previously have had limited institutional success and to faculty who have appointments at degree-granting institutions eligible for USDA-EPSCoR funding. The proposed PD may not have served as a PD on a NRI grant within the past five years (including Seed Grants, Research Career Enhancement Awards, and Postdoctoral Fellowships but excluding Equipment Grants).

Collaborative arrangements are encouraged; however, research colleagues who do not meet eligibility requirements may only serve as collaborators and should not be listed on the Proposal Cover Page (CSREES-2002).

The sabbatical description must include the research interests and goals of the PD, the research project to be pursued while on sabbatical leave, an indication of how the sabbatical leave will enhance the research capabilities of the PD, and a statement of future research goals and how the sabbatical will enable the PD to pursue these goals. A letter detailing the particulars of the arrangement with the home institution (e.g., dates and duration of sabbatical and salary arrangements) and a letter of support and intent from the established investigator who will be the host are to be included in the application. The host's letter is to provide assurance that all facilities and space necessary for conduct of the research will be available. Awards will be limited to one year's salary and funds for travel and supplies. These awards are not renewable. **Use the program code for the program in Box 8 of the Proposal Cover Page (Form CSREES-2002) and check the "Career Enhancement" box on the Project Summary (Form CSREES-2003).**

Equipment Grants

Funds will be designated for equipment grants to strengthen the research capacity of institutions. Only degree-granting institutions that are not among the most successful universities and colleges for receiving Federal funds for science and engineering research may apply (see Table 1. for the most successful institutions).

Each request shall be limited to one major piece of equipment within the cost range of \$10,000-\$250,000. The amount requested shall not exceed 50 percent of this 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. A letter(s) from the organization(s) committed to providing the remaining non-Federal funds must be included in the application. The requirement for matching funds may be waived if the award is to 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 and if the equipment to be acquired costs not more than \$25,000 and either has multiple uses within a single research project or is useable in more than one research project.

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.

A description of the research project(s) for which the equipment will be used and how the equipment will fit into or enhance the research program and allow the applicant(s) to become more competitive for future funding is required. A description of similar or complementary equipment available to the PD and why the requested equipment is necessary is also required. PDs are encouraged to provide evidence of institutional commitment for operation and maintenance of requested equipment. Arrangements for sharing equipment among faculty are encouraged; however, it must be evident that the PD is a principal user of the requested equipment. These awards are not intended to replace requests for equipment in individual research projects. Rather, they are intended to help fund items of equipment that will upgrade research infrastructure. Requests for

computer equipment are allowed only if the equipment is to be used in 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 . **Use the program code for the program in Box 8 of the Proposal Cover Page (Form CSREES-2002) and check the “Equipment” box on the Project Summary (Form CSREES-2003).**

Seed Grants

The purpose of these awards is to provide funds to enable investigators to collect preliminary data in preparation for applying for a Standard Research Grant. These awards will be limited to faculty with appointments at small and mid-sized degree-granting institutions that have had limited institutional success and to faculty with appointments at degree-granting institutions eligible for USDA-EPSCoR funding. In order to be eligible, a proposed PD may not have served as PD on a NRI grant within the past five years (including Seed Grants, Research Career Enhancement Awards, and Postdoctoral Fellowships but excluding Equipment Grants). All PD *and* co-PDs must meet all eligibility requirements for Strengthening Awards. **PLEASE NOTE:** A PD or co-PD of a Seed Grant may not serve as a PD or co-PD on another Seed Grant within the five years of the initial Seed Grant. Research colleagues who do not meet eligibility requirements may only serve as collaborators and should *not* be listed on the Proposal Cover Page (Form CSREES-2002). These awards will be limited to a total of \$100,000 (including indirect costs) for two years and are **not renewable**. Applications for seed grants are expected to indicate how the research will enhance future competitiveness of the PD in applying for Standard Research Grants. Also, awards are not intended to fund stand-alone research projects but rather projects that will lead to further research applicable to one of the research areas in the NRI.

Strengthening Standard Research Project Awards

These awards will be limited to faculty with appointments at small and mid-sized degree granting institutions that have had limited institutional success and to faculty with appointments at degree granting institutions eligible for USDA-EPSCoR funding. PDs may not have served as a PD on a NRI grant (**excluding Seed Grants, Research Career Enhancement Awards, Equipment Grants, and Postdoctoral Fellowships**) within the past five years. All PD **and** co-PDs must meet all eligibility requirements for the Standard Strengthening Research Project Awards Program. Research colleagues who do not meet eligibility requirements may only serve as collaborators and should **not** be listed on the Proposal Cover Page (Form CSREES-2002).

Flow Chart for Strengthening Eligibility

A flow chart for determining eligibility for Strengthening Research Awards is included as Figure 1. at the end of this document.

The project subject for any Strengthening Award must be appropriate to a program described under Part II, E., Program Opportunities, in this document. A separate peer review panel will not be assembled to review these applications.

3. Integrated projects

(a) Integrated Project Grants

Integrated project applications may involve any combination of research, education, and extension activities, with the provision that every project must include at least two of the three stated components (i.e., research, education, and extension) required for integration as defined in Part VIII, H. Integrated project applications may include, for example, institutions that conduct research; synthesize previous, ongoing and future research; develop curricula and build educational and research capacity; and transfer information to producers, end users, and the public. The type and number of participating institutions should be appropriate to the project proposed, and should include all participants necessary for successful completion of the projects. Integrated projects are expected to generate new knowledge and/or apply existing knowledge quickly through outreach and the dissemination of information on specific issues in agriculture and food systems where results may be visible over the short term.

Dependent on the merits of applications received, CSREES will ensure that a portion of project grants will be awarded to applications in which the lead institutions (recipient of the Federal funds) are small, mid-sized, and minority-serving institutions. When determining eligibility for these grant types, the following definitions apply:

(1) Small and mid-sized institutions are academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students and that are no higher than the 50th percentile of academic institutions funded by the National Research Initiative Competitive Grants Program in the past three years and are not within the top 100 Federally funded institutions (See Table 2. at the end of this document for an alphabetical listing of the most successful institutions.). (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter.) An institution in this instance is an organization that possesses a significant degree of autonomy.

(2) Minority-serving institution means an academic institution whose enrollment of a single minority group or a combination of minority groups (as defined in Part VIII, H.) exceeds fifty percent of the total enrollment, including graduate and undergraduate and 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.

Other institutions or organizations involved in small- and mid-sized institution eligible projects or minority-serving institution eligible projects need not meet the criteria

described in the definitions for small- and mid-sized institution or minority-serving institutions.

Another type of integrated project grant is the Coordinated Agricultural Project (CAP) award. CAP awards support large-scale, multi-million dollar projects to promote collaboration, open communication and the exchange of information; reduce duplication of effort; and coordinate activities among individuals, institutions, States, and regions. Unit participants serve as a team that conducts targeted research, extension, and education in response to emerging or priority area(s) of national need. Applications articulate how a CAP award will complement and/or link with existing programs or projects at the National level. An integrated research, extension, and education CAP unit contains the needed science based expertise, as well as expertise from principal stakeholders and partners to accomplish project goals and objectives. Applications outline the potential of the unit, the structure, coordination, and plan of implementation; and propose several research, extension, and education areas that will be addressed during the study period.

In FY 2005, CSREES plans to award the second increment of funding to existing CAP grantees with approved project periods of 2-4 years if satisfactory progress has been achieved on the project. A continuation grant is a grant instrument by which the Department agrees to support a specified level of effort for a predetermined project period with a statement of intention to provide additional support at a future date, provided that performance has been satisfactory, appropriations are available for this purpose, and continued support would be in the best interest of the Federal government and the public. If CSREES seeks new CAP applications in FY 2005, the Agency will do so through a supplemental RFA.

(b) Bridge Grants

Bridge grants are designed to assist small, mid-sized, and minority-serving institutions that have not previously been successful in obtaining competitive grants under subsection (b) of the Competitive, Special, and Facilities Research Grant Act (7 U.S.C. 450i(b)) (i.e., NRI) in order to sustain and enhance important collaborations and activities that might lead to future program success or success in obtaining other grants. A flow chart for determining eligibility for bridge grants is included as Figure 2. at the end of this document. Institutions eligible for bridge grants will be considered for an infusion of up to \$100,000 if an Integrated Project Grant application is considered meritorious but ranks below the funding cutoff during the peer review process.

Applicants may not apply directly for bridge grants. Bridge grants will be awarded only to eligible small- and mid-sized institutions and minority-serving institutions (as defined under 3(a), above) which are **not** among the most successful universities and colleges for receiving Federal funds for science and engineering research. See Table 2. at the end of this document for an alphabetical listing of the most successful institutions. Awards will be made after peer review of an integrated project grant application places the application below the funding cutoff. Applicants applying under this category should indicate whether the institution qualifies as a small, mid-sized institution or a minority-serving

institution (see Part VIII, H.) and include the documentation requested in 3.(a)(1) or 3.(a)(2), as applicable.

D. The NRI and USDA Strategic Planning

The NRI is moving to address priorities that support the objectives and goals identified in the USDA strategic planning process (http://www.csrees.usda.gov/about/strat_plan.html). The USDA plan has the following goals:

1. Enhance economic opportunities for agricultural producers;
2. Support increased economic opportunities and improved quality of life in rural America ;
3. Enhance protection and safety of the Nation's agriculture and food supply;
4. Improve the Nation's nutrition and health; and
5. Protect and enhance the Nation's natural resource base and environment;

The NRI continues to support fundamental research that provides a foundation to address topics important to the future success of U.S. agriculture and will be responsive to the needs identified in the CSREES strategic plan. The CSREES plan will be compatible with the goals of the USDA Strategic Plan and will be a dynamic working document that will evolve in response to changes in national needs. Decisions about NRI priorities are also informed by stakeholder input, congruence with Presidential initiatives, and two recent reports from the National Academy of Sciences' Board on Agriculture (2001 and 2002). These priorities are further designed to address the purposes of Section 401 of AREERA including all statutorily-identified critical emerging agricultural and rural issues, and priority mission areas (see Part I, A.).

E. Program Opportunities

Please note that CSREES offers a number of programs that support research, education, and extension, or a combination thereof. Included in these offerings are the Integrated Research, Education, and Extension Competitive Grants Program, and other programs that deal with food safety, biotechnology risk assessment, and higher education. These programs provide funding for many topic areas related to, but not duplicative of, NRI programs. Applicants are encouraged to examine other CSREES program descriptions to find the most appropriate source of funding. Eligibility for these programs is noted in each RFA. RFAs can be accessed through the Agency's Web site (<http://www.csrees.usda.gov/fo/funding.cfm>).

The following specific program opportunities are provided as a base from which applications for Conventional Projects, AREA, and Integrated Projects can be developed. These descriptions provide boundaries on the scope of each individual program. The NRI encourages submission of innovative projects that are "high-risk," as well as innovative applications with potential for more immediate application.

For research addressing biological issues, agriculturally important organism(s) should be used to accomplish the research objectives. The use of other organisms as experimental model systems **MUST** be justified relative to the goals of the appropriate research program.

***Note to multidisciplinary research teams:** The NRI recognizes the value of research performed as a team effort and recommends the following be taken into consideration when assembling a project team and developing an application for funding. To be competitive, the number of objectives and the level of personnel involved in the application should be appropriate to the NRI program and to the activities proposed. A clear management strategy should be provided which identifies the contribution of each member of the team.*

20.0 Animal and Plant Biosecurity

Applicants are strongly encouraged to contact the National Program Leaders with questions about the suitability of applications for Plant Biosecurity. Contact Kitty Cardwell (kcardwell@csrees.usda.gov; telephone: (202) 401-1790) or Ed Kaleikau (ekaleikau@csrees.usda.gov; telephone: (202) 401-6030).

Animal Biosecurity applications are NOT being solicited in FY 2005 (see 1., below, for details).

*Program Deadline: Plant Biosecurity applications must be **received by** 5:00 P.M., Eastern Time, June 15, 2005.*

Letters of Intent:

While not required, it is requested that Plant Biosecurity applicants notify CSREES of their intent to submit applications by e-mailing letters of intent to Kitty Cardwell (kcardwell@csrees.usda.gov) AND Ed Kaleikau (ekaleikau@csrees.usda.gov) by COB on May 2, 2005. Letters should contain: (1) a descriptive title of the proposed project; (2) names and roles of the PD(s) and other key personnel, along with their institutions; and, (3) a brief statement of approaches and objectives (500 words or less). CSREES may not provide applicants with feedback regarding the content of these letters. Failure to submit a letter of intent will not preclude consideration of an application.

Grants for this program are not likely to exceed \$1 million for project periods of 3-4 years. Support will be highly competitive. The amount requested must be commensurate with the activities proposed. The total amount of support available for this program will be approximately \$4 million.

This program will help agricultural producers and professionals evaluate strategies to better safeguard American agriculture from animal and plant diseases and pest losses. It will establish investigator collaboration on animal and plant diseases and pests of high economic impact that are currently endemic in the U.S., or that are future threats due to accidental or intentional introduction through bioterrorism attacks. This approach will

help assure a continued supply of safe, high-quality, affordable food and fiber for U.S. consumers and international trade partners.

This program was initiated in FY 2003. Each fiscal year, applications will be solicited that respond to specific high priority needs identified by stakeholders and partners. The program's purpose is not to address all threats to continued prosperity in any particular year; instead, the program will re-prioritize areas of concern each year.

Support is provided to multi-disciplinary, multi-institutional teams that bridge research, extension, and education efforts to develop and evaluate practical, cost-effective strategies to minimize or mitigate diseases. The program intends to promote collaboration, open communication, the exchange of information and the development of resources (e.g., vaccines, diagnostics, training manuals, Web sites, management recommendations). It aims to reduce duplication of efforts, and integrate activities among individuals, institutions, States, and regions. Therefore, applicants should clearly articulate how the proposed project will complement and/or link with existing programs or projects.

Project Directors should plan to present annual progress reports to principal stakeholders (e.g., in conjunction with national producer meetings, workshops, conferences). At the project's conclusion, the project team must present a final report to the principal stakeholders in order to assure widespread dissemination and implementation of the accomplishments (see Part VI, E. for additional reporting requirements). If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

1. Animal Biosecurity CAP Awards

The Animal Biosecurity program is NOT soliciting applications in FY 2005. However, contingent on available funding, the program plans to solicit applications in FY 2006. In FY 2005, the program's budget is supporting three ongoing CAP awards. Two of these awards were initiated in FY 2003: the Porcine Reproductive Respiratory Syndrome (PRRS) award (<http://www.porkboard.org/prrs>), which is budgeted through FY 2006, and the Johne's Disease (Mycobacterium paratuberculosis) award (<http://www.jdip.org>), which is budgeted through FY 2005. In FY 2004, the program requested proposals for Avian Influenza and Exotic Newcastle Disease. Contingent on the quality of application submissions, the program anticipates supporting the initiation of a third Coordinated Agricultural Project for one of those poultry diseases in FY 2004.

2. Plant Biosecurity

The objective of the Plant Biosecurity program is to fund basic and applied research, in conjunction with education and outreach activities for high-risk pathogens/pests of regional or national importance that threaten critical points in plant production systems. Examples of critical points include production fields, points of crop collection and transfer for transportation to points of end use. The ultimate goal of the program is to

evaluate early detection, diagnosis, monitoring, and tracking tools (a) to promote strategies for mitigation, control, and elimination of introduced high-risk organisms; and (b) to advance rapid response plans that will improve our ability to predict the spread of high-risk organisms and promptly communicate with response personnel (e.g., using wireless transmission systems, real-time or timely database linkages, alert systems).

Applications should propose research, extension and education projects that enhance agricultural plant security on a national basis. Applicants are encouraged to include field-based/extension scientists in meeting various objectives and provide evidence of collaboration or collaborative intent (e.g., inclusion as co-PD, description of objectives that reflect integration of technology/sampling concepts that include experimental design; preliminary data or justified hypotheses; or letters demonstrating discussion of the project and not just a willingness to participate at some future time).

In FY 2005, applications are sought that address the following needs:

(a) Evaluation of field-based diagnostic and communications tools, real time monitoring technologies, and associated implementation strategies to promote early detection of high consequence disease/pests prior to their establishment and spread; and

(b) Epidemiological research and modeling to fill knowledge gaps in risk assessment on high consequence pests/pathogens and select agent pathogens. Particularly, analytical tools are sought that integrate disease and pest outbreak data with appropriate scale geographic information for analysis of spread pattern.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

22.1 Agricultural Plants and Environmental Adaptation

Investigators are encouraged to contact Gail McLean, National Program Leader, at (202) 401-6060 regarding questions about suitability of research topics (or at gmclean@csrees.usda.gov).

Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$3.5 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, November 9, 2004.*

The future of agricultural productivity and sustainability depends on the ability of crop plants to grow and be productive in response to a changing environment. To lessen

impacts on yield, agriculturally-important plants and trees will need to adapt to environmental perturbations such as those brought about by global climate change, increased ozone, or by drought. Plants will also need to adapt to potentially poor soil and nutrient conditions caused by loss of farm land, pollution, and leaching of nutrients. Plus, as the world's population continues to grow, inhospitable land will need to be used for agriculture. The goal of this program is to enable both the improvement of plant productivity during environmental stress and the development of agriculturally important plants tolerant of various environmental conditions and stresses. This research will provide the basic knowledge needed to devise strategies for decreasing the impact of environmental stress on agricultural and forest productivity and sustainability.

This program invites both fundamental and mission-linked applications for innovative research on plant responses to abiotic stress. Applications are invited in the following priority areas: (1) global climate change (CO₂, temperature, ozone, etc.); (2) water stress (drought, flooding); and (3) nutrient stress (macro- and micro-nutrients). Applications should address the characterization and understanding of the molecular, biochemical, and/or physiological mechanisms involved in a plant's response and/or adaptation to abiotic stress. Applications also should be based on testable hypotheses and go beyond descriptive levels of experimentation. Projects should focus on the mechanism(s) used by particular plant species in adaptation to or tolerance of the specific environmental condition.

Importance of the proposed research to agricultural productivity and sustainability should be clearly indicated in the application. Researchers are strongly encouraged to conduct research directly in a crop or forest species important to agriculture. Use of non-crop model systems is acceptable only if tools are not yet available in the crop species of interest. However, the investigator must clearly indicate how such non-crop model studies are relevant to agriculture and food systems or forest species, the strategy for transferring the knowledge to these species for agricultural or forestry benefit, and the potential timeframe for such transfer.

Types of research supported by the program include: (1) identification and analysis of genes and gene products involved in generating or regulating the plant's response to an environmental stress; (2) identification of physiological, biochemical, cellular, and morphological changes that are part of the plant's mechanism of response to the stress, including putative adaptive responses favoring plant growth during or recovery from an environmental perturbation; and (3) characterization of the fundamental mechanisms by which environmental stress signals are perceived by plants and transduced into changes in biochemical, physiological or morphological processes. Applications with a physiological ecology approach are encouraged. The integration of molecular biology methods with physiological and ecophysiological approaches is particularly encouraged. All applications must demonstrate a clear link to a realistic environmental problem and use realistic treatments and measurement of plant stress status and environmental conditions.

During the review process, applications that address program priorities will be given higher priority for funding. Research and integrated projects that address topics of great

importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

Research on phytoremediation or biotic stresses, such as herbivory, will not be supported by this program. Ecosystem level studies also will not be supported by this program.

23.1 Managed Ecosystems

Investigators are encouraged to contact Diana Jerkins, National Program Leader, at 202-401-6996 regarding questions about suitability of research topics (or at djerkins@csrees.usda.gov to arrange a telephone consultation.

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 3-4 years. The total amount of support available for this program will be approximately \$3.5 million.

*Program Deadline: Applications must be **received by 5:00 P.M.**, Eastern Time, January 10, 2005.*

The goals of this program are to understand the impact of agriculture, forest, rangeland and other natural resource management practices on ecological systems and to promote their sustainability for the production of food, fiber, and forage. Sustainable productivity depends on the ability to utilize the earth's renewable natural resources without depleting them. This program strives to understand how agricultural practices for farm, forest, and rangelands affect natural and managed ecosystems, while developing improved management strategies to achieve sustainable production.

Ecological issues in agriculture and natural resources management are complex, requiring a systems approach to integrate physical, biological, ecological, social, and economic factors. Proposed ecosystem research should be multidisciplinary, explore differing spatial and temporal scales, evaluate the synergisms among system components and examine the potential for increased system sustainability.

The Managed Ecosystems program explicitly acknowledges the role humans play in effecting change in crop, range, and forest ecosystems. Analysis of ecosystem management should assess the effects of global change, support environmental quality, and incorporate sustainable strategies. This program will support research using experimental approaches to: (1) understand ecological processes as they pertain to agricultural (farm, forest, range) land use and management practices, and (2) develop and test innovative management strategies that lead to improvement of production, conservation, and restoration of farm, forest, and rangeland through systems analysis, design, and innovative practices. Descriptive research that incorporates productive modeling as a component of the systems analysis will be accepted. These models should

reflect the complex ecosystem being studied. Economic and policy assessments may be incorporated as part of a systems approach.

This program invites both fundamental and mission-linked applications for innovative research as well as projects that integrate research, extension, and/or education in the following priority areas:

1. Ecosystem health and development as a key to sustainability of an ecosystem

Development of alternative management practices through the investigation of biological processes leading to: more efficient agroecosystem functioning and natural resource use; and improved environmental quality by linking agricultural and natural ecosystems.

Applications can include the development and testing of innovative methodology, analysis of an existing system, design and validation of an improved system, and/or development of indicators or other means of system evaluation for efficiency of land management strategies.

2. Ecosystem restoration and conservation

(a) Effect of land use fragmentation/conservation practices on production and environmental services, especially related to wildlife habitat; and

(b) Increasing diversification of agricultural (farm, forest, range) ecosystems leading to greater biodiversity.

This program also invites applications for projects that integrate research, extension, and/or education for both of the priority areas described above.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

*All applications **must** address agricultural ecosystems and conduct research, extension, and/or education activities that will contribute to solution based land management. Agricultural ecosystems may be linked with natural ecosystems for biosystem studies. Applications with **primary** research foci related to water, invasive species, carbon sequestration, and soil systems should refer to the appropriate NRI program. These types of applications will not be considered under this program.*

25.0 Soil Processes

Investigators are encouraged to contact Nancy Cavallaro, National Program Leader, at 202-401-4082 regarding questions about suitability of research topics (or at ncavallaro@csrees.usda.gov to arrange a telephone consultation.

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. Budget requests over \$350,000 are expected to be multi-investigator and/or multi-institutional. The total amount of support available for this program will be approximately \$4.5 million.

*Program Deadline: Applications must be **received by 5:00 P.M.**, Eastern Time, February 1, 2005.*

Soils provide physical support, water and nutrients to plants and other flora and fauna and are recipients of organic and inorganic residues, wastes, and by-products. As such, soils serve as the location of many key processes and interactions in terrestrial ecosystems. Abiotic and biotic processes, and the linkages among these, regulate the flow of materials and energy within soils. Both static and dynamic soil properties affect the water, gases and solutes that pass through and over soils. However, the mechanisms controlling individual and coupled soil processes in the field remain poorly understood.

This program will support both basic and applied (mission-linked) interdisciplinary research on processes responsible for the changing quality of soils. Understanding the complex interactions among physical, chemical, mineralogical, and biological characteristics and processes in soils requires an interdisciplinary approach. Therefore, this program solicits interdisciplinary studies that integrate these properties and processes. Studies that make use of molecular methods and innovative new methodologies (for instance spectroscopic techniques and high energy light sources such as synchrotron radiation) to examine these processes are encouraged.

It is particularly important to recognize the spatial and temporal variability of soil properties and processes in examining these below ground ecosystems. Amendments to soils further affect these dynamics and in many cases are essential for the production of biomass. The following areas of research will receive priority in this program. Higher priority will be given to proposals that address and interrelate the two focus areas.

1. Soil quality dynamics: processes and mechanisms

This area focuses on fundamental and applied interdisciplinary research that quantifies and describes the physical environment and the reactive nature of the soil matrix as well as the sensitivity of that environment to internal and external forces and processes. Understanding the biogeochemical cycling of carbon in relation to other key soil nutrients (including water) is of particular interest. The relevance to agriculture, range and forestry should be clearly articulated.

2. Fate and transport

The focus of this area is on the fate and transport of carbon and other key soil nutrients with special emphasis on wastes, by-products and contaminants resulting from agricultural, range and forestry operations. Modeling approaches are appropriate but should be closely tied to experimental studies. Research on processes that promote sustainability, improve productivity and protect the soil environment from degradation is encouraged.

Improved understanding of these processes and of the basic mechanisms contributing to the immense diversity of this dynamic resource is needed if we are to succeed in both sustaining agricultural production and maintaining or improving soil and environmental quality in crop, forest, and rangeland systems. This knowledge will form the basis for effective management strategies for soil systems.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget (see Part IV, B., 1., m.).

See other NRI programs with targeted objectives that may include research on soil organisms, transport properties, gas fluxes, manure and waste management. These include NRI programs in Agricultural Plants and Environmental Adaptation (22.1), Biology of Plant-Microbe Associations (51.8), Integrative Biology of Arthropods and Nematodes (51.2), Watershed Processes and Water Resources (26.0), Air Quality (28.0), and the interagency competitive program on Land-Cover and Land-Use Change Interdisciplinary Research (U.S. Global Change Research Project). For applications that deal with water quality and have outreach and education components, see the separate RFA for the Integrated Research, Education, and Extension Program in Water Quality at <http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1134>. For applications that deal with soil insect and arthropod pests or soil borne plant pathogens, and have outreach and education components, see the separate RFA for the Integrated Research, Education, and Extension Program in Pest Management at http://www.csrees.usda.gov/funding/rfas/04_406_ipm.htm.

26.0 Watershed Processes and Water Resources

Investigators are encouraged to contact Michael O'Neill, National Program Leader, at (202) 205-5952 regarding questions about suitability of research topics (or at moneill@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. Budget requests over \$350,000 are expected to be multi-disciplinary and/or multi-institutional. The total amount of support available for this program will be approximately \$4.3 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, March 1, 2005.*

The nation's water resources are fundamental to the productivity and health of crop, range and forested lands, as well as to human health and well being. Continued production of food and fiber, and long-term sustainability of healthy, natural and managed watersheds are dependent on a reliable and sustainable supply of fresh, unpolluted water. Research in the Watershed Processes and Water Resources program is aimed at advancing our understanding of the processes that influence the quantity and quality of water resources available in these watersheds.

This program invites both fundamental and mission-linked applications for innovative research in understanding fundamental processes and developing appropriate technology for watersheds and water resources. It is anticipated that results from this research will have regional or national applicability. Applications that are primarily fundamental research and those that propose using model systems or smaller scales should explicitly indicate relevance to watersheds and/or water resource issues in agriculture, forestry and rangeland. Multi-disciplinary studies are encouraged.

The primary goal of this program is to increase our understanding of the fundamental processes that affect the quality and quantity of water resources moving in and from range, forested, and agricultural watersheds at diverse spatial and temporal scales. The secondary goal of this program is to improve water resource management and to increase our understanding of the role of water resource management on the quality and quantity of water resources available in agricultural, forested, and rangeland watersheds. Field and laboratory studies, as well as computer simulation modeling efforts, are viable research approaches but must show relevance to the watershed scale where appropriate.

Priority research areas to be addressed are:

1. Assessment and prediction of water resource needs and availability

Many areas of the country are experiencing drought, and there is growing demand on water resources to meet increasing domestic and industrial needs. These pressures and potentially increasing climatic variability create an urgent need to: (a) better understand hydrologic processes; and (b) improve efficiency and sustainability of water management and water use. Proposed research to evaluate the hydrological, geophysical, and water management factors that affect water availability are especially encouraged. Experimental approaches may include a modeling component.

2. Degradation and/or contamination of watersheds and water resources

Degradation and contamination of water resources is a primary limitation to environmental and human health. For FY 2005, this area focuses on the source, fate, and transport of pathogens to surface and ground water in agricultural, forest, and rangeland watersheds. A second focus is on the ecological interactions and impacts that result from excess sediment, nutrients, or other constituents in surface and groundwater resources.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

See other NRI programs with targeted objectives that may include research on soil organisms, transport properties, gas fluxes, manure and waste management. These include Soil Processes (25.0), Managed Ecosystems (23.1) and Air Quality (28.0). For applications that deal with water quality and have outreach and/or education components, see the separate RFA for the Integrated Research, Education, and Extension Program in Water Quality at <http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1134>.

28.0 Air Quality

Investigators are encouraged to contact Ray Knighton, National Program Leader, at (202) 401-6417 regarding questions about suitability of research topics (or at rknighton@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$5 million.

*Program Deadline: Applications must be **received by 5:00 P.M.**, Eastern Time, June 15, 2005.*

Agriculture, forest, and range production practices have increasingly become subject to State and federal regulations that are meant to protect air resources. In many instances, data do not exist or are not representative of agricultural industries for the purpose of estimating emissions to the atmosphere of regulated pollutants or of public nuisances such as odors and fugitive dust. The goal of this program is to develop emission data for agriculture, forest, and range production practices and to improve understanding of odor, gases, and particulate matter (PM) measurement, production, flux, fate and transport. Specific emphasis will be placed on compounds that are regulated by State and federal agencies and geographic regions that are in non-attainment of national ambient air quality standards.

This program invites applications for projects that integrate research, extension, and/or education in the following priority areas:

1. Measurement and monitoring

Research is solicited to improve measurement protocols/instrumentation and remote sensing to measure and characterize particulate matter and gases for within field/facility and edge-of-field/facility boundaries. Emission data for particulates, odors, and gases is of primary concern and is needed for all aspects of production practices and naturally

occurring events to update existing inventories. High priority emission sources and corresponding constituents are:

- (a) Animal feeding operations (especially PM, ammonia, hydrogen sulfide, methane and volatile organics);
- (b) Tillage and nutrient management (especially PM and nitrous oxide);
- (c) Controlled burning;
- (d) Production, harvest and post-harvest practices;
- (e) Wind and wet deposition

Priority will be given to projects that characterize the physical, chemical, and biological nature of agriculture, forest and range source aerosols. Projects should have testable research hypotheses and identify whether research will address fine particulate matter (< 2.5 microns in diameter) or larger particulate matter (up to 10 microns in diameter). Projects that utilize spectroscopic techniques and high energy light sources such as synchrotron radiation to characterize fine particulate matter are encouraged to apply. Research to determine the efficacy of techniques for monitoring and characterizing agriculturally important odors, odorants, and aerosols is also requested.

2. Fate and transport

Research is needed on the fate and transport of emitted particulates and gases. Topics of interest are fate of a particular nutrient or particulate that could become an important air emission source. Improved models are needed to predict movement and dispersion of air pollutants from production practices and management operations. Process-based mechanistic models using mass balance techniques of the whole enterprise are of specific interest.

3. Mitigation

Research on the efficacy of methods for mitigating emissions of air pollutants and the development of best management practices is also needed. Projects will be considered that evaluate the efficacy of conservation practices and other control technologies to reduce particulate and gaseous emissions, have technology transfer and education objectives, and demonstrate stakeholder participation. Research is also solicited on the economic barriers of implementing practices that reduce emissions.

This program also invites both fundamental and mission-linked applications for innovative research on: (1) characterizing particulate matter and gases (see priority 1., above); and (2) fate and transport (see priority 2., above).

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will

be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

31.0 Bioactive Food Components for Optimal Health

Investigators are encouraged to contact Etta Saltos, National Program Leader, at (202) 401-5178 regarding questions about the suitability of research topics (or at esaltos@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.2 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, November 3, 2004.*

IMPORTANT NOTE TO THE HUMAN NUTRITION RESEARCH COMMUNITY: In response to the National Research Council's evaluation of the NRI and other stakeholder/partner assessments, many NRI programs, including this one, are now evolving to a more issue-based focus. This FY the presentation of research priority areas has changed. Please read the new program description carefully. With limited resources for a very broad area, the program has narrowed in scope to increase award size in fewer areas.

The consumption of a nutritious diet is important for maintaining long-term health and decreasing the risk for chronic disease. The primary objective of this program is to support research to improve our understanding of the role of foods and their biologically active components (e.g., phytochemicals) in promoting health.

This program invites both fundamental and mission-linked applications for innovative research in the following priority areas:

1. Mechanistic studies of the bioavailability, function, efficacy and safety of physiologically active dietary components and neglected nutrients;
2. Interrelationships among dietary components in promoting health; and
3. Mechanisms underlying the relationship between diet and optimal health, e.g., the influence of bioactive food components on the immune, cardiovascular, gastrointestinal and central nervous systems.

Multi-disciplinary approaches are encouraged.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will

be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

*Support will not be provided for research on dietary requirements as related to therapies for metabolic disorders, infectious diseases, cancer, and alcohol-related disorders, or for the establishment, expansion, or maintenance of dietary databases. Studies on the use of dietary supplements or the use of dietary components at pharmacologic doses to improve health are not acceptable. Surveys of the nutritional status of population groups are not acceptable for this program, but may qualify for submission to the Human Nutrition and Obesity Program (31.5). The Bioactive Food Components for Optimal Health Program will **NO LONGER** accept applications on topics related to consumer food choices. Applications related to this area should be directed to the Human Nutrition and Obesity Program (31.5). Applications dealing with food processing techniques, or the utilization or production of foods should be directed to the Improving Food Quality and Value Program (71.1) unless they are clearly oriented toward dietary effects on optimal human health.*

31.5 Human Nutrition and Obesity

Investigators are encouraged to contact the National Program Leaders, Etta Saltos (esaltos@csrees.usda.gov; telephone: (202) 401-5178) or Susan Welsh (swelsh@csrees.usda.gov; telephone: (202) 720-5544) with questions about the suitability of applications.

Standard Research Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. Integrated Project Grants for this program are not likely to exceed \$1.5 million for project periods up to 4 years. The total amount of support available for this program will be approximately \$8 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, June 15, 2005.*

This crosscutting program addresses the complex problem of obesity prevention. The program seeks to support applications that integrate at least two of the three CSREES supported functions - research, education and extension/outreach.

The development of obesity that results from an imbalance of energy intake and energy expenditure is influenced by a multitude of interacting factors. The goal of this program is to fund innovative projects that address critical factors related to obesity prevention so that resulting knowledge can be applied to the development and evaluation of effective interventions. Projects should address some aspect of food (e.g., production, processing, packaging, marketing, purchasing, preparation, or consumption) as it relates to obesity.

This program invites applications for integrated research, education and/or extension projects in the following priority areas: (1) the influence of social and psychological

factors, including the development of self-esteem, self-efficacy and resiliency, family and community influences and attitudes toward food, physical activity and health on the development of obesity; (2) the role of lifestyle, including physical activity, cultural and ethnic factors and the influence of past dietary patterns, in determining body weight ; (3) the role of educational factors, cognitive ability and informational resources in determining body weight; and (4) the influence of economic factors and public policy issues, including the community environment, food availability, accessibility, cost, individual income and propensity to save, food insecurity, time constraints and public and private assistance programs on the development of obesity. The program also invites research applications in a single focus area; that of epidemiological studies of factors related to obesity prevention, which may include secondary analyses of large, national databases.

Interventions may target individuals, groups, market segments, or communities. Vulnerable population groups, including children, adolescents, ethnic minorities, and economically, educationally, or socially disadvantaged groups, are of special concern.

Applications should bring together the disciplines, functions, and institutions necessary to carry out the objectives within the projected timeframe. Evaluations may address newly developed or existing interventions. Research may need to address the development, modification and validation of innovative assessment tools. Support for postdoctoral or graduate student training is especially encouraged. Applicants may also request partial support for conferences related to the topics listed above.

During the review process, applications that address these program priorities will be given higher priority for funding. Projects that address topics of great importance and are of exceptional merit but which do not address the priorities described above will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

Support will not be provided for projects that focus primarily on medical therapies for disease. Applications dealing with the use of functional foods in preventing obesity should be directed to the Bioactive Food Components for Optimal Health program (31.0). Applications dealing with food processing techniques, or the utilization or production of foods should be directed to the Improving Food Quality and Value Program (71.1).

32.0 Food Safety

Investigators are encouraged to contact Chris Wozniak, National Program Leader, at (202) 401-6020 to request further information regarding the suitability of specific topics (or at cwozniak@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.7 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 7, 2004.*

IMPORTANT NOTE TO THE FOOD SAFETY RESEARCH COMMUNITY: In response to the National Research Council's evaluation of the NRI and other stakeholder/partner assessments, many NRI programs, including this one, are now evolving to a more issue-based focus. This FY the presentation of research priority areas has changed. Please read the new program description carefully. With limited resources for a very broad area, the program has narrowed in scope to increase award size in fewer areas.

The scope of this program is to enhance our knowledge of food safety as it relates to the presence in or on food of: *microorganisms, microbial metabolites and toxins, chemical contaminants, pesticidal residues, and the economic impact of food safety regulations as they affect trade and exportation. Meat, poultry, seafood, dairy products, grains, fruits and vegetables are all included for consideration of food safety concerns as described herein.*

Research seeking to increase our knowledge base with regard to the routes of contamination of food, from on-farm investigations, post-harvest incidence, to processing and distribution, is encouraged. Aspects of microbial ecology which provide for avenues of intervention and mitigation of food-borne toxicities need to be investigated. Surveillance as a principle objective is not suitable for this program.

Applications that contain hypothesis driven research targeting improved or novel detection methods for microorganisms or contaminants will be considered for funding, however, they **must** be of direct value in mitigating, reducing or managing the offending agent or disease causing entity or in providing a greater understanding of the routes of food contamination and the biology of the offending agent. Research aimed solely at development of a detection methodology will **not** be considered for review.

Innovative research in one or more of the following priority areas is strongly encouraged:

1. Illuminating the biomolecular and/or biophysical basis by which microorganisms capable of causing food-borne illness colonize and grow in or on foods;
2. Elucidation of the biological and ecological processes that influence the production of toxins or metabolites of colonizing microorganisms;
3. Critical evaluation of the biological and physical basis by which pesticide residues and chemical contaminants become associated with food;
4. Analysis or predictive modeling of the economic impacts at discreet points in the food production, manufacturing, and distribution system, which are associated with governmental regulations designed to safeguard the food supply.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of

great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

Applications dealing with food processing techniques or the utilization and production of foods designed to improve food quality should be submitted to the Improving Food Quality and Value Program (71.1). Proposals that address pathogens affecting both animal and human health, and have a primary goal to protect animal health, rather than to reduce human exposure to pathogens, should be directed to the Animal Protection Program (44.0). Food safety education proposals for consumers and food handlers should be directed to the Integrated Research, Education, and Extension Program – National Integrated Food Safety Initiative, which publishes a separate RFA at <http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1086>.

32.1 Epidemiological Approaches for Food Safety

Investigators are encouraged to contact the National Program Leader for Food Safety, Mary E. Torrence, (202) 401-6357 regarding questions about suitability of research topics (or at mtorrence@reeusda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$1 million (including indirect costs) for project periods of 3-4 years. The total amount of support available for this program will be approximately \$4 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 7, 2004.*

Development of an understanding of the multiple factors involved in food safety to provide the science-based data for policy decisions requires epidemiological studies. Significant gaps exist in the knowledge base for food safety and of the risk factors involved in the entire continuum of food production, from farm to table. Pre- and post-harvest epidemiological studies are vital for identification and characterization of pathogenic organisms, their sources and reservoirs; and to understand the transmission of the pathogen. The identification of risk factors for exposure to and infection by these pathogens can be accomplished by several different epidemiological research methodologies. These methodologies can be applied at any stage of food production. Environmental and ecological data are needed to increase our understanding of disease-causing microorganisms, their products, and naturally occurring contaminants in meats, poultry, seafood, and fresh fruits and vegetables. Population-based studies that address identified data gaps from risk assessments or provide field data for on-going risk assessments will be considered. *Pure risk assessment methodologies or modeling studies are **not** eligible.*

Applications **must have** a primary focus on population-based epidemiological studies. Applications **must have** an epidemiologist as an active participant of the study, either as a co-PD or collaborator. *Applications concentrating strictly on laboratory methods or*

*techniques will **not** be accepted. Method developments that are hypothesis-driven should be submitted to 32.0 Food Safety.* Simple prevalence studies or studies that have already been done numerous times are **not** encouraged. Applications must describe research that is new, innovative, and in high priority areas for agriculture and public health.

Applications that involve identifying and evaluating risk factors and evaluating and implementing strategies to reduce foodborne pathogen levels or disease will receive the highest priority. The following areas will be emphasized: (1) identification and evaluation of risk factors that affect the levels, transmission, or persistence of foodborne organisms or the prevalence of foodborne disease; (2) identification, implementation, and evaluation of possible intervention or management strategies; (3) identification of farm-based solutions that contribute to decreased prevalence of foodborne pathogens; and (4) development of outcome measures for the impact of intervention or management strategies on microbial contamination or food safety.

Applications should be multi-institutional and multidisciplinary. Priority will be given to projects that involve collaboration with institutions, organizations, and communities of interest. Strong partnerships are encouraged, such as consortia or collaborative networks. Innovative multidisciplinary collaborations and partnerships are those designed to build solutions to understanding the interrelationships of the various factors that affect the safety of our food supply. Multidisciplinary projects with a systems-based approach are encouraged.

In addition to the evaluation criteria described in Part V, B., applications will be evaluated on how well the Project Description addresses the following issues.

1. Strength of collaboration

Describe how the project will involve partners and communities of interest. Describe how and by whom the focus and scope of the project were determined, how partners will be involved during the course of the project, and how end users will be impacted by results. Provide evidence that arrangements necessary for collaborative partnerships have been discussed with the parties involved and can realistically be expected to come to fruition, or have actually been finalized contingent on an award under this program. The parties involved must provide evidence via letters.

2. Strength of coordination and management

Describe how the project will be coordinated among the various participants and clearly describe the nature of the collaborations. Describe plans for management of the project to ensure its proper and efficient administration.

3. Relevance of the science

Justify that the research problem being studied is of high priority nationally to the food safety area, to agriculture, or public health. Justify that this research is new and

innovative and not a repetition of other published data or studies. Describe its unique contribution to food safety, agriculture, and public health.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

41.0 Animal Reproduction

Investigators are encouraged to contact Mark Mirando, National Program Leader, at (202) 401-4336 regarding questions about suitability of research topics (or at mmirando@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 3, 2004.*

Reducing infertility in breeding populations of agriculturally important animals, including aquacultured species, is of major importance for efficient animal production. In several species, fertility has declined significantly over the past several decades. New knowledge is needed to improve fertility and facilitate implementation of integrated animal production systems that will contribute to sustainability of the animal production unit. This information will control or reduce animal production costs, provide product cost benefits to consumers, and may ultimately lead to increased productivity from fewer animals, thereby conserving natural resources and enhancing the environment. Approaches developed to foster and manage animal reproduction are key to future application of biotechnologies. Therefore, the objective of this program is to increase our knowledge of reproductive biology in agriculturally important animals with the goal of reducing infertility and improving overall reproductive management in animal production systems.

This program invites both fundamental and mission-linked applications for innovative research on current major problems related to fertility of agriculturally important species. Applications are invited in the following priority areas:

1. Basic mechanisms regulating fertility;
2. Identifying and ameliorating the causes of infertility;
3. Improved cryopreservation of gametes to enhance agricultural biosecurity and preserve genetic resources; and

4. Improvement of sterilization methods or development of monosex populations in agriculturally important species.

This program also invites applications for multifunctional projects that integrate research, extension, and/or education to address the problems of infertility in dairy cows and broiler breeders or seasonal infertility in swine (see priority 2., above).

Research applications emphasizing functional genomic approaches and other new technologies are encouraged. Applications that incorporate strategies with immediate application to the animal and/or aquaculture industries are also encouraged. Multi-disciplinary research is encouraged.

All model systems (especially the use of laboratory animals, cell cultures, etc.) must be thoroughly justified in terms of the program guidelines and relevance to U.S. animal agriculture. Beginning in the next funding cycle (FY 2006), this program will no longer accept proposals whose studies primarily utilize non-agricultural or non-aquacultured species as animal models.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

Proposals that focus on uterine defense mechanisms (e.g., basic or applied immunology should be directed to the Animal Protection program (44.0). Disease oriented proposals should not be submitted to this program.

42.0 Animal Growth and Nutrient Utilization

Investigators are encouraged to contact Mark Mirando, National Program Leader, at (202) 401-4336 regarding questions about suitability of research topics (or at mmirando@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.5 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, May 17, 2005.*

Suboptimal growth and development are limiting factors in animal productivity. Basic information regarding developmental processes in agriculturally important animals, including aquaculture species, is largely lacking. The primary objective of the program is to increase our understanding of the biological mechanisms underlying normal animal growth, development of the musculoskeletal system, lactation, and nutrient digestion and

metabolism. New knowledge in these areas is needed to improve animal production and control muscling, growth, metabolism and mammary function. Research is also needed to identify biological mechanisms for increasing dietary nutrient availability, directing nutrient partitioning toward more protein and less fat, enhancing nutrient composition in animal products, and minimizing excretion of endogenous nutrients as waste products.

This program invites both fundamental and mission-linked applications for innovative research on current major problems related to growth and nutrient utilization in agriculturally important species. Applications are invited in the following areas: (a) improving quality and efficiency of meat and milk production; and (b) mechanisms controlling nutrient intake, digestion, absorption and availability to improve nutrient utilization and minimize excretion of endogenous nutrients as waste products. This program also invites applications for multifunctional projects that integrate research, extension, and/or education to improve animal utilization of elemental nutrients, such as nitrogen, phosphorus and essential trace minerals, with the intended goal of reducing animal excretion of these nutrients into the environment. Research applications emphasizing functional genomic approaches and other new technologies are encouraged. Proposed projects that incorporate strategies with immediate application to the animal and/or aquaculture industries are also encouraged.

All model systems (especially the use of laboratory animals, cell cultures, etc.) must be thoroughly justified in terms of the program guidelines and relevance to U.S. animal agriculture. Multidisciplinary research is encouraged. Beginning in the next funding cycle (FY 2006), this program will no longer receive proposals whose studies primarily utilize non-agricultural or non-aquacultured species as animal models.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

Applications concerning the developmental biology of the immune system should be submitted to the Animal Protection program (44.0). Applications focusing on developmental biology of the reproductive system (including embryonic, gonadal, and placental development) and applications dealing with nutritional regulation of reproduction should be submitted to the Animal Reproduction program (41.0). Proposals addressing the effects of diseases on animal growth, lactation or nutrient utilization should not be submitted to this program.

43.0 Animal Genomics

Investigators are encouraged to contact Peter Brayton, National Program Leader, at (202) 401-4399 regarding questions about suitability of research topics (or at pbrayton@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$3 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, June 15, 2005.*

Animal genomics will play an increasingly important role in assuring the continued profitability and competitiveness of U.S. animal agriculture. Identifying, mapping, and understanding the function and control of genes will permit the development of new genetic technologies and increase the ability to realize the full genetic potential for improvement of agriculturally important animal and aquaculture species. The long-term objectives of this program are to increase fundamental knowledge of the composition and organization of the animal genome and to increase the ability to genetically improve agriculturally important animals, including horses and aquaculture species.

Increased knowledge in this area will aid in maintaining the genetic diversity of animals, improving animal productivity and efficiency, matching genetic backgrounds to desired traits, integrating quantitative and molecular genetic information. Also, animal agricultural products may be produced more efficiently and could be of improved quality. For example, genomics research will improve the accuracy of livestock genotype selection for phenotype. In addition, selecting animals with reduced risk for infectious disease, thus reducing the need for antibiotics, will reduce the induction of antibiotic resistant bacterial strains. A likely integration of disease surveillance and host genetics will emerge for many diseases. Another goal of agricultural research is to promote new markets for agricultural products. High value-added areas, such as production of specialized pharmaceuticals and other biochemical products are emerging industries, and large farm species are increasingly likely to provide models for certain human diseases better than those from genetically modified mice.

Animal genomics research is likely to be cost-effective as a beneficiary of the completed Human Genome Project. The considerable similarities of the genomes of livestock species and even of fish and birds to that of the human will reduce the need for whole genome sequencing, simplify mapping of genes on chromosomes, and allow candidate genes for various economically important traits to be quickly tracked and identified. Applications using animal model systems are not solicited. Multi-disciplinary research is encouraged.

This program invites both fundamental and mission-linked applications for innovative research permitting the genetic selection of animals with superior production traits. For FY 2005, applications are invited in the following priority areas only:

1. Identification and mapping of molecular markers, including quantitative trait loci (QTL) and economic trait loci (ETL) of agricultural importance;
2. Identification of genetic diversity, including single nucleotide polymorphisms, and marker assisted selection, with emphasis on those of economic and agricultural importance, including those associated with genetic defects; and
3. Development and application of methods to modify the animal genome (e.g., nuclear transfer, embryonic stem cells and transgenics) to improve production traits.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

The NRI Animal Genomics program expects that **all** awardees (regardless of subsection) will make the results of research funded by the program publicly available in an appropriate manner (e.g., submission of data to genome databases, sharing of probes and sequences, germplasm deposition, or through patent applications). The Animal Genomics program considers public availability of research results an integral part of the qualifications of the PD, which are reviewed as part of the peer review process (described in Part V). Therefore, it is important to include a statement in the application regarding how results of research funded by the Animal Genomics program have been or will be made publicly available.

Proposals on emerging biotechnologies for animal reproduction should be submitted to the Animal Reproduction Program (41.0). Proposals on the genetics of animal-associated microbes should be submitted to the Animal Protection (44.0). Proposals on functional genomics should be submitted to the Functional Genomics of Agriculturally Important Organisms Program (45.0).

43.1 Animal Genome Reagent and Tool Development

Please note that CSREES plans to sunset this program in FY 2006 and redirect resources to other animal genomics programs. Investigators are encouraged to contact Peter Brayton, National Program Leader, at (202) 401-4399 regarding questions about suitability of research topics (or at pbrayton@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$1 million (including indirect costs) for project periods of 3 years. The total amount of support available for this program will be approximately \$3 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, June 15, 2005.*

This program will emphasize the development of basic reagents and tools to accelerate research in agricultural animal genomics. The goal is to develop tools that will advance the understanding of animal genomes in terms of how they are organized and how they function. This will include bioinformatic tools to manage the increasing amount of genomic data being generated. In FY 2005, awards will target cattle, swine, sheep, poultry, horses or aquaculture species (or a combination thereof).

This program invites both fundamental and mission-linked applications for innovative research in the following priority areas:

1. Large scale (at least 100,000) EST (expressed sequence tag) sequencing by using normalized cDNA libraries prepared from tissues expressing genes of agricultural relevance;
2. Production of large-insert, deep-coverage BAC libraries only for those species which lack this publicly available resource;
3. Production of species-specific DNA microarrays for gene expression studies (e.g., DNA-based biochips);
4. High resolution radiation hybrid or linkage maps; and
5. Bioinformatic tools to assist in comparative genomics and annotation.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

Applicants must demonstrate that they can apply the most recent technologies to the production of these reagents and that they will adequately and efficiently store and distribute the reagents and tools once they are available. A description of quality control measures must be included in the application. A commitment must be made to make any sequence and mapping data rapidly available by deposition in a publicly accessible database. A clear management plan for coordinating project objectives should be included. Each application must clearly state the area being addressed. If an applicant wishes to address more than one area or more than one animal species, the advantages of such an integrated approach must be described. Applicants for bioinformatic tools should describe how their information would be integrated with existing data/databases.

The NRI Animal Genome Reagent and Tool Development program expects that **all** awardees (regardless of section) will make the results of research funded by the program publicly available in an appropriate manner (e.g., submission of data to genome databases sharing of probes and sequences, germplasm deposition or through patent applications). The Animal Genome Reagent and Tool Development program considers public

availability of research results an integral part of the qualifications of the investigator, which are reviewed as part of the peer review process (described in Part V). Therefore, it is important to include a statement in the application regarding how results of research funded by the Animal Genome Reagent and Tool Development program have been or will be made publicly available.

44.0 Animal Protection

The total amount of support available for this program will be approximately \$11 million.

Program Deadline: Proposals must be received by 5:00 P.M., Eastern Time, December 3, 2004.

***IMPORTANT NOTE TO THE ANIMAL HEALTH RESEARCH COMMUNITY:** In response to the National Research Council's evaluation of the NRI and other stakeholder/partner assessments including the National Agricultural Research, Extension, Education and Economics Advisory Board, many NRI programs, including this one, continue their evolution to a more issue-based focus. This process began in Fiscal Year 2004 and continues in Fiscal Year 2005 with more concentrated focus that includes the announcement of a **limited number of high priority diseases and areas that the program seeks to support**. The program regrets that some areas previously supported by this program no longer fit in this year's solicitation. Some of those areas may be eligible for support through other CSREES programs, or other Federal agencies. Please read the new program description carefully. With limited resources for a very broad area, the program continues its transition to fewer areas in order to maximize scientific outcomes and accountability. During the coming year, the program will be collecting additional input from partner and stakeholder organizations in response to this year's request for applications. In Fiscal Year 2006, further focusing of the program is possible.*

The Animal Protection program includes three areas of emphasis:

1. Animal Disease Countermeasures
2. Animal Well-being Assessment and Improvement
3. Veterinary Immunological Reagents

During the review process, applications that address the three areas detailed below will be given highest priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget. (See Part IV, B., 1., m.).

1. Animal Disease Countermeasures

For the Animal Disease Countermeasures section, investigators are encouraged to contact Peter Johnson (pjohnson@csrees.usda.gov), Peter Brayton (pbrayton@csrees.usda.gov), or Peter Burfening (pburfening@csrees.usda.gov) by e-mail or call (202) 401-4399 regarding questions about suitability of research topics.

Grants for this program will not exceed \$350,000 (including indirect costs) for project periods of 2-4 years.

Maintaining and/or improving animal health to meet the food and fiber needs of this nation is an increasingly difficult challenge. Despite advances in science, new and re-emerging diseases occur with an increasing frequency due to a variety of factors.

The Animal Disease Countermeasures section focuses on high priority diseases of economic importance to U.S. animal agriculture, including equine and aquaculture species. This emphasis will increase the knowledge and technology needed to prevent or reduce the severity of animal diseases. It will also contribute to an increase in the efficiency of animal production systems, a reduction in non-tariff trade barriers, and high-quality safe foods for consumers. The program addresses a major limiting factor in animal agriculture: insufficient basic and applied information about diseases in animals of agricultural importance. This knowledge gap seriously impedes a major reduction in costly economic losses from animal diseases that are already present in the United States. The paucity of information also jeopardizes food security and the future viability of animal industries by increasing their vulnerability to pathogens which may establish new niches or undergo genetic mutations to result in new and re-emerging diseases, or which may be accidentally or intentionally introduced.

In FY 2005, based on stakeholder and partner input solicited during the past year, the program has identified a limited number of specific areas as those of HIGHEST PRIORITY for which innovative research proposals are requested.

FY 2005 High Priority Areas

Species Specific High Priority Areas:

- (a) Aquaculture: *Edwardsiella ictaluri*; Infectious salmon anemia; Infectious hematopoietic necrosis;
- (b) Equine: Equine laminitis; *Streptococcus equi* (strangles); West Nile Virus in horses;
- (c) Poultry: Avian Coccidia; Marek's Disease; Poult Enteritis Mortality Syndrome (PEMS);
- (d) Ruminants: Bovine viral diarrhea; Bovine respiratory disease complex; Infectious causes of dairy cattle mastitis; Johne's disease; and
- (e) Swine: Porcine Reproductive and Respiratory Syndrome (PRRS); Post-weaning Multisystemic Wasting Syndrome of Swine (PMWS); Swine Influenza.

Non-Species Specific High Priority Areas:

(a) Diseases that may be introduced to livestock through interactions with wildlife (**except for** prion-related proposals that should be directed to one of CSREES' Food Safety Programs such as 32.0 Food Safety or 32.1 Epidemiological Approaches for Food Safety); and

(b) Foreign Animal Diseases (e.g., Foot and Mouth Disease, Avian Influenza, Exotic Newcastle Disease, Vesicular Stomatitis Virus).

Focus Requested for High Priority Areas:

Both fundamental and mission-linked proposals for innovative research are solicited for the program priority areas above that investigate one or more of the following:

(a) Pathogen Biology (e.g., mechanisms of disease, basic cellular and molecular biology, processes critical to infection initiation or disease severity);

(b) Mechanisms of Host/Pathogen Interactions; Immunology (e.g., pathogenesis, innate and adaptive immune responses/pathogen clearance, mucosal immunity, immune modulators);

(c) Etiology and Control; and

(d) Epidemiology and Ecology (e.g., risk assessment, modeling, economic assessments, molecular epidemiology, evaluation of management strategies and impact on disease).

Applications with a primary focus on BASIC or APPLIED IMMUNOLOGY that do not include work with a specific disease are also considered a high priority if the PD adequately justifies the work's potential for broad applicability to multiple diseases. A basic immunology approach may also propose to work with a disease agent other than one of the high priority agents listed above if the project director provides convincing justification that the outcome will be BROADLY applicable beyond that single agent. Proposals that address alternatives to antibiotics are also encouraged.

Applications should address one or more of the following goals for the priority areas:

- Discovery of new foundational knowledge related to pathogen biology, host-pathogen interactions, immunology, and/or epidemiology and ecology;
- Development of more effective vaccines;
- Improved diagnostic methods/ pathogen detection systems that provide a foundation for a better understanding of disease epidemiology and ecology;
- Discovery of innovative disease treatments or preventatives, including immune enhancers, innate immunity stimulation, alternatives to antibiotics, and pathogen inactivation strategies; and,

- Innovative management strategies for prevention and control of animal health problems.

It is not likely that funds will be available to support all the listed priority areas for which proposals will be submitted. Therefore, when justifying the proposal relevance in the Rationale and Significance section of the Project Description, PDs are urged to present as convincing a case as possible for their approach to address that particular problem.

Applications that address Johne's Disease or Porcine Reproductive and Respiratory Syndrome (PRRS) remain a high priority for funding within the Animal Protection Program which seeks to support and strengthen efforts initiated under Coordinated Agricultural Projects. *Applications on Johne's Disease or Porcine Reproductive Respiratory Syndrome (PRRS) are **expected** to indicate how they will integrate the proposed research effort within the community objectives established for the Coordinated Agricultural Projects for each of those areas.* PDs submitting applications on those two diseases who are not already affiliated with those projects should consult the websites established for these community efforts (PRRS: <http://www.porkboard.org/prrs>; Johne's Disease: <http://www.jdip.org>).

Where appropriate, the program encourages applicants to take advantage of genomic approaches (e.g., functional genomics, proteomics) in order to accelerate the discovery of new targets for diagnostics, vaccines, and treatments. The program supports international efforts to better capture the current and future value of microarray data. If proposing microarray studies, applicants are strongly encouraged to include a statement addressing Minimum Information About Microarray Experiment (MIAME) compliance. For further information about MIAME, see <http://www.mged.org> .

The development and evaluation of diagnostic tests are appropriate when a linkage can be made for their utility in advancing the understanding of the natural history and mechanism of the disease, or its means of transmission or persistence in the host or environment. Applications that develop new or improved diagnostic tests are expected to include an appropriate validation plan.

Vaccine development proposals that may approach or enter the commercialization stage by the conclusion of the award should also address the development of differential assays for detecting vaccinated versus field exposed animals for newly emerging diseases, or diseases where serology is used to determine exposure/infection. Multi-disciplinary approaches are encouraged.

Prion-related applications (e.g., Bovine Spongiform Encephalopathy; Chronic Wasting Disease; Scrapie) should not be submitted to this program. Instead, prion-related applications should be directed to one of CSREES' Food Safety Programs, such as 32.0 Food Safety or 32.1 Epidemiological Approaches for Food Safety.

Food safety applications should be directed to one of CSREES' Food Safety Programs (such as 32.0 Food Safety Program, 32.1 Epidemiological Approaches for Food Safety Program, or 10.303 Integrated Research, Education, and Extension Competitive Grants

Program: National Integrated Food Safety Initiative), which issues a separate RFA available at http://www.csrees.usda.gov/funding/rfas/04_food_safety.html.

Animal genetics applications (e.g., applications with a primary focus on identifying, isolating, and characterizing the genetic basis for disease resistance in the host animal) should be directed to the Animal Genomics program (43.0). NOTE: Immunogenetics proposals should be submitted to program 43.0.

Vaccine development applications that may approach or enter the commercialization stage are also encouraged to explore the USDA/SBIR (Small Business Innovation Research Program) for possible funding. The RFA for that program is available at (<http://www.csrees.usda.gov/funding/sbir/sbir.html>).

2. Animal Well-being Assessment and Improvement

For the Animal Well-being Assessment and Improvement section, investigators are encouraged to contact Peter Burfening, National Program Leader, at (202)-401-4399 regarding questions about suitability of research topics (or pburfening@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$350,000 (including indirect costs) for project periods of 2-4 years.

The Animal Well-being Assessment and Improvement section focuses on enhancing animal well-being throughout the food production cycle. This emphasis will provide information about how animals of agricultural importance in the U.S. interact with the production environment and respond to animal management practices. Where appropriate, management practices will be developed that improve animal well-being. Such knowledge is needed to remain competitive globally and to maintain consumer trust through science-based studies. Research to ensure animal well-being may also help decrease animal management and health-care costs. This area addresses agricultural and food security by helping to assure continued access of U.S. animal products to national and international markets.

Both basic and applied research proposals are solicited that contribute to the development of long-term management options and/or short-term production practices that assure animal well-being. Multi-disciplinary approaches are encouraged.

This focus area invites both fundamental and mission-linked research proposals, as well as **applications that integrate research, education, and/or extension** in the following priority areas:

- (a) Develop science-based criteria to measure well-being, including pain, stress, and behavioral needs;
- (b) Determine the impact of current and alternative production systems on animal well-being and food quality, including housing, handling, transportation and harvest; and

(c) Assess the behavior and well-being of genetically modified food animals.

3. Veterinary Immunological Reagents

For the Veterinary Immunological Reagents section, investigators are encouraged to contact Peter Johnson, National Program Leader, at (202)-401-1896 regarding questions about suitability (or pjohnson@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods up to 4 years (\$2,000,000 total budget).

A major obstacle to advances in veterinary immunology and disease control is the lack of sufficient immunological reagents specific for ruminants, swine, poultry, equine and aquaculture species. In response, the Animal Protection program seeks to support **ONE broad community-driven application** that presents a systematic plan and approach to begin to address this immunological reagent gap for the U.S. veterinary immunology research community. The program anticipates that, contingent on the competitive peer review process, a maximum of one award for veterinary immunological reagents will be funded. If an award is made in FY 2005, this section will not be offered in FY 2006.

Applications for veterinary immunological reagents are required to:

- (a) Address the needs of ruminants, swine, poultry, equine and aquaculture species **in a single application**. Applications that do not address **ALL five species groups** will be returned without review. The application should clearly outline how the PDs will determine the U.S. immunology research communities' highest priority needs for ruminants, swine, poultry, equine and aquaculture species;
- (b) Include a strong management plan to assure close communication/coordination among all project collaborators that establishes a sound decision process for funds distribution among the 5 species;
- (c) Address quality control of developed reagents, as well as the distribution and maintenance of the developed reagents. All reagents must be made publicly available and readily accessible;
- (d) Establish an Advisory Board/Committee within the proposed management structure that includes principal national stakeholders/ partners for the 5 species group that also incorporates international representation. The Advisory Board/Committee will help assure a high degree of accountability among each of the benefited species communities.
- (e) Coordinate the group's efforts with similar national and international activities developing veterinary immunological reagents; and
- (f) Outline the strategy for an annual assessment. PDs should plan to present an annual progress report to the U.S. veterinary immunology community and other interested stakeholders and partners (e.g., in conjunction with a national meeting, workshop,

conference). At the project's conclusion, the project team must also present a final report to the principal stakeholders and partners.

45.0 Functional Genomics of Agriculturally Important Organisms

Applicants are strongly encouraged to contact National Program Leaders with questions about the suitability of proposals. Questions regarding the functional genomics of animals should be directed to Peter Burfening (pburfening@csrees.usda.gov; telephone: (202) 401-5863) or Muquarrab Qureshi (mqureshi@csrees.usda.gov; telephone: (202) 401-4895). Questions regarding the functional genomics of arthropods or nematodes should be directed to Mary Purcell-Miramontes (mpurcell@csrees.usda.gov; telephone: (202) 401-5114). Questions regarding the functional genomics of microbes should be directed to Ann Lichens-Park (apark@csrees.usda.gov; telephone: (202) 401-6466). Questions regarding the functional genomics of plants should be directed to Ed Kaleikau (ekaleikau@csrees.usda.gov; telephone: (202) 401-1931).

The total amount of support available for this program will be approximately \$8 million.

Program Deadline: Applications must be received by 5:00 P.M., Eastern Time, June 15, 2005.

Agricultural genomics will play a major role in addressing the challenges facing production and management options for U.S. food and fiber. These challenges include, but are not limited to: increasing animal and crop productivity; developing drought-tolerant crop varieties; enhancing nutritional content and other qualities of food and fiber; creating new food or non-food products or new uses for existing products; mitigating toxin accumulation in the environment; and controlling pests, diseases and other threats to agricultural biosecurity. This program will accept applications primarily for fundamental and mission-linked research, but will also accept applications for integrated projects.

The overall goal of the functional genomics program area is to increase the understanding of the biological role of gene sequences in agriculturally important animals, arthropods and nematodes, microbes, and plants, and to link these sequences to physiological functions or agricultural and food processes. As the goal of the program is to support large-scale functional analysis of genomic sequences, applications may include gene expression profiling, proteomics, and/or metabolomics. Grantees will be expected to make the results of research funded by this program available in a publicly accessible database (e.g., GenBank). If proposing microarray studies, applicants are strongly encouraged to include a statement addressing Minimum Information About Microarray Experiment (MIAME) compliance. For further information about MIAME, see www.mged.org. Collaboration with international partners is appropriate; however, applications must be submitted by eligible U.S. institutions.

Research goals for each of the supported organismal groups are described in the individual sections below. During the review process, applications that address these program goals will be given higher priority for funding. Research and integrated projects

that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

1. Animals

The Functional Genomics of Agriculturally Important Organisms/Animals program will not be offered in FY 2005. The FY 2005 budget will be used to support the increased number of awards made in FY 2004. However, it is anticipated that The Functional Genomics of Agriculturally Important Organisms/Animals will be refocused and will again solicit for proposals in FY 2006.

2. Arthropods and Nematodes

Grants for this program will not exceed \$750,000 (including indirect costs) for project periods of 2-4 years.

Research in this area should address gene expression analysis and function of agriculturally important arthropods and nematodes. Arthropods will be restricted to insects, mites, or ticks, which are pests of crop plants or livestock, as well as beneficial or pollinator species. Nematodes will be restricted to entomopathogenic and plant-parasitic nematodes. Sequencing projects will be supported only if the project's immediate goal is to ascertain the functions of genes. In the project description, applicants are required to include a clear justification for the system studied, in terms of economic and/or societal benefit. Studies of model systems may be submitted to the program only if knowledge gained is applied to systems of economic or societal importance within the submitted project. Applications are limited to functional genomics and proteomics studies of: (a) chemical perception and signaling to elucidate interactions between pests or beneficial species with agricultural commodities or tritrophic relationships; (b) the immune response relevant to pest control or protection of agricultural commodities; and (c) the insect midgut to understand the functions of genes associated with pesticide susceptibility or resistance, or for development of novel targets for pest control. Large scale and high throughput approaches to develop resources and databases with the potential to address broad issues in pest control and protection of agricultural commodities are particularly encouraged in this program.

3. Microbes

Grants for this program will not exceed \$1 million (including indirect costs) for project periods of 2-4 years.

Research in this area should address the characterization of the molecular mechanisms responsible for microbial processes, enabled by the availability of a sequenced microbial genome or genomes. Research activities should characterize, on a large scale, the function of genes or networks of genes in microbe(s) having a completely, or almost

completely, sequenced genome. Information (e.g. Web site addresses) necessary to access publicly available genomic sequence data of such microbe(s) should be provided in the Project Description portion of the application. If the sequence data is not publicly available or there are restrictions on its availability, that should be explained in the Project Description. The microbe(s) of study must be of importance to U.S. agriculture. Projects are expected to utilize microarrays and/or proteomics to: (a) analyze the spatial and/or temporal expression of sets of genes and/or proteins; or (b) identify genes expressed or proteins present under different environmental conditions or as part of particular metabolic or regulatory pathways. Research supported in this subsection must fall within one of the following categories: (a) mechanisms of microbial pathogenicity; (b) microbial mechanisms of host specificity and colonization; (c) mechanisms of microbe-microbe or microbe-host communication; and (d) microbial mechanisms of surviving, or responding to, environmental changes. Applications involving the development of microarrays should include plans for distributing the arrays as a community resource. This program **will not** support whole genome sequencing of microbes. Such studies should be submitted to the Fiscal Year 2005 NSF/USDA Microbial Genome Sequencing Program (MGSP), which solicits applications through a separate RFA. When it is released it will be available at: www.csrees.usda.gov/fo/fundview.cfm?fnum=1108.

4. Plants

Grants for this program will not exceed \$750,000 (including indirect costs) for project periods of 2-4 years.

Research in this area is expected to focus on the completed sequence of the rice genome as a reference species for cereals. Examples of research include comparative functional genomic analysis including proteomics and metabolomics to associate sequence information to biological function for U.S. crop improvement in rice, wheat, barley, corn and sorghum. Recognizing the considerable rice genomics resources developed internationally, applicants are encouraged to develop proposals that build or expand U.S. collaboration with the international community on rice functional genomics. For further information, see <http://www.iris.irri.org/IRFGC/>.

51.2 Integrative Biology of Arthropods and Nematodes

Investigators are encouraged to contact Mary Purcell-Miramontes, National Program Leader, at (202) 401-5114 regarding questions about suitability of research topics (or mpurcell@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$5.8 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, November 2, 2004*

Fundamental knowledge is needed to form the basis of novel management strategies for pests and lead to better utilization of beneficial species. The long-term objective of this program is to improve pest management options for the future and reduce our dependence on pesticides that are harmful to the environment. Emphasis is placed on ecological studies of insects, mites, ticks or nematodes with plants or animals of agricultural importance. The systems under study can include pests occurring in horticultural and field crops, forests, rangelands, urban landscapes, food or feed transported and stored for human or livestock consumption, and arthropod pests of livestock. The term pest is limited to insects, mites, ticks, plant parasitic nematodes and weeds (only within the context of biological control of weeds and where the focus is on arthropod biological control agent). Beneficial species include insect pollinators and biological control agents (e.g., insects, microbes and entomopathogenic nematodes) of the above pests.

This program invites both fundamental and mission-linked applications for innovative research in the following priority areas: (1) population biology, (2) biological control, (3) chemical ecology, (4) behavioral ecology, and (5) fundamental resistance management (applications on this topic must show how results will be applied to the development of resistance management programs).

Proposed projects should demonstrate relevance to U.S. agriculture. The Project Description portion of the application must include a clear justification for the system studied, in terms of economic and/or societal benefit to agricultural and rural communities. Studies of model systems may be submitted to the program only if knowledge gained is applied to systems of economic or societal importance within the submitted project. Proposed studies must include a justification for how anticipated results will be relevant to reduced stress on plants or livestock. Applications that include a modeling component must give consideration to validation of the model. Applications whose sole purpose is to develop diagnostic tests for pest detection or surveillance are not appropriate for this program and will not be considered.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

Applications for research focusing on molecular genetics, biochemistry or physiology of insects, mites, ticks and nematodes should be submitted to the Arthropod and Nematode Gateways to Genomics program (51.3). Studies assessing or managing the environmental risk of introducing genetically modified organisms into the environment should consider submitting to the USDA Biotechnology Risk Assessment Research Grants Program (<http://www.csrees.usda.gov/fo/fundview.cfm?fonum=1075>). Applicants whose projects are near-term in application are advised to consult with program leaders of other pest management grant programs in CSREES such as Crops at Risk (CAR), Risk

Avoidance and Mitigation Program (RAMP), Methyl Bromide Transitions (MBT), Organic Transitions (ORG)

51.3 Arthropod and Nematode Gateways to Genomics

Investigators are encouraged to contact Mary Purcell-Miramontes, National Program Leader, at (202) 401-5114 regarding questions about suitability of research topics (or at mpurcell@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$3.6 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, February 1, 2005.*

Advances in the molecular physiology, biochemistry, and genetics of arthropods and nematodes could lead to environmentally sustainable pest management options in the future. Examples of promising outcomes include the identification of gene products which relate to corresponding resistance genes in plants and animals; molecular genetic analyses of host-pathogen or host-parasite interactions to promote environmentally benign methods of pest control, incorporation of arthropod-specific neurotoxins into vectors such as baculoviruses to increase their potency; identification of genes that code for resistance to insecticides or to pests of pollinators; analysis of genes for selective improvement of beneficial insects, such as olfaction, pollination, and nectar-gathering activity or genes relevant to insecticide targets; immunity of insects to pests and pathogens; pheromone biology, feeding, reproduction, and mating behavior. Priority will be given to projects that demonstrate relevance to U.S. agriculture. Model organisms will be considered for support only if clear justification is given for how information gained will be applied to agriculturally relevant species. Projects should be hypothesis-driven and aimed to better understand molecular physiological, biochemical or genomic processes in agriculturally important arthropods and nematodes. Arthropods in this program are limited to insects, mites and ticks. Nematodes include both entomopathogenic and plant-parasitic nematodes.

This program invites both fundamental and mission-linked applications for innovative research in the following priority areas:

- 1. Molecular characterization of signaling pathways between arthropods or nematodes and their hosts;**
- 2. Cellular and molecular basis of interactions of arthropods or nematodes with plant resistance genes, plant defensive compounds, pheromones or semiochemicals;**
- 3. Cellular and molecular studies of arthropod or nematode interactions with microbes;**

4. Genetic manipulations to evaluate the function of arthropod or nematode genes; and

5. Characterization of novel targets for pest control, including pesticide resistance studies.

The Project Description portion of the application must include a clear justification for the system studied, in terms of economic and/or societal benefit to agricultural and rural communities. Studies of model systems may be submitted to the program only if knowledge gained is applied to systems of economic or societal importance within the submitted project. Proposed studies must include a justification for how anticipated results will be relevant to reduced stress on plants or livestock. Applications whose sole purpose is to develop diagnostic tests for pest detection or surveillance will only be considered if a direct linkage can be made for their utility in advancing knowledge of arthropod or nematode biology and genomics.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

Applications for research focusing on ecology and behavior of arthropods and nematodes should be submitted to the Integrative Biology of Arthropods and Nematodes program (51.2). Applicants focusing on high-throughput approaches to functional genomics should consider submitting to the Functional Genomics of Agriculturally Important Organisms program (45.0).

51.8 Biology of Plant-Microbe Associations

Investigators are encouraged to contact Ann Lichens-Park, National Program Leader, at (202) 401-6460 regarding questions about suitability of research topics (or at apark@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$5.4 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 1, 2004.*

Microbes play critically important roles in agricultural systems, both as pathogens and as beneficial organisms. This program will support fundamental and mission-linked research on interactions between plants and their associated microbes, including fungi and fungal-like microbes, bacteria, viruses, viroids, and mycoplasma-like organisms. Applications

must address plant-microbe associations using: (1) economically important plants and/or microorganisms; or (2) plants and/or microorganisms that are important to agricultural sustainability (e.g., microorganisms that contribute to more environmentally sustainable crop production). The Project Description portion of the application must include a clear justification for the system studied, in terms of economic and/or societal benefit. Studies of model systems may be submitted to the program only if knowledge gained is applied to systems of economic or societal importance within the submitted project. Studies on the biology of the microbes themselves, the interactions between the microbes and plants, the response of plants to microbes and the influence of biotic and abiotic environmental factors on plant-microbe interactions are within the scope of this program. Microbes studied may be foliar or soil-borne, free-living or living within plant hosts. Microbial functional genomic studies are also encouraged. Applications involving the development of microarrays should include plans for distributing the arrays as a community resource.

Studies should lead to a broad base of knowledge and advance the conceptual framework of plant pathology, plant microbiology, or related fields. This program invites both fundamental and mission-linked applications for innovative research in the following priority areas:

1. Molecular mechanisms of disease or resistance interactions between microbial pathogens and their host plants. Such studies may focus on the pathogen, the host plant or both;
- 2) Molecular mechanisms of interactions between microbes and their plant hosts which positively influence plant productivity (e.g. microbial biocontrol agents, nitrogen-fixing bacteria, or fungal endosymbionts of plants.);
- 3) The influence of environmental factors on microbial survival and spread; and
- 4) Epidemiological studies which address spread and invasion of plant-associated microbes.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

The development and evaluation of diagnostic tests are appropriate when a direct and persuasive linkage can be made for their utility in advancing the understanding of molecular mechanisms underlying plant disease, or its means of transmission or persistence in the host or environment. Development and testing of diagnostic tests simply for the purpose of disease detection or surveillance is not appropriate for this program and will not be considered. Development and testing of biological control agents or disease resistant plants is not appropriate for this program and will not be considered.

Applications addressing nitrogen metabolism in microbes should be submitted to the Agricultural Plant Biochemistry program (54.3). Applications focusing on how microbial processes affect the soil environment and how the soil environment affects the microbial interaction with the plant will not be considered.

51.9 Biology of Weedy and Invasive Plants

Investigators are encouraged to contact Diana Jerkins, National Program Leader, at (202) 401-4354 regarding questions about suitability of research topics (or at djerkins@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$3.6 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, January 7, 2005.*

Weedy and invasive plants cost Americans well over \$1 billion annually in damage and lost earnings. The presence of weedy or invasive plants in croplands reduces crop yields through competition for resources, and may contaminate grain for export. In other ecosystems, weedy or invasive plants may out-compete native species, and change the ecosystem in fundamental ways.

The goal of this program is to support: (1) research on general processes and principles that contribute to plant competitiveness or invasiveness; or (2) development of novel methods to alter plant species competitiveness, invasiveness, or abundance. It is expected that the knowledge gained from these studies will ultimately be applied to agricultural settings or closely related systems involving weedy or invasive plants. This program also invites applications for projects that integrate research, extension, and/or education to address novel and environmentally sound forms of controlling weedy or invasive plants (see the priorities below).

The program will entertain proposals aimed at characterizing and understanding the population dynamics of weeds and their interactions with plant and animal populations in agricultural settings (emphasizing crop production, range and pasture production and forest production), wild lands, and lands of conservation significance. Supported studies will focus on native or exotic plant species that are considered to be weedy or invasive. Studies on plant traits that may contribute to weediness or invasiveness are also welcome, whether or not the plant in which they are studied is weedy or invasive. Collaborations between weed biologists and plant population biologists, ecologists, physiologists, systematists, land or wildlife managers or those with expertise in simulation modeling are encouraged

Research on the following topics is solicited

1. Innovative methods to rapidly assess the probability that a plant may become weedy or invasive in a new environment;

2. How and to what extent weedy or invasive species affect crops, pasture, rangelands or native biodiversity.
3. Understanding ecological, physiological, evolutionary, or genetic processes that contribute to plant invasiveness or ecological success; and
4. Evaluation of new principles and techniques that will lead to novel and environmentally sound forms of controlling weedy or invasive plants.

Other research topics that support the program goals will be accepted, as well. The Biology of Weedy and Invasive Plants program welcomes all of the research topic areas that were supported by the former Weed Biology and Management program (51.4).

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

52.1 Plant Genome, Bioinformatics, and Genetic Resources

Investigators are encouraged to contact Ed Kaleikau, National Program Leader, at (202) 401-1931 regarding questions about suitability of research topics (or at ekaleikau@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-3 years. The total amount of support available for this program will be approximately \$4 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, October 29, 2004.*

In FY 2005, this program will focus on research projects that advance our knowledge of the genome of Rosaceous plants, such as pome fruits, stone fruits, strawberry, brambles and related ornamentals. Its commercially valuable members include fruit-producing (peach/nectarine, apricot, plum, sweet and sour cherry, apples, raspberries, blackberries, and strawberries), nut producing (almond), lumber producing (black cherry) and ornamental species (rose, flowering cherry, quince, and pear). Rosaceae offers unique opportunities for basic gene and genomics studies, as well as opportunities to improve the quality and sustainability of many temperate fruit crops and ornamentals.

This program will support projects on the application of basic discovery to plant improvement that can result in new products or new trade markets important to U.S. agricultural producers and consumers. Investigators are encouraged to develop national and international collaborations with research groups already working on the species of interest to minimize duplication of effort and maximize cost effectiveness. Applications

that include interaction and cooperation with end user groups such as the seed industry, processors and growers that have already made a significant investment in the species of interest are encouraged. Applications should include a plan for timely dissemination of information and deliverables to a clearly identified community of users, as well as to the scientific community as a whole.

Proposals must include a clear, complete and workable plan for sharing results and management of intellectual property. The plan must be specific about the nature of the results to be shared, the timing and means of release, and constraints on release. Sequences (BAC end sequencing, EST's, cDNA's etc.) must be released according to the currently accepted community standard (e.g. Bermuda agreement) to public databases (GenBank if applicable) as soon as their quality is checked. If the proposed project would produce community resources (biological materials, germplasm, software, etc.), this program encourages that they be made available as soon as their quality is checked. The resources produced must be available to all segments of the scientific community, including industry. The description should be specific and describe what, how, and when the community would have public access to the outcome of the project. This is particularly important for the projects that will produce tangible research tools and resources.

Applicants must aim to release the results of their research to the public in a timely manner and in an accessible and usable form (Genome Database for Rosaceae: <http://www.genome.clemson.edu/gdr>). Applications from both individual investigators and multi-disciplinary groups are encouraged.

This program invites both fundamental and mission-linked research applications in the following priority areas:

1. Use of innovative approaches for mapping and identification of important genes (e.g., Physical maps, ESTs, etc.), QTL analysis (e.g., fruit quality, shape, size, texture, color, flavor, nutritional composition, disease resistance, etc.) and comparative genomics.;
2. Meeting plant bioinformatic and database needs to efficiently and effectively handle and interpret the genomic/genetic data being generated to accelerate the knowledge discovery process (e.g., computational resources and analytical tools that can mine genomic data and lead to hypothesis testing, validation and application). Investigators are expected to coordinate their proposals with the Genome Database for Rosaceae <http://www.genome.clemson.edu/gdr>; and
3. Application of marker-assisted breeding/selection to characterize germplasm, establish mapping populations, and utilize new genome technologies to identify and transfer genes critical to U.S. plant breeding objectives.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is

funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

52.2 Genetic Processes and Mechanisms of Crop Plants

Investigators are encouraged to contact Liang-Shiou Lin, National Program Leader, at (202) 401-5042 regarding questions about suitability of research topics (or at llin@csrees.usda.gov).

Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.2 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, November 9, 2004.*

Basic understanding of plant genes and genetic processes and mechanisms is crucial for the genetic improvement of agricultural plants. The goal of this program is to supply such fundamental knowledge to support the development of genetically superior varieties of crop and forest species. This program invites both fundamental and mission-linked applications for innovative research in the following priority areas:

1. Functional analysis of agriculturally important genes and gene products;
2. Regulatory mechanisms of nuclear and organellar gene expression, including all stages from transcription to post-translational modification;
3. Mechanisms of recombination, transposition, replication, and repair;
4. Epigenetic mechanisms that influence gene expression, such as altered DNA methylation or chromatin structure, and studies on polyploidy, gene dosage, and gene duplication; and
5. Genetic processes at the level of plant populations and plant evolution, including studies on plant domestication.

Importance of the proposed research to agricultural productivity and sustainability should be clearly indicated in the application. Researchers are strongly encouraged to conduct research directly in a crop or forest species important to agriculture. Use of non-crop model systems is acceptable only if tools are not yet available in the crop species of interest. However, the investigator must clearly indicate how such non-crop model studies are relevant to agriculture and food systems or forest species, the strategy for transferring the knowledge to these species for agricultural or forestry benefit, and the potential timeframe for such transfer. The Program discourages submission of proposals that focus solely on technique or tool development without addressing one of the priority areas listed above.

During the review process, applications that address program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

52.4 Applied Plant Genomics CAP

Investigators are encouraged to contact Ed Kaleikau, National Program Leader, at (202) 401-1931 regarding questions about suitability of research topics (or at ekaleikau@csrees.usda.gov to arrange a telephone consultation).

The goal of the Applied Plant Genomics CAP is to engage the applied plant-sciences, both public and private, and involve them in the application of basic discoveries to U.S. crop or forestry improvement. The first RFA for this program was published in FY 2004 to support a CAP focused on large-scale rice translational genomics for U.S. agriculture.

In FY 2005, CSREES plans to award the second increment of funding to existing CAP grantees with approved project periods of 2-4 years if satisfactory progress has been achieved on the project. A continuation grant is a grant instrument by which the Department agrees to support a specified level of effort for a predetermined project period with a statement of intention to provide additional support at a future date, provided that performance has been satisfactory, appropriations are available for this purpose, and continued support would be in the best interest of the Federal government and the public. If CSREES seeks new Applied Plant Genomics CAP applications in FY 2005, the Agency will do so through a supplemental RFA that will not be plant species specific.

53.0 Developmental Processes of Crop Plants

Investigators are encouraged to contact Liang-Shiou Lin, National Program Leader, at (202) 401-5042 regarding questions about suitability of research topics (or at llin@csrees.usda.gov).

Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.2 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, January 11, 2005.*

The goal of this program is to provide fundamental knowledge on plant growth and development over various phases of the plant life cycle, from seed to seed. Such knowledge forms the basis for improving crop plants through modification of plant

growth patterns or developmental processes. This program invites both fundamental and mission-linked applications for innovative research in the following priority areas:

1. Developmental pathways leading to the formation of vegetative and reproductive structures;
2. Hormonal regulation of growth and development;
3. Mechanisms of transducing internal and external signals required for normal growth and development;
4. Cellular structures or cell biological processes that affect plant growth or development, such as studies on the cytoskeleton, membrane transport, macromolecular trafficking and cell-to-cell communication; and
5. Regulation of the cell cycle and mechanisms of cell and organelle division and differentiation.

Importance of the proposed research to agricultural productivity and sustainability should be clearly indicated in the application. Researchers are strongly encouraged to conduct research directly in a crop or forest species important to agriculture. Use of non-crop model systems is acceptable only if tools are not yet available in the crop species of interest. However, the investigator must clearly indicate how such non-crop model studies are relevant to agriculture and food systems or forest species, the strategy for transferring the knowledge to these species for agricultural or forestry benefit, and the potential timeframe for such transfer.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

54.3 Agricultural Plant Biochemistry

Investigators are encouraged to contact Gail McLean, National Program Leader, at (202) 401-6060 regarding questions about suitability of research topics (or at gmclean@csrees.usda.gov).

Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.2 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, January 11, 2005.*

For plant genomics to lead to development of agricultural plants with improved or optimized performance, the biochemical processes and pathways in the cell, and the genes and proteins involved in biochemical processes and pathways, need to be characterized. Indeed, the lack of knowledge about a biochemical pathway or process is often the rate-limiting step for application of the genomic and genetic information. Thus, the combination of biochemistry and genomics will play an important role in the improvement and sustainability of agricultural and food production systems.

The goal of this program is to provide basic knowledge about biochemical processes, pathways, and interactions in agriculturally-important plants and related organisms (mycorrhizal fungi, nitrogen-fixing bacteria, etc.). The resulting fundamental knowledge in biochemistry, combined with genomics and molecular biology, will lead to practical applications such as improving the nutritional value of plant-based foods, increasing the productivity of crop plants, enhancing plant fitness and survival, and utilizing plants as bioreactors to produce important industrial and pharmaceutical compounds.

Research for this program should either focus on a biochemical process or pathway important for agriculture and food systems in plants or plant symbionts (e.g., nitrogen fixing bacteria or mycorrhizal fungi) or address a significant problem in agricultural plant biology using a predominantly biochemical approach. This program invites both fundamental and mission-linked applications for innovative research in the following priority areas:

1. Photosynthesis and respiration;
2. Nitrogen fixation and metabolism in plants and free-living nitrogen-fixing microbes;
3. Primary and secondary metabolites and metabolic pathways;
4. Cell wall structure and enzymology; and
5. Small scale proteomic or metabolomic studies to gain insight into biological systems.

Importance of the proposed research to agricultural productivity and sustainability should be clearly indicated in the application. Researchers are strongly encouraged to conduct research directly in a crop or forest species important to agriculture. Use of non-crop model systems is acceptable only if tools are not yet available in the crop species of interest. However, the investigator must clearly indicate how such non-crop model studies are relevant to agriculture and food systems or forest species, the strategy for transferring the knowledge to these species for agricultural or forestry benefit, and the potential timeframe for such transfer.

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team

will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

Proposals on plant environmental response that have a biochemistry component will continue to be considered by the Agricultural Plants and Environmental Adaptation program (22.1). Topics in plant cell biology, such as studies on cytoskeleton, membrane transport, signal transduction, and macromolecular trafficking, will continue to be supported by the Developmental Processes of Crop Plants program (53.0), unless the emphasis is on biochemistry, which will be supported by this program. Research directed towards metabolic engineering, the purposeful alteration of metabolic pathways to understand and use cellular pathways for chemical transformation, energy transduction, and supramolecular assembly, should consider applying to the Interagency Metabolic Engineering Program <http://www.metabolicengineering.gov>).

61.0 Agricultural Markets and Trade

Investigators are strongly encouraged to contact Pat Hipple, National Program Leader, at (202) 401-2185 regarding questions about suitability of research topics (or at phipple@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$2.2 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 7, 2004.*

Agriculture markets more than \$900 billion worth of food annually; 20 percent of U.S. agricultural production is exported to global markets, accounting for significant additional trade value and potential for increased income to U.S. producers.

This program invites both fundamental and mission-linked proposals for innovative research that analyzes strategic issues of importance to U.S. agriculture that affect competitiveness of food, fiber, and bio-based products in domestic and foreign markets, including models of competition and cooperation that grow domestic U.S. markets and expand U.S. global trade opportunities.

Applications addressing this priority are invited from any social or behavioral science discipline, business, management, or engineering, etc., or combination thereof. A wide range of theoretical and methodological approaches is welcome, but applicants are strongly advised to specify their theory and methods on a level that a multi-disciplinary review panel will understand. Applications are expected to present a new, creative, and innovative perspective or approach to the topic, to explain the unique contribution the research will make to our understanding of the research questions, to discuss the broader impacts of the research, and to provide a persuasive argument why federal funding should be used to support this research.

If a project is funded, at least one member of the project team will be required to attend annual investigator meetings beginning in the second year of funding. Reasonable travel expenses should be claimed as part of the project budget (see Part IV, B, 1, m.).

Research specific to small and mid-size farm viability should be directed to the NRI Program Enhancing the Prosperity of Small Farms and Rural Agricultural Communities (66.0). Projects related to risk and risk management issues should be directed to USDA's Risk Management Agency.

62.0 Rural Development

Investigators are strongly encouraged to contact Pat Hipple, National Program Leader, at (202) 401-2185 regarding questions about suitability of research topics (or at phipple@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$2.4 million.

*Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 7, 2004.*

Rural America is home to 20 percent of the Nation's population, 49 million citizens, and comprises 75 percent of the Nation's land. More than 2,000 counties, almost 66 percent of all counties in the U.S., serve rural America. Rural people and places are challenged by profound social, economic, technological, and demographic changes. Although endowed with physical, natural, human, and organizational assets, many factors—geography, infrastructure, history, economy, leadership, civic engagement, and institutional capacity—affect the ability of rural people and rural communities to mobilize these assets to address the changes and challenges they face and to capitalize on new opportunities. While agriculture is still critical to many areas, it is not sufficient to insure the prosperity of rural people and places. The evaluation of policies and practices that promote or degrade community vitality and quality of life for rural Americans is best done through a research approach that attends to multiple dimensions of rural life and the inter-related and interacting components that are both causes and consequences of rural change.

This program invites applications that evaluate the policies and practices associated with creating and sustaining rural community vitality and rural prosperity. Applications should include an examination of the social, economic, technological, and demographic factors that affect quality of life for rural residents.

Applications addressing this priority are invited from any social or behavioral science discipline, business, management, or engineering, etc., or combination thereof. A wide range of theoretical and methodological approaches is welcome, but applicants are strongly advised to specify their theory and methods on a level that a multi-disciplinary review panel will understand. Applications are expected to present a new, creative, and

innovative perspective or approach to the topic, to explain the unique contribution the research will make to our understanding of the research questions, to discuss the broader impacts of the research, and to provide a persuasive argument why federal funding should be used to support this research.

If a project is funded, at least one member of the project team will be required to attend annual investigator meetings beginning in the second year of funding. Reasonable travel expenses should be claimed as part of the project budget (see Part IV, B, 1, m.).

Research specific to small and mid-size farm viability or rural agricultural development should be directed to the NRI Program Enhancing the Prosperity of Small Farms and Rural Agricultural Communities (66.0).

66.0 Enhancing the Prosperity of Small Farms and Rural Agricultural Communities

Investigators are encouraged to contact National Program Leaders Siva Sureshwaran at (202) 720-3310 (or at ssureshwaran@csrees.usda.gov to arrange a telephone consultation) or Diana Jerkins at (202) 401-6996 (djerkins@csrees.usda.gov) with questions about the suitability of research topics.

A separate RFA was issued for this program. It can be found online at: <http://www.csrees.usda.gov/fo/fundview.cfm?fnum=1200>.

71.1 Improving Food Quality and Value

Investigators are encouraged to contact the National Program Leaders, Hongda Chen at (202) 401-6497 or Ram Rao at (202) 401-6010, regarding specific questions about suitability of research topics (or e-mail them at hchen@csrees.usda.gov or r Rao@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 3-4 years. The total amount of support available for this program will be approximately \$6 million.

Program Deadline: Applications must be received by 5:00 P.M., Eastern Time, December 3, 2004

Improving food quality and value is essential in meeting the needs of the consumer and enhancing competitiveness in global markets and is driven by the application of physical, chemical and biological principles. In FY 2005, this program will provide funding for three priority areas:

1. The importance of interaction of macromolecules in the food matrix (e.g., protein-polysaccharide interaction) in controlling structure, texture, stability and flavor delivery in foods, has been known for decades. However, basic mechanisms involved in these interactions and factors modulating these interactions are still unfolding. Shifting emphases on the levels, types and ratios of these macromolecules used in food

formulation (e.g., low carbohydrate/net carbohydrate foods) further necessitate the need for understanding of the mechanism of these interactions.

Applications addressing the following are requested in this priority area: (a) the fundamental understanding of the mechanism of interaction of proteins, polysaccharides, and lipids in foods (e.g., covalent, ionic, hydrophilic, and hydrophobic, structures, kinetics); and (b) factors influencing the complexation and segregation of these macromolecules (e.g., processing environment, storage conditions and other food ingredients), and the resultant quality of foods (e.g., predictive modeling, food product quality).

2. The development of new technologies and improvement of the current technologies are imperative for enhancing food quality and value in manufacturing, packaging, distribution and consumption of foods. Novel concepts constantly emerge as new discoveries are found in the broad fields of science, engineering, and technology. Some examples of emerging technologies include ultra-high pressure pasteurization and sterilization, pulse electric fields, and microwave and radio frequency sterilization.

Applications addressing the following issue are requested for this priority area: advanced and innovative processing engineering and technology that enhances food quality attributes, including development and applications of analytical characterization techniques of physical, chemical, biological, and sensory natures.

3. Some food components have been shown to provide health benefits beyond normal nutrition in epidemiological, animal model and/or clinical studies. Often these bioactive components in foods are subjected to a variety of processes, which might alter the chemistry and bioavailability of these bioactive components.

Applications addressing the following issue are requested for this priority area: chemistry and fates of proven bioactive compounds in foods and food ingredients during processing, storage and distribution.

Multi- and cross-disciplinary approaches are highly encouraged. For integrated projects, the focus for FY 2005 will be on the development and technology transfer of promising emerging food processing technologies. During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

CSREES anticipates that this program will have two sections, namely (A) Food Engineering and Physical Processes; and (B) Food Chemistry and Product Development; with a separate panel for each due to the large number of applications expected. Researchers should indicate their review panel preference in Box 8. of the Proposal

Cover Page by placing either an “A” or a “B” after the Program Number. If not indicated, the application will be assigned by the National Program Leaders.

Applications addressing combined and inseparable quality and safety objectives will be entertained in this program. However, applications dealing primarily with issues of food safety should be directed to the appropriate Food Safety programs (NRI 32.0 or the Integrated Research, Education, and Extension Program: National Integrated Food Safety Initiative). Applications dealing with bioavailability, metabolism and mechanism of action of bioactive food components should be sent to the Bioactive Food Components for Optimal Health program (31.0). Applications dealing with consumer attitudes and behavior towards food should be submitted to the Human Nutrition and Obesity program (31.5).

71.2 Biobased Products and Bioenergy Production Research

Investigators are encouraged to contact the National Program Leader, Chavonda Jacobs-Young at 202-401-6188 or cjacobs@csrees.usda.gov regarding questions of research topic suitability.

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 3-4 years. The total amount of support available for this program will be approximately \$5.4 million.

Program Deadline: Applications must be received by 5:00 P.M., Eastern Time, January 14, 2005.

Agricultural commodities, including forestry derived biomass, provide raw materials for the production of numerous industrial and consumer products such as enzymes, textile fibers, coatings, paper and packaging materials, construction materials and composites, personal care products and pharmaceuticals. In addition, agricultural biomass is a plentiful source of fuels that can lessen U.S. dependence on foreign energy supplies. Use of agricultural biomaterials for fuels or products provides a renewable alternative to petroleum-based feedstocks along with the potential for reduced emissions and by-products and improved biodegradability of end products.

Federal policy supports greater use of biobased products and research on biomass processing and conversion. This program supports fulfillment of Executive Order 13134 (*Developing and Promoting Biobased Products and Bioenergy*, available at <http://www.bioproducts-bioenergy.gov/about/eo13134.asp>), which calls for a tripling of U.S. use of biobased and bioenergy products by 2010 and the *Biomass Research and Development Act of 2000* (available at http://www.bioproducts-bioenergy.gov/about/bio_act.asp), which promotes research and development leading to the production of biobased industrial products. Also, the program supports the *Healthy Forests Restoration Act of 2003* that seeks to reduce forest wildfires through the creation of healthy forests by the thinning of undergrowth and trees in nearly 20 million acres of federal lands (see <http://www.usda.gov/news/releases/2003/12/healthyforest2003.htm> for more information on this legislation). Value-added uses for these forest thinnings and

other wood based materials must be identified. This program encourages research on critical barriers to enhancing the utilization of wood and wood fiber for the production of value-added products.

Research projects supported in 2005 will focus on the conversion of biobased materials into value-added industrial products and biofuels. The overarching areas of interest include characterizing feedstock to improve conversion efficiency, improving/developing catalyst to improve conversion efficiency and improving/designing more efficient processes/reactors for biomass conversion. Proposals are sought which apply to the following topics:

1. Biobased industrial and consumer products

Knowledge is needed in the areas of: (a) fundamental studies of biomass structures/properties to enhance product quality and processing characteristics; (b) physical, chemical, and biological modifications of feedstock to aid in the development of high-value products; (c) improved production technology/engineering, including separation, extraction, and solid wood engineering; (d) biochemical and chemical catalysis and improved methods for measuring and controlling process parameters; and (e) innovative non-food uses for improved utilization of co-products and agricultural and forestry residuals.

2. Biofuels research

Applications will be considered for fundamental and mission-linked research relating to the conversion of biomass material to alcohol fuels and biodiesel. The scope of the program includes pretreatment and conversion steps that limit the technical and economic efficiency of the biological production of fuels from agricultural and forest biomass. This program area emphasizes the biological (including microbiological) processes central to the conversion process, including physiological, biochemical, and genetic factors. Biodiesel research is limited to feedstock improvement related to biodiesel properties and to conversion technology. **Engine performance testing and emissions characterization will not be supported.**

During the review process, applications that address these program priorities will be given higher priority for funding. Research and integrated projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

73.0 Improved Utilization of Wood and Wood Fiber

CSREES is not soliciting applications for the Improved Utilization of Wood and Wood Fiber program (73.0) at this time. Please see the program description for the Biobased Products and Bioenergy Production Research program (71.2). Applicants to the program

are encouraged to contact the National Program Leader, Chavonda Jacobs-Young (202-401-6188 or cjacobs@csrees.usda.gov) with research topic suitability questions.

75.0 Nanoscale Science and Engineering for Agriculture and Food Systems

Investigators are encouraged to contact Dr. Hongda Chen, National Program Leader at (202) 401-6497 regarding specific questions about suitability of research topics (or e-mail him at hchen@csrees.usda.gov to arrange a telephone consultation).

Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 3-4 years. The total amount of support available for this program will be approximately \$4 million.

Program Deadline: Applications must be received by 5:00 P.M., Eastern Time, January 14, 2005

The focus of this program is on the frontiers of nanoscale science and engineering, where exploratory research of high-risk/high-reward potential is a priority.

Nanoscale science, engineering and technology, herein referred to as nanotechnology for brevity, is the fundamental understanding and technological advances arising from the exploitation of new physical, chemical, and biological properties of matter at the length scale of approximately 1 to 100 nanometers. Exciting novel structures, phenomena, and processes have been observed at the nanoscale in recent years, and new experimental, theoretical and simulation tools have been developed for investigating them.

Nanotechnology, as a new enabling technology, has the potential to revolutionize agriculture and food systems. Agricultural and food biosecurity, improved food quality and safety for better human health, plant and animal disease detection and treatment delivery systems, new tools for molecular and cellular biology, new and better materials of agricultural origins, and protection of the environment are examples of the important links of nanotechnology to the science and engineering of agriculture and food systems. Multi- and cross-disciplinary approaches are highly encouraged. Recognition of societal impacts of nanotechnology in the agriculture and food system is also an appropriate and important inclusion in cross-disciplinary research. This program, in a concerted effort with other Federal agencies under the framework of the National Nanotechnology Initiative (NNI), aims to accelerate the pace of the fundamental research and development of nanotechnology for agriculture and food systems.

This program invites both fundamental and mission-linked applications for innovative research in the following priority areas:

1. To develop fundamental understanding of biological systems and biologically inspired materials in which nanostructures exhibit novel physical, chemical, and/or biological properties and play an important role in biological functions of agriculture and food systems; and
2. To improve understanding of unique nanoscale sensing mechanisms and to develop a new generation of nanosensors for detecting commonly encountered and emerging

pathogens, toxins, contaminants, allergens, nutrients, pesticides, fertilizers, and other physical, physiological, and biochemical indices important to food and agricultural systems.

During the review process, applications that address these program priorities will be given priority for funding. Research projects that address topics of great importance and are of exceptional merit that have not been listed as priorities will be reviewed and may be funded within the limits of the program budget. If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual grantees' workshops. Reasonable travel expenses may be claimed as part of the project budget.

PART III—ELIGIBILITY INFORMATION

A. Eligible Applicants

For research projects, the eligibility requirements for the NRI are as follows: except where otherwise prohibited by law, State agricultural experiment stations, all colleges and universities, other research institutions and organizations, Federal agencies, national laboratories, private organizations or corporations, and individuals are eligible to apply for and to receive a competitive grant. The Agricultural Research Enhancement Awards (AREA) have some notable differences from these requirements. See Part II, C., 2. for details.

For integrated projects, the eligibility requirements for the NRI are as follows: except where otherwise prohibited by law, State agricultural experiment stations, all colleges and universities, research foundations maintained by colleges or universities, private research organizations with established and demonstrated capacities to perform research or technology transfer, Federal research agencies, and national laboratories are eligible to apply for and receive a competitive grant. The bridge grants have some notable differences from these requirements. See Part II, C., 3(b) for details.

Unsolicited applications will not be considered and applications from scientists at non-United States organizations will not be accepted. Award recipients may subcontract to organizations not eligible to apply provided such organizations are necessary for the conduct of the project.

B. Request for Determination

If an applicant considers itself a minority-serving institution and wishes to be considered for a bridge grant (as described in Part II, C., 3(b)), but is unable to meet the enrollment criteria specified in the Definitions section of this RFA, the applicant must submit to CSREES documentation supporting the request. This documentation must be submitted as part of the requestor's application package and must be received by CSREES by the applicable program deadline (see program description in Part II, E.). The Secretary or designated individual will determine whether the group or groups identified are eligible under this Program.

The Request for Determination must be submitted as a separate letter to the relevant National Program Leader (identified in Part II, E. of this RFA). The legend at the top of the letter must read: "REQUEST FOR DETERMINATION". In addition, the following information must be provided in the order specified below:

- (a) A description of each minority group that is being submitted for determination;
- (b) Data or studies supporting this group's designation as a minority group; and
- (c) Data indicating that enrollment of the minority group(s) exceeds fifty percent of the total enrollment at the academic institution, including graduate and undergraduate and full- and part-time students.

C. Cost Sharing or Matching

For research projects, unless otherwise indicated, cost sharing or matching is not required for NRI awards. See Part II, C., 2(c) for cost sharing requirements for equipment grants.

For integrated projects, if a grant is for applied research that 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.

PART IV—APPLICATION AND SUBMISSION INFORMATION

A. Address to Request Application Package

Program application materials are available at the CSREES Funding Opportunities Web site (<http://www.csrees.usda.gov/funding/forms.htm>). The CSREES application forms are also accessible through the NRI home page (<http://www.csrees.usda.gov/funding/nri/nri.html>). If you do not have access to the Web page or have trouble downloading material and you would like a hard copy, you may contact the Proposal Services Unit, Competitive Programs, USDA/CSREES at (202) 401-5048. When calling the Proposal Services Unit, please indicate that you are requesting the RFA and associated application forms for the National Research Initiative Competitive Grants Program. These materials also may be requested via Internet by sending a message with your name, mailing address (not e-mail) and phone number to psb@csrees.usda.gov. State that you want a copy of the RFA and the associated application forms for the National Research Initiative Competitive Grants Program.

B. Content and Form of Application Submission

Applications should be prepared following the guidelines and the instructions below. Each application must contain the following elements in the order indicated:

1. Integrated and Standard Research Grant Applications

(a) General

Use the following guidelines to prepare an application. Proper preparation of applications will assist reviewers in evaluating the merits of each application in a systematic, consistent fashion:

(1) Prepare the application on only one side of the page using standard size (8 1/2" x 11") white paper, one-inch margins, typed or word processed using no type smaller than 12 point font, and double spaced. Use an easily readable font face (e.g., Geneva, Helvetica, Times Roman).

(2) Number each page of the application sequentially, starting with the Project Description, including the budget pages, required forms, and any appendices.

(3) Staple the application in the upper left-hand corner. Do not bind. An original and 14 copies of the application are required (except for applications for Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, and Seed Grants for which an original and 10 copies of the application should be submitted) along with 2 additional copies of the "Project Summary," Form CSREES-2003, as a separate attachment. Prior to mailing, compare the application with the checklist found at the end of this document to ensure the application is complete.

(4) Include original illustrations (photographs, color prints, etc.) in all copies of the application to prevent loss of meaning through poor quality reproduction.

(5) The contents of the application should be assembled in the following order:

- Proposal Cover Page (Form CSREES-2002)
- Table of Contents
- Project Summary (Form CSREES-2003)
- Response to Previous Review (if applicable)
- Project Description (see instructions for page limitations)
- References to Project Description
- Facilities and Equipment
- Key Personnel (vitae and publications list)
- Collaborative Arrangements (including letters of support)
- Conflict-of-Interest List (Form CSREES-2007)
- Results from Prior NRI Support (if applicable)
- Budget (Form CSREES-2004)
- Budget Narrative
- Matching (if required)
- Current and Pending Support (Form CSREES-2005)
- Assurance Statement(s) (Form CSREES-2008)
- Compliance with the National Environmental Policy Act (NEPA) (Form CSREES-2006)

- Appendices to Project Description
- Personal Data on Project Director(s) (Page B of Form CSREES-2002)

(b) Proposal Cover Page (Form CSREES-2002)

Page A

Each copy of each grant application must contain a Proposal Cover Page, Form CSREES-2002. One copy of the application, preferably the original, must contain the pen-and-ink signature(s) of the proposing PDs and the AOR, the individual who possesses the necessary authority to commit the organization's time and other relevant resources to the project. If there are more than three co-PDs for an application, please list additional co-PDs on a separate sheet of paper (with appropriate information and signatures) and attach to the Proposal Cover Page (Form CSREES-2002). Any proposed PD or co-PD whose signature does not appear on Form CSREES-2002 or attached additional sheets will not be listed on any resulting grant award. Complete both signature blocks located at the bottom of the Proposal Cover Page form. Please note that Form CSREES-2002 is comprised of two parts - Page A, which is the Proposal Cover Page, and Page B, which is the Personal Data on Project Director.

Form CSREES-2002 serves as a source document for the CSREES grant database; it is therefore important that it be accurately completed in its entirety, especially the e-mail addresses requested in Blocks 4.c. and 18.c. However, the following items are highlighted as having a high potential for errors or misinterpretations:

(1) Type of Performing Organization (Blocks 6.a. and 6.b.). For Block 6.a., a check should be placed in the appropriate box to identify the type of organization which is the legal recipient named in Block 1. Only one box should be checked. For Block 6.b., please check as many boxes as apply to the affiliation of the PD listed in Block 16.

(2) Title of Proposed Project (Block 7.). The title of the project must be brief (140-character maximum, including spaces), yet represent the major thrust of the effort being proposed. Project titles are read by a variety of nonscientific people; therefore, highly technical words or phraseology should be avoided where possible. In addition, introductory phrases such as “investigation of,” “research on,” “education for,” or “outreach that” should not be used.

(3) Program to Which You Are Applying (Block 8.). Enter “NRI”. The program area (i.e., name of the program component) and number (e.g., 61.0 Agricultural Markets and Trade) should also be inserted in Block 8.

(4) DUNS NO. (Data Universal Numbering System) (Block 11.). A DUNS number must be included for the legal recipient named in Block 1. (except applications from individuals). See Part VIII, J.

(5) Type of Request (Block 14.). Check the appropriate box for your application. For “Renewals” and “Resubmitted Renewals,” the prior USDA Award Number must be identified.

(6) Project Director (PD) (Blocks 16.-19.). Blocks 16.-18. are used to identify the PD and Block 19. to identify co-PDs. If needed, additional co-PDs may be listed on a separate sheet of paper and attached to Form CSREES-2002, the Proposal Cover Page, with the applicable co-PD information and signatures. Listing multiple co-PDs, beyond those required for genuine collaboration, is discouraged.

(7) Other Possible Sponsors (Block 21.). List the names or acronyms of all other public or private sponsors including other agencies within USDA to which your application has been or might be sent. In the event you decide to send your application to another organization or agency at a later date, you must inform the identified CSREES program contact as soon as practicable. Submitting your application to other potential sponsors will not prejudice its review by CSREES; however, submitting the same (i.e., duplicate) application to another CSREES program is not permissible.

Page B

Page B should be submitted only with the original signature copy of the application and should be placed as the last page of the original copy of the application. This page contains personal data on the PD(s). CSREES requests this information in order to monitor the operation of its review and awards processes. This page will not be duplicated or used during the review process. Please note that failure to submit this information will in no way affect consideration of your application.

(c) Table of Contents

For consistency and ease in locating information, each application must contain a detailed Table of Contents immediately following the Proposal Cover Page. The Table of Contents should contain page numbers for each component of the application. Page numbering should begin with the first page of the Project Description. A Table of Contents page is included at the end of this RFA for your convenience. It should be used in the preparation of an application.

(d) Project Summary (Form CSREES-2003)

The application must contain a Project Summary, Form CSREES-2003. The summary should be approximately 250 words, contained within the box, placed immediately after the Table of Contents, and not numbered. The names and affiliated organizations of the PD and all co-PDs should be listed on this form, in addition to the title of the project. The summary should be a self-contained, specific description of the activity to be undertaken and should focus on: overall project goal(s) and supporting objectives; plans to accomplish project goal(s); and relevance of the project to the goals of the NRI. The PD(s) should also indicate in the Project Summary which of the five USDA goals (Part II, D.) the proposed project addresses. The importance of a concise, informative Project Summary cannot be overemphasized. If there are more than three co-PDs for an application, please list additional co-PDs on a separate sheet of paper (with appropriate information) and attach to the Project Summary (Form CSREES-2003). (Please check the appropriate "Proposal Type" you are submitting in the box on the upper right-hand

portion of the form. For integrated projects, please check the “Standard Research Proposal” box.)

(e) Response to Previous Review

This requirement only applies to “Resubmitted Applications” and “Resubmitted Renewal Applications” as described in Part II. B., Types of Applications. PDs must respond to the previous review panel summary on no more than one page, titled “RESPONSE TO PREVIOUS REVIEW,” which is to be placed directly after the Project Summary, Form CSREES-2003. If desired, additional comments may be included in the text of the Project Description, subject to the page limitations of that section.

(f) Project Description

PLEASE NOTE: For Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, and Seed Grants, the Project Description section may not exceed a total of 7 double-spaced pages, including figures and tables. For all other types of applications, the Project Description section may not exceed a total of 18 single- or double-spaced pages, including figures and tables. These page limitations apply regardless of whether figures or tables are included. All pages, including those with figures and tables, should be numbered sequentially. Applications exceeding the applicable page limitation may be returned without review. These maximums have been established to ensure fair and equitable competition. Project Descriptions must include all of the following:

(1) Introduction. A clear statement of the long-term goal(s) and supporting objectives or research questions of the proposed project should be included. Summarize the body of knowledge or other past activities that substantiate the need for the proposed project. Describe ongoing or recently completed significant activities related to the proposed project including the work of key project personnel. Preliminary data/information pertinent to the proposed research should be included in this section. All works cited should be referenced (see g., References to Project Description, below).

(2) Progress Report. If the application is a renewal of an existing project supported under this program (or its predecessor), include a clearly marked progress report describing results to date from the previous award. In addition, the progress report must be contained within the 18-page limit and should contain the following information:

- A comparison of actual accomplishments with the objectives established for the previous award;
- The reasons established objectives were not met, if applicable; and
- A listing of any publications resulting from the award. Copies of no more than 2 preprints or reprints may be appended to the application (see section on Appendices to Project Description).

(3) Rationale and Significance. Concisely present the rationale behind the proposed research. The specific relationship of the project’s objectives to the potential long-range

improvement in and sustainability of U.S. agriculture and food systems or to one or more of the particular program areas should be shown clearly. These purposes are described under Part I, B., Purpose and Priorities. Any novel ideas or contributions that the proposed project offers should also be discussed in this section.

(4) Approach. The activities proposed or problems being addressed must be clearly stated and the approaches being applied clearly described. Specifically, this section must include:

- A description of the activities proposed and the sequence in which the activities are to be performed;
- Methods to be used in carrying out the proposed project, including the feasibility of the methods;
- Expected outcomes;
- Means by which results will be analyzed, assessed, or interpreted;
- How results or products will be used;
- Pitfalls that may be encountered;
- Limitations to proposed procedures; and
- 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.

(g) References to Project Description

All references to works cited should be complete, including titles and all co-authors, and should conform to an acceptable journal format. References are not considered in the page-limitation for the Project Description.

(h) Facilities and Equipment

Facilities and major items of equipment that are available for use or assignment to the proposed project during the requested period of support should be described. In addition, items of nonexpendable equipment necessary to conduct and successfully conclude the proposed project should be listed (including dollar amounts), and, if funds are requested for their acquisition, justified on a separate page and attached to the budget.

(i) Key Personnel

The following should be included, as applicable:

(1) The roles and responsibilities of the PD, co-PD, and/or collaborator should be clearly described; and

(2) The vitae of the PD and each co-PD, senior associate, and other professional personnel. This section should include vitae of all key persons who are expected to work on the project, whether or not CSREES funds are sought for their support. The vitae should be limited to two (2) pages each in length, excluding publications listings. The

vitae should include a presentation of academic and research credentials, as applicable, e.g., earned degrees, teaching experience, employment history, professional activities, honors and awards, and grants received. A chronological list of **all** publications in **refereed journals** during the past **four (4) years**, including those in press, must be provided for each project member for whom a curriculum vita is provided. Also list only those **non-refereed** technical publications that have **relevance** to the proposed project. All authors should be listed in the same order as they appear on each paper cited, along with the title and complete reference as these usually appear in journals.

(j) Collaborative Arrangements

If it will be necessary to enter into formal consulting or collaborative arrangements with others, such arrangements should be fully explained and justified. If the consultant(s) or collaborator(s) are known at the time of application, a vitae or resume should be provided. In addition, evidence (e.g., letter of support) should be provided that the collaborators involved have agreed to render these services. The applicant also will be required to provide additional information on consultants and collaborators in the budget portion of the application. See instructions in the application forms for completing Form CSREES-2004, Budget.

(k) Conflict-of-Interest List (Form CSREES-2007)

A "Conflict-of-Interest List," Form CSREES-2007, must be provided for all individuals who have submitted a vita in response to item i.(2) of this section. Each Form CSREES-2007 should list alphabetically, by the last names, the full names of the individuals in the following categories: (a) all co-authors on publications within the past four years, including pending publications and submissions; (b) all collaborators on projects within the past four years, including current and planned collaborations; (c) all thesis or postdoctoral advisees/advisors; and (d) all persons in your field with whom you have had a consulting or financial arrangement within the past four years, who stand to gain by seeing the project funded. This form is necessary to assist program staff in excluding from application review those individuals who have conflicts of interest with the personnel in the grant application. The program contact must be informed of any additional conflicts of interest that arise after the application is submitted.

(l) Results from Prior NRI Support

If the PD or a co-PD has received NRI support in the past five years, information on results from that prior funding is required. This information will be used in the review of the application and is limited in length to one page per award. For renewal applications, provision of the Progress Report (see Project Description) is sufficient and information need not be repeated in this section. For each award, list the CSREES award number, the amount and period of support, the title of the project, a summary of the results of the completed work, the long-term effects of these results, and the publications resulting from the NRI award.

(m) Budget

(1) Budget Form (Form CSREES-2004)

Prepare the Budget, Form CSREES-2004, in accordance with instructions provided with the application forms. A budget form is required for each year of requested support. In addition, a cumulative budget is required detailing the requested total support for the overall project period. The budget form may be reproduced as needed by applicants. Funds may be requested under any of the categories listed on the form, provided that the item or service for which support is requested is allowable under the authorizing legislation, the applicable statutes, regulations, and Federal cost principles, and these program guidelines, and can be justified as necessary for the successful conduct of the proposed project (see Part IV, D. for applicable funding restrictions). Applicants also must include a budget narrative to justify their budget requests (see section (2) below).

(2) Budget Narrative

All 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 budget and justified on a separate sheet of paper and placed immediately behind the Budget form.

(3) Matching

For those equipment grants that require matching, a letter signed by the institution's authorized organizational representative stating that the necessary non-Federal matching funds will be made available from an institution or other source is required. If the institution is eligible for the waiver of these matching funds, the budget justification must include a letter signed by the institution's authorized organizational representative so stating and providing documentation of eligibility.

For integrated projects, if an applicant concludes that matching funds are not required (as specified under Part III, C.), a justification should be included in the Budget Narrative. CSREES will consider this justification when ascertaining final matching requirements. CSREES retains the right to make final determinations regarding matching requirements.

For those integrated projects where matching funds are required (as specified under Part III, C.), applications should include written verification of commitments of matching support (including both cash and in-kind contributions) from third parties. Written verification means:

For any third party cash contributions, a separate pledge agreement for each donation, signed by the authorized organizational representative of the donor organization and the applicant organization, which must include: (1) The name, address, and telephone number of the donor; (2) the name of the applicant organization; (3) the title of the

project for which the donation is made; (4) the dollar amount of the cash donation; and (5) a statement that the donor will pay the cash contribution during the grant period.

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 Narrative. 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 the applicable cost principles. Applicants should refer to OMB Circulars A-21, Cost Principles for Educational Institutions, A-87, Cost Principles for State, Local, and Tribal Governments, A-122, Cost Principles for Non-Profit Organizations, and the cost principles in the Federal Acquisition Regulation at 48 CFR 31.2 for further guidance and other requirements relating to matching and allowable costs.

(n) Current and Pending Support (Form CSREES-2005)

All applications must contain Form CSREES-2005 listing other current public or private support (including in-house support) to which the PD, as listed on the Proposal Cover Page (Form CSREES-2005), has committed a portion of time, whether or not salary support is included in the budget. Please follow the instructions provided on this form. Concurrent submission of identical or similar applications to the possible sponsors will not prejudice application review or evaluation by the CSREES. However, an application that duplicates or overlaps substantially with an application already reviewed and funded (or to be funded) by another organization or agency will not be funded under this program. **Please note that the project being proposed should be included in the pending section of the form.**

(o) Assurance Statement(s) (Form CSREES-2008)

A number of situations encountered in the conduct of projects require special assurances, supporting documentation, etc., before funding can be approved for the project. In addition to any other situation that may exist with regard to a particular project, applications involving any of the following elements must comply with the additional requirements as applicable.

(1) Recombinant DNA or RNA Research

All key personnel identified in the application and all endorsing officials of the proposing organization are required to comply with the guidelines established by the National Institutes of Health entitled, "Guidelines for Research Involving Recombinant DNA Molecules," as revised. If your project proposes to use recombinant DNA or RNA techniques, you must so indicate by checking the "yes" box in Block 20 of Form CSREES-2002 (the Proposal Cover Page) and by completing Section A of Form CSREES-2008. For applicable applications recommended for funding, Institutional Biosafety Committee approval is required before CSREES funds will be released. Please refer to the application forms for further instructions.

(2) Animal Care

Responsibility for the humane care and treatment of live vertebrate animals used in any grant project supported with funds provided by CSREES rests with the performing organization. Where a project involves the use of living vertebrate animals for experimental purposes, all key personnel identified in an application and all endorsing officials of the proposing organization are required to comply with the applicable provisions of the Animal Welfare Act, as amended (7 U.S.C. 2131 et seq.), and the regulations promulgated thereunder by the Secretary in 9 CFR Parts 1, 2, 3, and 4 pertaining to the care, handling, and treatment of these animals. If your project will involve these animals, you should check “yes” in Block 20 of Form CSREES-2002 and complete Section B of Form CSREES-2008. In the event a project involving the use of live vertebrate animals results in a grant award, funds will be released only after the Institutional Animal Care and Use Committee has approved the project. Please refer to the application forms for further instructions.

(3) Protection of Human Subjects

Responsibility for safeguarding the rights and welfare of human subjects used in any grant project supported with funds provided by CSREES rests with the performing organization. Guidance on this issue is contained in the National Research Act, Pub. L. No. 93-348, as amended, and implementing regulations promulgated by the Department under 7 CFR Part 1c. If you propose to use human subjects in your project, you should check the “yes” box in Block 20 of Form CSREES-2002 and complete Section C of Form CSREES-2008. In the event a project involving human subjects at risk is recommended for award, funds will be released only after the Institutional Review Board (IRB) has approved the research plan and CSREES has accepted documentation of the IRB approval. Please refer to the application forms for additional instructions.

(p) Certifications

Note that by signing Form CSREES-2002, the Proposal Cover Page, the applicant is providing the certifications required by 7 CFR Part 3017, regarding Debarment and Suspension and Drug-Free Workplace, and 7 CFR Part 3018, regarding Lobbying. The certification forms are included in the application package for informational purposes only. These forms should not be submitted with the application since by signing Form CSREES-2002 your organization is providing the required certifications. If the project will involve a subcontractor or consultant, the subcontractor/consultant should submit a Form AD-1048, Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions, to the grantee organization for retention in their records. This form should not be submitted to USDA.

(q) Compliance with the National Environmental Policy Act (NEPA) (Form CSREES-2006)

As outlined in 7 CFR Part 3407 (the CSREES regulations implementing NEPA), the environmental data for any proposed project is to be provided to CSREES so that

CSREES may determine whether any further action is needed. In some cases, however, the preparation of environmental data may not be required. Certain categories of actions are excluded from the requirements of NEPA.

In order for CSREES to determine whether any further action is needed with respect to NEPA, pertinent information regarding the possible environmental impacts of a particular project is necessary; therefore, Form CSREES-2006, "NEPA Exclusions Form," must be included in the application indicating whether the applicant is of the opinion that the project falls within a categorical exclusion and the reasons therefore. If it is the applicant's opinion that the proposed project falls within the categorical exclusions, the specific exclusion(s) must be identified.

Even though a project may fall within the categorical exclusions, CSREES may determine that an Environmental Assessment or an Environmental Impact Statement is necessary for an activity if substantial controversy on environmental grounds exists or if other extraordinary conditions or circumstances are present which may cause such activity to have a significant environmental effect.

(r) Appendices to Project Description

Each Project Description is expected to be complete; however, additions to the Project Description (appendices) are allowed if they are directly germane to the proposed research and are strictly limited to a maximum of 2 of the following:

- (1) Reprints (papers that have been published in peer-reviewed journals); and
- (2) Preprints (only manuscripts in press for a peer-reviewed journal will be accepted and must be accompanied by letters of acceptance from the publishing journals).

Preprints sent in support of the application should be single-spaced and printed on both sides of the page. Each preprint must be identified with the name of the submitting organization, the name(s) of the PD(s), and the title of the application, and be securely attached to each copy of the application.

Staff of the NRI will not collate applications or application addenda. Information may not be appended to an application to circumvent page limitations prescribed for the Project Description. Extraneous materials will not be used during the peer review process.

2. Research Conference Applications

Submit applications requesting support for research conferences to appropriate research programs, described in Part II, E., by applicable deadlines. **Potential applicants are strongly advised to consult appropriate NRI staff before preparing their research conference application.** The application should include:

(a) Proposal Cover Page (Form CSREES-2002);

Appropriately complete and sign.

(b) Project Summary (Form CSREES-2003);

State the objectives of the research conference, symposium, or workshop, as well as the proposed location and probable inclusive date(s) of the conference. Check the box marked "Conference" in the upper right-hand corner of the Project Summary (Form CSREES-2003).

(c) Project Description;

Describe the conference proposed, including:

- (1) A justification for the meeting;
- (2) Recent meetings on the same subject with dates and locations;
- (3) Names and organizational affiliations of the chair and other members of the organizing committee;
- (4) A proposed program (or agenda) for the conference, including a listing of scheduled participants and their institutional affiliations; and
- (5) The method of announcement or invitation that will be used.

(d) Curriculum Vita;

Include for submitting PD(s) with a brief listing of relevant publications. Each vita and publications listing, combined, should not exceed three (3) pages.

(e) Conflict-of-Interest List (Form CSREES-2007);

Include for submitting PD(s).

(f) An Estimated Total Budget (Form CSREES-2004);

Estimate for conference, and include an itemized breakdown of all support requested from the NRI. The budget for the conference may include an appropriate amount for transportation and subsistence costs for participants and for other conference-related costs.

(g) Current and Pending Support (Form CSREES-2005); and

(h) Appropriate Assurance Statement(s) (Form CSREES-2008), Certifications, and National Environmental Policy Act Exclusions Form (Form CSREES-2006).

See instructions in Part IV, B., 1., q.

3. Agricultural Research Enhancement Award (AREA) Applications

(a) Postdoctoral Fellowships

See Part III, A. and Part II, C., 2(a) for eligibility requirements.

Submit applications requesting support for postdoctoral fellowships to appropriate research programs, described in Part II, E., by applicable deadlines. Individual may submit applications directly or through the mentor's institution. Postdoctoral applicants must be sole PDs listed on the application. Applications should contain all of the components of, and be assembled in the order described in, Part IV, B., 1.

Additional instructions include:

- (1) Proposal Cover Page (Form CSREES-2002). If the application is submitted through an institution, Form CSREES-2002 must be endorsed by the AOR who possesses the necessary authority to commit the applicant's time and other relevant resources. If an individual submits the application, only the proposing postdoctoral applicant should sign Form CSREES-2002;
- (2) Project Summary (Form CSREES-2003). Check the box marked "Postdoctoral" in the upper right-hand corner of the form;
- (3) Documentation that arrangements have been made with an established investigator to serve as mentor. *The letter must provide assurance that the proposed project initiates the postdoctoral student's independent research program. Although the project may fit in the context of the mentor's existing research area, it should not simply be an extension of ongoing projects in the mentor's laboratory;*
- (4) Documentation that arrangements have been made for the necessary facilities, space, and materials for conduct of the research;
- (5) Documentation from the host institution's AOR indicating that the host institution concurs with the above arrangements. Postdoctoral applicants from Federal laboratories must notify the appropriate regional office;
- (6) Conflict-of-Interest List (Form CSREES-2007) for the postdoctoral applicant and the scientific mentor;
- (7) Budget (Form CSREES-2004). The budget is limited to \$125,000 and to two year's duration. Funds should be requested primarily for salary support although other expenditures (e.g., supplies, travel, and publication costs) are allowable costs if properly justified. Either an institutional allowance, not to exceed \$2,400 per year, or indirect costs may be requested within the \$125,000 limitation. The institutional allowance should be included on Line J. of the Budget form, "All Other Direct Costs";

(8) Current and Pending Support (Form CSREES-2005) for both the postdoctoral applicant and the scientific mentor (as documentation of on-going work in the mentor's laboratory);

(9) Assurance Statements (Form CSREES-2008). Postdoctoral fellowship applicants whose research requires Assurance Statements must have their project reviewed by the appropriate committee(s) at the institution where the research will be conducted. Assurance Statements must be signed by an AOR of that institution. (See Part IV, B., 1., o.);

(10) Certifications regarding Debarment and Suspension, Drug-Free Work Place, and Lobbying (by signing the Proposal Cover Page the institution(s) agree to these provisions); and

(11) National Environmental Policy Act Exclusions Form (Form CSREES-2006).

(b) New Investigator Awards

See Part III, A. and Part II, C., 2(b) for eligibility requirements.

New investigators should submit research applications to appropriate research programs, described in Part II, E., by applicable deadlines. Applications should contain all of the components of, and be assembled in the order described in, Part IV, B., 1 Check the box marked “New Investigator” in the upper right-hand corner of the Project Summary (Form CSREES-2003).

(c) Strengthening Awards

(1) Research Career Enhancement Awards (Sabbatical Awards). See Research Career Enhancement Awards (Sabbatical Awards) in Part III, A. and Part II, C., 2(c) for eligibility requirements. Applications from eligible faculty wishing to enhance their research capabilities through sabbatical leaves are encouraged. Applications should be submitted to appropriate research programs, described in Part II, E., by applicable deadlines . Applications should originate through the applicant's home institution. The following guidelines apply:

(a) Proposal Cover Page (CSREES-2002). Complete as described in Part IV, B., 1. Indicate NRI and the program code of the appropriate research program in Block 8.;

(b) Project Summary (Form CSREES-2003). Indicate overall project goals and supporting objectives. Check the box marked “Career Enhancement” in the upper right-hand corner;

(c) Project Description. Describe the proposed sabbatical (limited to seven (7) pages including figures and tables). Include:

- A general description of the research interests and goals of the applicant in order to provide perspective for the application;

- A description of the research project to be pursued while on the sabbatical leave;
- A statement of how the proposed activities will enhance the scientific research 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.

(d) Curriculum Vita, Publication Lists (including titles), and Conflict of Interest Lists (Form CSREES-2007). Include for applicant, scientific host and any other personnel whose qualifications merit consideration in the evaluation of the application. Follow detailed instructions provided under Part IV, B., 1.;

(i) A letter from the home institution detailing the particular arrangements at the home institution with respect to salary and date and duration of sabbatical;

(j) A letter from the scientific host indicating willingness to serve in this capacity, and a description of the host's contribution to the proposed activities both scientifically and with regard to use of facilities and equipment;

(k) A statement signed by the Department Head or equivalent official at the host institution indicating a commitment to provide research space and facilities for the period of the applicant's presence;

(l) Budget (Form CSREES-2004) and Budget Justification. Limit to one year's salary and funds for travel and supplies;

(m) Current and Pending Support (Form CSREES-2005);

(n) Assurance Statements (Form CSREES-2008). Applicants whose research requires Assurance Statements must have their project reviewed and approved by the appropriate committee(s) at the institution where the research will be conducted. Assurance Statements must be signed by an AOR of that institution. (See Part IV, B., 1, o.);

(o) Certifications regarding Debarment and Suspension, Drug-Free Workplace, and Lobbying (by signing the Proposal Cover Page the institution(s) agree to these provisions); and

(p) National Environmental Policy Act Exclusions Form (Form CSREES-2006).

(2) Equipment Grants. See Equipment Grants, in Part III, A. and Part II, C., 2(c) for eligibility requirements. Applications requesting assistance in purchasing equipment must be submitted as Equipment Grant applications. Applications should be submitted to appropriate research programs, described in Part II, E., by applicable deadlines. Include the following:

(a) Proposal Cover Page (CSREES-2002). Complete as described in Part IV, B., 1. Indicate NRI and the program code of the appropriate research program in Block 8.;

(b) Project Summary (Form CSREES-2003). Indicate equipment sought and overall project goals for its use. Check the box marked “Equipment” in the upper right-hand corner;

(c) Project Description. Include general description of the research project(s) for which the equipment will be used, how the equipment will fit into or enhance the research program, and how the equipment will allow the applicant to become competitive for future funding or move into new research areas;

(d) A brief description of other similar or complementary equipment available to the PD at the institution and why the requested equipment is necessary;

(e) Curriculum Vita, Publication Lists (including titles), and Conflict of Interest Lists (Form CSREES-2007). Include for applicant and other major users of the equipment. Follow detailed instructions provided under Part IV, B., 1.;

(f) Budget Form (CSREES-2004) and Budget Justification. See Part II, C., 2(c) for budget limitations, matching requirements, waiver conditions and cost restrictions. 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 item of equipment. A letter signed by the institution’s AOR stating that the necessary non-Federal matching funds will be made available from an institutional or other source is required. If the institution is eligible for the waiver of these matching funds, the budget justification must include a letter signed by the institution’s AOR so stating and providing documentation of eligibility. A justification must be given for how this equipment will strengthen the applicant's research program or institution;

(g) Current and Pending Support (Form CSREES-2005). Follow instructions in Part IV, B, 1. If the applicant has significant funding from other sources,

(h) Certifications regarding Debarment and Suspension, Drug-free Work Place, and Lobbying (by signing the Proposal Cover Page the institution(s) agree to these provisions); and

(i) National Environmental Policy Act Exclusions Form (Form CSREES-2006).

(3) Seed Grants. See Seed Grants, in Part III, A. and Part II, C., 2(c) for eligibility requirements. Applications from eligible faculty wishing to collect preliminary data should be submitted as Seed Grant applications. Applications should be submitted to appropriate research programs, described in Part II, E., Program Opportunities, by applicable deadlines . Applications should contain all of the components of, and be assembled in the order described in, Part IV, B., 1. In addition, the following are required:

(a) Project Summary (Form CSREES-2003). Check the box marked “Seed Grant” in the upper right-hand corner;

(b) Project Description. Include all the components of a Standard Research Project application and present enough experimental detail to allow adequate evaluation. In order to be competitive, long-term research goals and a statement describing how this seed grant will allow the applicant to become competitive for future funding should be included;

(4) Strengthening Standard Research Project Awards. See Strengthening Standard Research Project Awards, in Part II, C, 2(c) for eligibility requirements. Faculty who are eligible for the Strengthening Award Program may wish to apply for a Standard Research Project Award. Applications should be directed to appropriate research programs, described in Part II, E., by applicable deadlines Strengthening Standard Research Project Award Applications should contain all of the components and meet the format guidelines (including page limitations) described in Part IV, B., 1.; however, applicants should check the box marked “Standard Strengthening” in the upper right-hand corner of the Project Summary (Form CSREES-2003).

C. Submission Dates and Times

Applications must be received by COB in the Proposal Services Unit/CSREES on the dates indicated in the table at the end of this RFA (5:00 p.m., Eastern Time) for the various program areas. Applications received after applicable deadlines will not be considered for funding.

D. Funding Restrictions

The FY 2004 Consolidated Appropriations Act (Public Law 108-199) limited indirect costs to 20 percent of the total Federal funds provided under each award. CSREES anticipates that the FY 2005 Appropriations Act will include a similar limitation. Therefore, when preparing budgets, applicants should limit their requests for recovery of indirect costs to the lesser of their institution’s official negotiated indirect cost rate or the equivalent of 20 percent of total Federal funds awarded. Another method of calculating the maximum allowable is 25 percent of the total direct costs. Please note that if the 2005 Appropriations Act contains a different indirect cost limitation CSREES will contact each successful applicant to apply the correct rate prior to the award of a grant.

Funds may not be used for the renovation or refurbishment of research spaces (including energy retrofitting); purchase or installations of fixed equipment in such spaces; or planning, repair, rehabilitation, acquisition, or construction of buildings or facilities.

E. Other Submission Requirements

1. What to Submit

An original and 14 copies of the application are required (except for applications for Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, and Seed Grants, for which an original and 10 copies of the application should be submitted) and 2 additional copies of the Project Summary, Form CSREES-2003, as a separate

attachment. All copies of the application and the Project Summary must be submitted in one package.

2. Multiple Submissions

Duplicate, essentially duplicate, or predominantly overlapping applications submitted to one or more program areas within the NRI (including the programs described under Agricultural Research Enhancement Awards) in any one fiscal year **will be returned without review**. In addition, applicants also may not submit to the NRI an application that is considered duplicate, essentially duplicate, or predominantly overlapping with an application submitted to another CSREES program in the same fiscal year.

3. Where to Submit

Applicants are strongly encouraged to submit completed applications via overnight mail or delivery service to ensure timely receipt by the USDA. The address for hand-delivered applications or applications submitted using an express mail or overnight courier service is:

National Research Initiative Competitive Grants Program
c/o Proposal Services Unit
Cooperative State Research, Education, and Extension Service

U.S. Department of Agriculture
Room 1420, Waterfront Centre
800 9th Street, SW
Washington, DC 20024
Telephone: (202) 401-5048

Applications sent via the U.S. Postal Service must be sent to the following address:

National Research Initiative Competitive Grants Program
c/o Proposal Services Unit
Cooperative State Research, Education, and Extension Service
U.S. Department of Agriculture
STOP 2245
1400 Independence Avenue, SW
Washington, DC 20250-2245

The receipt of all applications will be acknowledged by e-mail. Therefore, applicants are strongly encouraged to provide accurate e-mail addresses, where designated, on the Form CSREES-2002. If the applicant's e-mail address is not indicated, CSREES will acknowledge receipt of the application by letter.

If the applicant does not receive an acknowledgment within 60 days of the submission deadline, please contact the program contact. Once the application has been assigned a proposal number, please cite that number on all future correspondence.

PART V—APPLICATION REVIEW REQUIREMENTS

A. General

Each application will be evaluated in a two-part process. First, each application will be screened to ensure that it meets the administrative requirements as set forth in this RFA. Applications that do not fall within the guidelines as stated in the RFA will be eliminated from program competition and will be returned to the applicant. Second, a review panel will technically evaluate applications that meet these requirements. Written comments will be solicited from *ad hoc* reviewers when required, and individual written comments and a peer review panel prior to recommending applications for funding will provide in-depth discussions.

Reviewers will be selected 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, 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 to producers and the general public of each application.

B. Evaluation Criteria

Agricultural research 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 shall take into account the following factors.

For Standard Research Grants, Strengthening Standard Research Project Grants, Postdoctoral Fellowships, New Investigator Awards, Integrated Project Grants and Bridge Grants:

1. Scientific merit of the application for research, extension and/or education, including:

(a) Novelty, innovation, uniqueness, and originality;

(b) Where model systems are used, ability to transfer knowledge gained from these systems to organisms of importance to U.S. agriculture;

(c) Conceptual adequacy of the research, extension, and education components, as applicable;

(d) Clarity and delineation of objectives;

(e) Adequacy of the description of the undertaking and suitability and feasibility of methodology;

(f) Demonstration of feasibility through preliminary data and/or, for postdoctoral fellowships, publication record of the mentor; and

(g) Probability of success of project.

2. Qualifications of proposed project personnel and adequacy of facilities, including:

(a) Qualifications of applicant (individual or team) to conduct the proposed project, including performance record and potential for future accomplishments (for Postdoctoral Fellowship applications, this applies to the mentor as well as to the postdoctoral applicant);

(b) Demonstrated awareness of previous and alternative approaches to the problem identified in the proposal;

(c) Institutional experience and competence in subject area; and

(d) Adequacy of available or obtainable support personnel, facilities, and instrumentation.

3. Planning and administration of the proposed project, including:

(a) Time allocated for systematic attainment of objectives; and

(b) For multi-institutional and integrated projects, planned administration of the proposed project and its maintenance, partnerships, collaborative efforts, evaluation and monitoring efforts, and the planned dissemination of information over the duration of the project.

4. Relevance of the proposal to improvements in and sustainability of U.S. agriculture, including:

(a) Documentation that the research, extension, and/or education activities are directed toward current or likely future issues or priority areas identified in this document;

(b) For integrated activities, evident linkage of research, extension, and education functions, as appropriate;

(c) For integrated activities, evidence of involvement of stakeholders and/or communities of interest.

In addition to the application criteria above, applications considered for Bridge Grant support will be judged based on the potential that further funding will sustain and enhance important collaborations and activities that might lead to future program success or success in obtaining other grants.

Applications submitted to program 32.1, Epidemiological Approaches for Food Safety, will also be evaluated on how well the Project Description addresses strength of collaboration and strength of coordination and management.

Postdoctoral fellowship applications also will be evaluated on the quality of the training environment, including:

- (a) Documentation that arrangements have been made with an established investigator to serve as mentor;
- (b) Documentation that arrangements have been made for the necessary facilities, space, and materials to conduct the proposed research; and
- (c) Potential for the postdoctoral fellow to initiate an independent research program.

For Conference 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 organizing committee and appropriateness of invited speakers to topic areas being covered;**
- 3. Uniqueness and timeliness of the conference; and**
- 4. Appropriateness of budget request.**

For Research Career Enhancement Awards, Equipment Grants, and Seed Grants:

- 1. The merit of the proposed activities or research equipment as a means of enhancing the research capabilities and competitiveness of the applicant and/or institution;**
- 2. The applicant's previous research experience and background;**
- 3. The appropriateness of the proposed activities or research equipment for the goals proposed; and**
- 4. Relevance of the project to long-range improvements in and sustainability of U.S. agriculture.**

C. Conflicts of Interest and Confidentiality

During the peer evaluation process, extreme care will be taken to prevent any actual or perceived conflicts of interest that may impact review or evaluation. For the purpose of determining conflicts of interest, the academic and administrative autonomy of an institution shall be determined by reference to the current Higher Education Directory, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church, VA 22042. Phone: (703) 532-2300. Web site: <http://www.hepinc.com>.

Names of submitting institutions and individuals, as well as application content and peer evaluations, will be 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. Therefore, the names of the reviewers will not be released to applicants. At the end of the fiscal year, names of panelists will be made available in such a way that the panelists cannot be identified with the review of any particular application.

PART VI—AWARD ADMINISTRATION

A. General

Within the limit of funds available for such purpose, the awarding official of CSREES shall make grants to those responsible, eligible applicants whose applications are judged most meritorious under the procedures set forth in this RFA. Note that 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 CSREES under this RFA shall be expended solely for the purpose for which the funds are granted in accordance with the approved application and budget, the regulations, the terms and conditions of the award, the applicable Federal cost principles, and the applicable Department's assistance regulations (e.g., parts 3015 and 3019 of 7 CFR). The total period for which a grant is awarded (including all funded and no-cost time extensions) may not exceed five years.

B. Organizational Management Information

Specific management information relating to an applicant shall be submitted on a one-time basis as 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 CSREES program. CSREES will provide copies of forms recommended for use in fulfilling these requirements as part of the preaward process. Although an applicant may be eligible based on its status as one of these entities, there are factors that may exclude an applicant from receiving Federal financial and nonfinancial assistance and benefits under this program (e.g., debarment or suspension of an individual involved or a determination that an applicant is not responsible based on submitted organizational management information).

C. Award Notice

The award document will provide pertinent instructions and information shall include at a minimum the following:

1. Legal name and address of performing organization or institution to whom the Administrator has awarded a grant under the terms of this RFA;
2. Title of project;
3. Name(s) and institution(s) of PDs chosen to direct and control approved activities;
4. Identifying grant number assigned by the Department;
5. Project period, specifying the amount of time the Department intends to support the project without requiring recompetition for funds;
6. Total amount of Departmental financial assistance approved by the Administrator during the project period;
7. Legal authority(ies) under which the grant is awarded;
8. Appropriate Catalog of Federal Domestic Assistance (CFDA) number;
9. Applicable award terms and conditions (see <http://www.csrees.usda.gov/business/awards/awardterms.html>) to view CSREES award terms and conditions);
10. Approved budget plan for categorizing allocable project funds to accomplish the stated purpose of the grant award; and
11. Other information or provisions deemed necessary by CSREES to carry out its respective granting activities or to accomplish the purpose of a particular grant.

D. 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:

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

7 CFR Part 3—USDA debt collection regulations.

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

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

7 CFR Part 3015—USDA Uniform Federal Assistance Regulations, implementing OMB directives (i.e., OMB Circular Nos. A-21 and A-122) and incorporating provisions of 31 U.S.C. 6301-6308 (formerly the Federal Grant and Cooperative Agreement Act of 1977, Pub. L. No. 95-224), as well as general policy requirements applicable to recipients of Departmental financial assistance.

7 CFR Part 3017—USDA implementation of Governmentwide Debarment and Suspension (Nonprocurement) and Governmentwide Requirements for Drug-Free Workplace (Grants).

7 CFR Part 3018—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.

7 CFR Part 3019—USDA implementation of OMB Circular A-110, Uniform Administrative Requirements for Grants and Other Agreements With Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations.

7 CFR Part 3052—USDA implementation of OMB Circular No. A-133, Audits of States, Local Governments, and Non-profit Organizations.

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

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).

E. Expected Program Outputs and Reporting Requirements

Grantees are required to submit annual and summary evaluation reports via the CSREES Current Research Information System (CRIS). CRIS is an electronic, Web-based inventory system that facilitates both grantee submissions of project outcomes and public access to information on Federally-funded projects.

If a project is funded, beginning in the second year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget (see Part IV, B., 1., m.).

PART VII—AGENCY CONTACTS

Applicants and other interested parties are encouraged to contact the NRI: telephone, (202) 401-5022; fax, (202) 401-6488; e-mail, nricgp@csrees.usda.gov. Specific questions pertaining to technical matters may be directed to the cognizant National Program Leader listed in Part II, E.

PART VIII—OTHER INFORMATION

A. Access to Review Information

Copies of reviews, not including the identity of reviewers, and a summary of the panel comments will be sent 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 grant state otherwise, the grantee may not in whole or in part delegate or transfer to another person, institution, or organization the responsibility for use or expenditure of grant funds.

2. Changes in Project Plans

(a) The permissible changes by the grantee, PD(s), or other key project personnel in the approved project grant 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 grantee 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) Changes in approved goals or objectives shall be requested by the grantee and approved in writing by the ADO prior to effecting such changes. In no event shall requests for such changes be approved which are outside the scope of the original approved project.

(c) Changes in approved project leadership or the replacement or reassignment of other key project personnel shall be requested by the grantee and approved in writing by the ADO prior to effecting such changes.

(d) 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, shall

be requested by the grantee and approved in writing by the ADO prior to effecting such transfers, unless prescribed otherwise in the terms and conditions of the grant.

(e) Changes in Project Period: The project period may be extended by CSREES without additional financial support, for such additional period(s) as the ADO determines may be necessary to complete or fulfill the purposes of an approved project, but in no case shall the total project period exceed five years. Any extension of time shall be conditioned upon prior request by the grantee and approval in writing by the ADO, unless prescribed otherwise in the terms and conditions of a grant.

(f) Changes in Approved Budget: Changes in an approved budget must be requested by the grantee 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 grant award.

C. Confidential Aspects of Applications and Awards

When an application results in a grant, it becomes a part of the record of CSREES 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. Such an application will be released only with the consent of the applicant or to the extent required by law. The original copy of an application that does not result in a grant will be retained by the Agency for a period of one year. Other copies will be destroyed. 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 collections of information requirements contained in this Notice have been approved under OMB Document No. 0524-0039.

E. Application Disposition

When each peer review panel has completed its deliberations, the responsible program staff of the NRI 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.

The NRI reserves the right to negotiate with the PD and/or with the submitting organization or institution regarding project revisions (e.g., reductions in the scope of

work), funding level, or period or method of support prior to recommending any project for funding.

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 by the NRI for a period of three years. The remaining copies will be destroyed.

F. Materials Available on the Internet

The following are among the materials available on the NRI page (<http://www.csrees.usda.gov/funding/nri/nri.html>).

- 1. NRI 2005 Request for Applications**
- 2. CSREES Application Forms**
- 3. NRI Abstracts of Funded Research**
- 4. NRI Annual Report**

G. Electronic Subscription to NRI Documents

A mail server has been set-up to notify subscribers when NRI publications such as its RFAs or Abstracts of Funded Research are available electronically on the Web. Subscribers will not receive the document itself, but instead will receive an e-mail containing an announcement regarding the document's availability on the Web.

To subscribe:

Send an e-mail message to: nri-epubs@lyris.csrees.usda.gov. In the body of the message, include only the word: *subscribe*

To unsubscribe:

Send an e-mail message to: nri-epubs@lyris.csrees.usda.gov. In the body of the message, include only the word: *unsubscribe*

Please note that this is not a forum. Messages, other than those related to subscription, cannot be posted to this address.

H. Definitions

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

Administrator means the Administrator of the Cooperative State Research, Education, and Extension Service (CSREES) and any other officer or employee of the Department to whom the authority involved is delegated.

Authorized departmental officer means the Secretary or any employee of the Department who has the authority to issue or modify grant instruments on behalf of the Secretary.

Authorized organizational representative means the president, director, or chief executive officer or other designated official of the applicant organization who has the authority to commit the resources of the organization.

Department or USDA means the United States Department of Agriculture.

Education Activity means 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.

Extension Activity means an act or process that delivers science-based knowledge and informal educational programs to people, enabling them to make practical decisions.

Fundamental research is research that tests scientific hypotheses and provides basic knowledge to assist in meeting the costs of conducting, for the benefit of the public, an identified project which is intended and designed to accomplish the purpose of the program as identified in these guidelines.

Grant means the award by the Secretary of funds to an eligible organization or individual to assist in meeting the costs of conducting, for the benefit of the public, an identified project that is intended and designed to accomplish the purpose of the program as identified in these guidelines.

Grantee means an organization designated in the grant award document as the responsible legal entity to which a grant is awarded.

Integrated means to bring the three components of the agricultural knowledge system (research, education, and extension) together around a problem area or activity.

Matching means that portion of allowable project costs not borne by the Federal Government, including the value of in-kind contributions.

Minority means Alaskan Native, American Indian, Asian-American, Black (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 (see Part III, B.).

Minority-serving institution means an academic institution whose enrollment of a single minority or a combination of minorities, as defined in this section, exceeds fifty percent

of the total enrollment, including graduate and undergraduate applied research and full- and part-time students. (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter). An institution in this instance is an organization that possesses a significant degree of autonomy⁴.

Mission-Linked Research is research on specifically identified agricultural problems which, through a continuum of efforts, provides information and technology that may be transferred to users and may relate to a product, practice or process.

Multidisciplinary project means research, education and extension projects in which investigators from two or more disciplines are collaborating closely. These collaborations, where appropriate, may integrate the biological, physical, chemical, or social sciences.

Peer review means an evaluation of a proposed project for scientific or technical quality and relevance performed by experts with the scientific knowledge and technical skills to conduct the proposed work or to give expert advice on the merits of an application.

Prior approval means written approval evidencing prior consent by an authorized departmental officer as defined above.

Project means the particular activity within the scope of the program supported by a grant award.

Project director means the single individual designated in the grant application and approved by the Secretary who is responsible for the direction and management of the project.

Project period means the period, as stated in the award document, during which Federal sponsorship begins and ends.

Research activity means a scientific investigation or inquiry which results in the generation of knowledge.

Secretary means the Secretary of Agriculture and any other officer or employee of the Department to whom the authority involved is delegated.

Small and mid-sized institutions for Integrated Projects are academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students and that are no higher than the 50th percentile of academic institutions funded by the National Research Initiative Competitive Grants Program in the past three years and are not within the top 100 Federally funded institutions (See Table 2 at the end of this document for an alphabetical listing of the most successful institutions). (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter.). An institution in this instance is an organization that possesses a significant degree of autonomy⁴.

*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)

Small and mid-sized institutions for Research Projects are academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students. (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter.) An institution in this instance is an organization that possesses a significant degree of autonomy.

Project period means the period, as stated in the award document, during which Federal sponsorship begins and ends.

Secretary means the Secretary of Agriculture and any other officer or employee of the Department to whom the authority involved is delegated.

I. CSREES' Grants.gov Implementation Plans

Grants.gov is an Internet web site for grant and other financial assistance information (e.g., allows grant seekers to find funding opportunities). It also will serve to facilitate electronic transmission of information pertaining to grants and other financial assistance information (e.g., electronic application submission). In FY 2004, CSREES initiated the receipt of applications electronically through the Grants.gov (<http://www.grants.gov>) storefront for limited programs. As a result of this initiative, it was evident that improvements were necessary prior to further implementation of electronic applications. CSREES is working hard to provide Grants.gov as an option for programs in FY 2005. More information about CSREES' Grants.gov plans, including important announcements, program implementation, and detailed requirements, is posted on the CSREES' web site, http://www.csrees.usda.gov/business/other_links/egov/egov.html, which will be updated as appropriate. It is suggested that this site be visited periodically for important updates.

Grants.gov is not available for the submission of applications in response to this RFA. See Part IV, E. for information about the format (i.e., hard copy or electronic) for the submission of applications under this RFA.

J. DUNS Number

A Dun and Bradstreet (D&B) Data Universal Numbering System (DUNS) number is a unique nine-digit sequence recognized as the universal standard for identifying and keeping track of over 70 million businesses worldwide. A Federal Register notice of final policy issuance (68 FR 38402) requires a DUNS number in every application (i.e., hard copy and electronic) for a grant or cooperative agreement (except applications from individuals) submitted on or after October 1, 2003. Therefore, potential applicants should verify that they have a DUNS number or take the steps needed to obtain one. For information about how to obtain a DUNS number go to

<http://www.grants.gov/RequestaDUNS>. Please note that the registration may take up to 14 business days to complete.

K. Required Registration for Grants.gov

The Central Contract Registry (CCR) is a database that serves as the primary Government repository for contractor information required for the conduct of business with the Government. This database will also be used as a central location for maintaining organizational information for organizations seeking and receiving grants from the Government. Such organizations must register in the CCR prior to the submission of applications via grants.gov (a DUNS number is needed for CCR registration). For information about how to register in the CCR visit <http://www.grants.gov>. Allow a minimum of 5 days to complete the CCR registration.

TABLE 1.

Use to Determine Eligibility for Strengthening Research Awards - Most Successful Universities and Colleges Receiving Federal Funds for Science and Engineering Research and Development in FY 2002

Arizona State University
Baylor College of Medicine
Boston University
Brown University
California Institute of Technology
Carnegie-Mellon University
Case Western Reserve University
Colorado State University
Columbia University
Cornell University
CUNY Mount Sinai School of Medicine
Dartmouth College
Duke University
Emory University
Florida State University
George Washington University
Georgetown University
Georgia Institute of Technology
Harvard University
Indiana University Purdue University at Indianapolis
Johns Hopkins University
Massachusetts Institute of Technology
Medical College of Wisconsin
Medical University of South Carolina
Michigan State University
New York University
Northwestern University
Ohio State University
Oregon Health Sciences University
Oregon State University
Pennsylvania State University
Princeton University
Purdue University
Rockefeller University
Rutgers, The State University of New Jersey
Scripps Research Institute
Stanford University
State University of New York at Buffalo
State University of New York at Stony Brook
Thomas Jefferson University

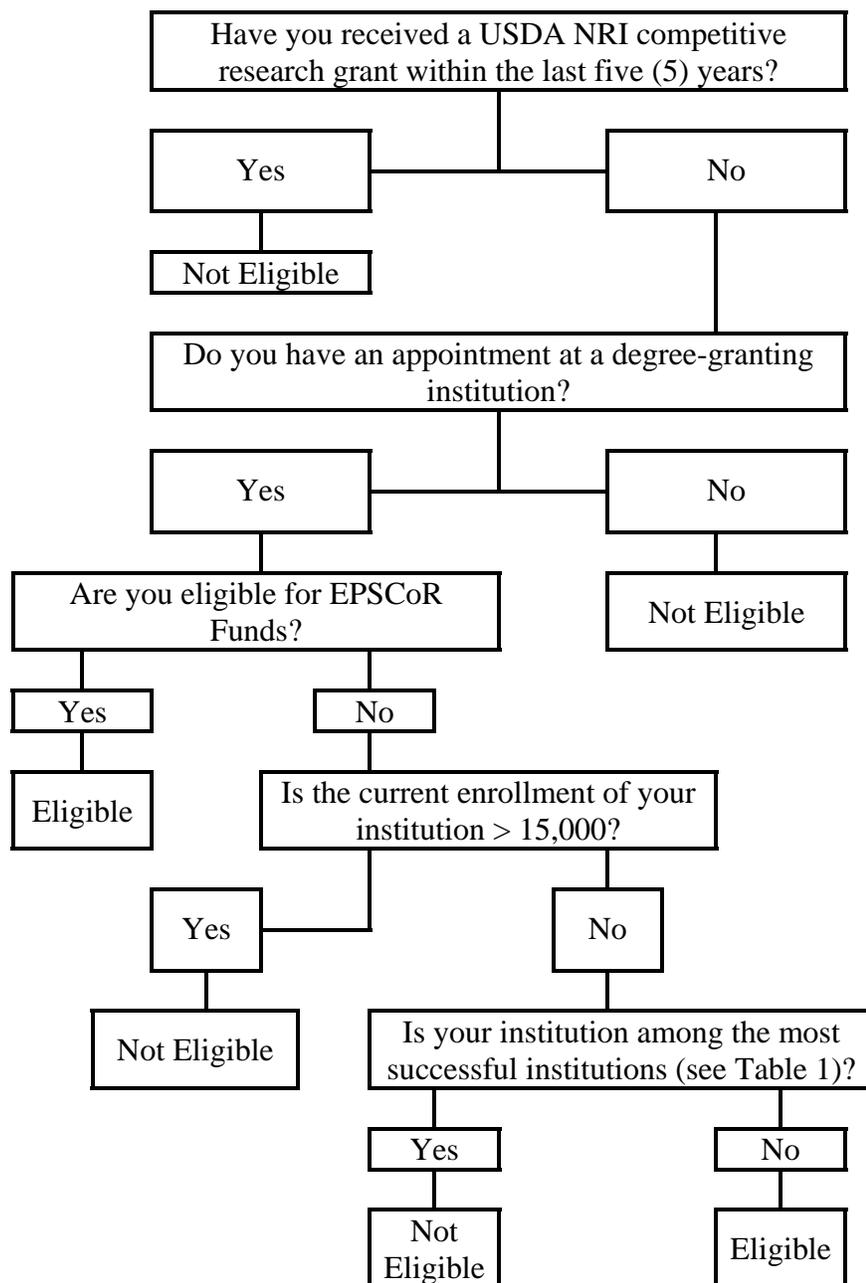
University Corporation for Atmospheric Research
University of Alabama Birmingham
University of Arizona
University of California Berkeley
University of California Davis
University of California Irvine
University of California Los Angeles
University of California San Diego
University of California San Francisco
University of California Santa Barbara
University of Chicago
University of Cincinnati
University of Colorado Boulder
University of Colorado Health Sciences Center
University of Connecticut
University of Florida
University of Georgia
University of Hawaii Manoa
University of Kentucky
University of Illinois Urbana-Champaign
University of Illinois Chicago
University of Iowa
University of Maryland Baltimore Prof School
University of Maryland College Park
University of Massachusetts Medical School Worcester
University of Medicine and Dentistry of New Jersey
University of Miami
University of Michigan Ann Arbor
University of Minnesota Twin Cities
University of Missouri Columbia
University of New Mexico
University of North Carolina Chapel Hill
University of Pennsylvania
University of Pittsburgh
University of Rochester
University of South Florida
University of Southern California
University of Texas at Austin
University of Texas Health Science Center Houston
University of Texas Health Science Center San Antonio
University of Texas MD Anderson Cancer Center
University of Texas Medical Branch Galveston
University of Texas SW Medical Center Dallas
University of Utah
University of Vermont
University of Virginia

University of Washington
University of Wisconsin Madison
Utah State University
Vanderbilt University
Virginia Polytechnic Institute and State University
Virginia Commonwealth University
Wake Forest University
Washington University
Wayne State University
Woods Hole Oceanographic Institute
Yale University
Yeshiva University, New York

¹Based on data from the table 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 fiscal year 2002 of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (National Science Foundation).

FIGURE 1.

Flow Chart for Strengthening Research Award Eligibility (Seed Grants, Research Career Enhancement Awards, Strengthening Standard Awards; NOT Equipment Grants*)



*The only requirements for Equipment Grants are that the institution is degree granting and not among the “top 100”. For Strengthening Standard Awards, the Project Director may have received a Seed Grant, Research Career Enhancement Award, Equipment Grant, or Postdoctoral Fellowship.

FIGURE 2.

Flow Chart for Bridge Grant Eligibility

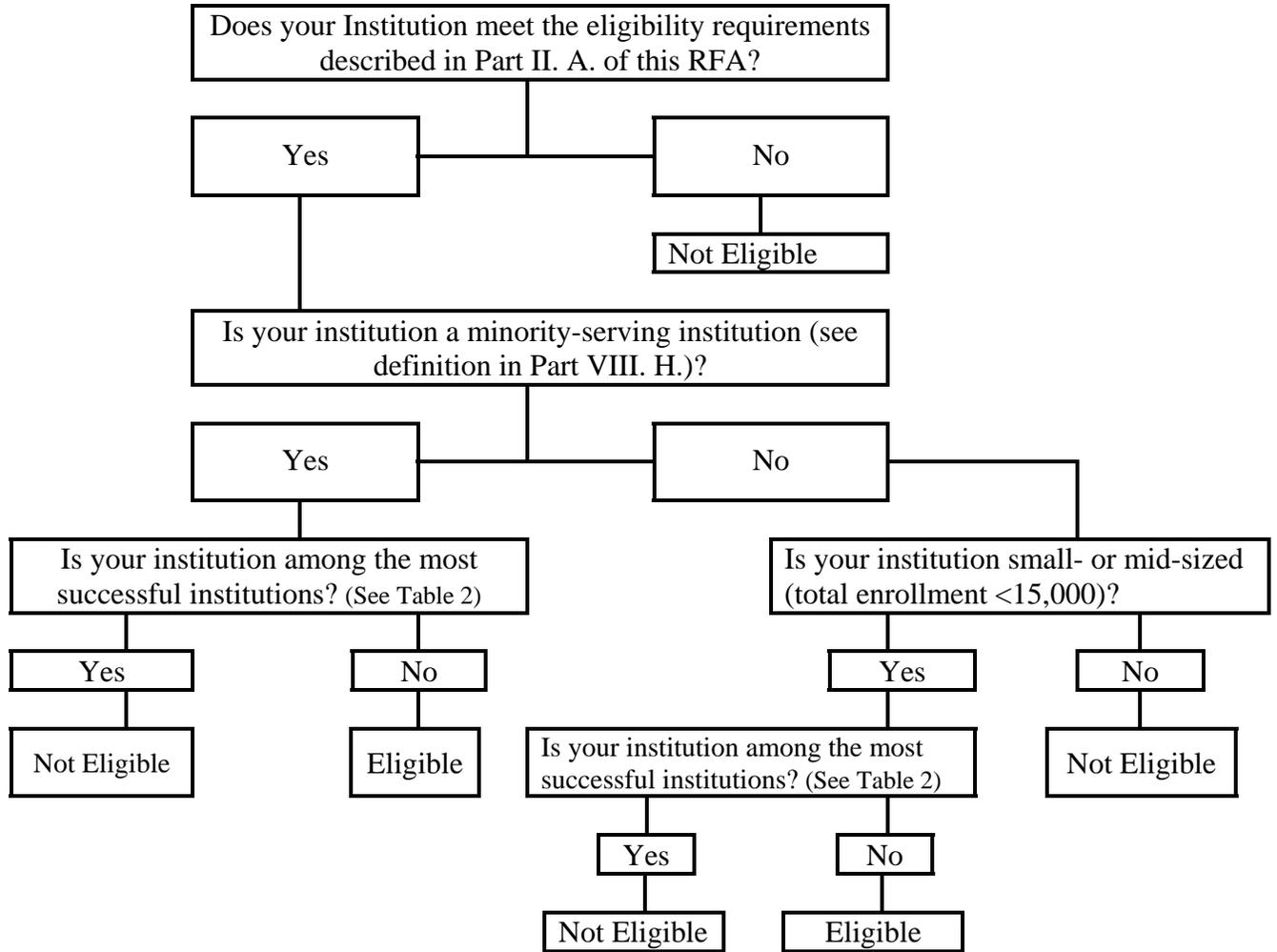


TABLE 2.

***Use to Determine Eligibility for Bridge Grants Most Successful
Universities and Colleges Receiving Federal and/or National Research
Initiative Funds***

Alabama A & M University*
Arizona State University
Auburn University *
Baylor College of Medicine
Baylor University *
Boise State University *
Boston University
Brown University
California Institute of Technology
California State Polytechnic University *
Carnegie-Mellon University
Case Western Reserve University
City University of New York, City College*
Clemson University *
Colorado State University
Columbia University
Cornell University
CUNY Mount Sinai School of Medicine
Dartmouth College
Drew University*
Duke University
Emory University
Florida State University
George Washington University
Georgetown University
Georgia Institute of Technology
Harvard University
Illinois State University *
Indiana University Bloomington *
Indiana University Purdue University at Indianapolis
Iowa State University *
Johns Hopkins University
Kansas State University *
Louisiana State University *
Loyola University Chicago *
Massachusetts Institute of Technology
Medical College of Wisconsin
Medical University of South Carolina
Miami University*
Michigan State University

Michigan Technological University *
Mississippi State University
Montana State University *
New Mexico Institute of Mining and Technology *
New Mexico State University *
New York University
North Carolina State University *
North Dakota State University *
Northern Arizona University *
Northwestern University
Ohio State University
Oklahoma State University *
Oregon Health Sciences University
Oregon State University
Pennsylvania State University
Princeton University
Purdue University
Rice University *
Rockefeller University
Rutgers, The State University of New Jersey
Scripps Research Institute
South Dakota State University *
Southern Illinois University Carbondale *
Southwestern Indian Polytechnic Institute *
Stanford University
State University of New York at Albany *
State University of New York at Buffalo
State University of New York at Stony Brook
State University of New York College of Environmental Science & Forestry *
Texas A&M University
Texas Tech University *
Thomas Jefferson University
Tufts University *
University of Alabama Birmingham
University of Alaska Fairbanks *
University of Arizona
University of Arkansas Fayetteville *
University of California Berkeley
University of California Davis
University of California Irvine
University of California Los Angeles
University of California Riverside *
University of California San Diego
University of California San Francisco
University of California Santa Barbara
University of California Santa Cruz *

University of Chicago
University of Cincinnati
University of Colorado Boulder
University of Connecticut
University of Delaware *
University of Florida
University of Georgia
University of Hawaii Manoa
University of Idaho *
University of Illinois Chicago
University of Illinois Urbana-Champaign
University of Iowa
University of Kansas
University of Kentucky
University of Maine Orono *
University of Maryland Baltimore Prof Sch
University of Maryland Biotechnology Institute *
University of Maryland College Park
University of Massachusetts Amherst *
University of Massachusetts Medical School Worcester
University of Medicine and Dentistry of New Jersey
University of Miami
University of Michigan Ann Arbor
University of Minnesota Twin Cities
University of Mississippi *
University of Mississippi Medical Center *
University of Missouri Columbia
University of Missouri Rolla *
University of Missouri St. Louis *
University of Montana *
University of Nebraska Lincoln *
University of Nebraska Kearney *
University of Nevada Las Vegas *
University of Nevada Reno *
University of New Hampshire *
University of New Mexico
University of North Carolina Chapel Hill
University of North Carolina Greensboro *
University of North Texas *
University of Notre Dame *
University of Oklahoma Health Sciences Center *
University of Oregon *
University of Pennsylvania
University of Pittsburgh
University of Rhode Island *
University of Rochester

University of South Florida
University of Southern California
University of Tennessee Knoxville *
University of Texas at Austin
University of Texas Health Science Center San Antonio
University of Texas Health Science Center Houston
University of Texas MD Anderson Cancer Center
University of Texas Medical Branch Galveston
University of Texas SW Medical Center Dallas
University of Utah
University of Vermont
University of Virginia
University of Washington
University of Wisconsin Madison
University of Wyoming *
Utah State University
Vanderbilt University
Virginia Commonwealth University
Virginia Institute of Marine Science *
Virginia Polytechnic Institute and State University
Wake Forest University
Washington State University *
Washington University
Wayne State University
West Virginia University *
Woods Hole Oceanographic Institute
Yale University
Yeshiva University New York

Based on data from the table 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 fiscal year 2002 of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (National Science Foundation).

*Annotated institutions are not in the list for the most successful Federally funded, but were among the top 50th percentile of those funded by the National Research Initiative (Competitive, Special, and Facilities Research Grant Act (7 U.S.C. 450i(b)) over the past three years (fiscal years 2000 through 2002).

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32.1 Epidemiological Approaches for Food Safety - Mary Torrence, National Program Leader, Phone: (202) 401-6357, Fax: (202) 205-3641, E-mail : mtorrence@csrees.usda.gov

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<p>51.8 Biology of Plant-Microbe Associations - Ann Lichens-Park, National Program Leader, Phone: (202) 401-6466, Fax: (202) 401-6488, E-mail: apark@csrees.usda.gov</p>
<p>51.9 Biology of Weedy and Invasive Plants – Diana Jerkins, National Program Leader, Phone: (202) 401-6996, Fax: (202) 401-6071, E-mail: djerkins@csrees.usda.gov</p>
<p>52.1 Plant Genome, Bioinformatics, & Genetic Resources - Ed Kaleikau, National Program Leader, Phone: (202) 401-6030, Fax: (202) 401-6488, E-mail: ekaleikau@csrees.usda.gov</p>
<p>52.2 Genetic Processes and Mechanisms of Crop Plants - Liang-Shiou Lin, National Program Leader, Phone: (202) 401-5042, Fax: (202) 401-6488, E-mail: llin@csrees.usda.gov</p>
<p>52.4 Applied Plant Genomics – Coordinated Agricultural Project (CAP) - Ed Kaleikau, National Program Leader, Phone: (202) 401-6030, Fax: (202) 401-6488, E-mail: ekaleikau@csrees.usda.gov</p>
<p>53.0 Developmental Processes of Crop Plants - Liang-Shiou Lin, National Program Leader, Phone: (202) 401-5042, Fax: (202) 401-6488, E-mail: llin@csrees.usda.gov</p>
<p>54.3 Agricultural Plant Biochemistry - Gail McLean, National Program Leader, Phone: (202) 401-6060, Fax: (202) 401-6488, E-mail: gmclean@csrees.usda.gov</p>
<p>61.0 Agricultural Markets and Trade – Pat Hipple, National Program Leader 62.0 Rural Development – Pat Hipple, National Program Leader, Phone: (202) 401-2185, Fax: (202) 401-6071, E-mail: phipple@csrees.usda.gov</p>
<p>71.1 Improving Food Quality and Value – National Program Leaders: Hongda Chen, Phone: (202) 401-6497, Fax: (202) 401-4888, E-mail: hchen@csrees.usda.gov; Ram Rao, Phone: (202) 401-6010, Fax: (202) 401-4888, E-mail: rrao@csrees.usda.gov</p>
<p>71.2 Biobased Products and Bioenergy Production Research – Chavonda Jacobs-Young, National Program Leader; Phone: (202) 401-6188, Fax: (202) 401-6071, E-mail: cjacobs@csrees.usda.gov</p>
<p>75.0 Nanoscale Science and Engineering for Agriculture and Food Systems – Hongda Chen, National Program Leader, Phone: (202) 401-6497, Fax: (202) 401-4888, E-mail: hchen@csrees.usda.gov</p>

Office of Extramural Programs - Awards Management Branch - administrative issues regarding award processing and post-award management. Phone: (202) 401-4342 or (202) 401-5050 Fax: (202) 401-6271 or (202) 401-3237

NRI DEADLINE DATES FOR FY 2005

The following fixed dates have been established for FY 2005 application submission deadlines within the National Research Initiative Competitive Grants Program, Cooperative State Research, Education, and Extension Service, United States Department of Agriculture. To be considered for funding in any fiscal year, applications **must be RECEIVED BY Close of Business (5:00 P.M., Eastern Time)** on the date listed below. When the deadline date falls on a weekend or Federal holiday, transmission must be made by the following business day.

Programs offered in any fiscal year depend on availability of funds and deadlines may be delayed due to unforeseen circumstances. Consult the pertinent NRI notice in the *Federal Register*, the NRI RFA, or the NRI home page (<http://www.csrees.usda.gov/funding/nri/nri.html>) for up-to-date information.

Receipt Dates (by COB)	Program Codes	Program Areas
October 29, 2004	52.1	Plant Genome, Bioinformatics, and Genetic Resources
November 2, 2004	51.2	Integrative Biology of Arthropods and Nematodes
November 3, 2004	31.0	Bioactive Food Components for Optimal Health
November 9, 2004	22.1	Agricultural Plants and Environmental Adaptation
November 9, 2004	52.2	Genetic Processes and Mechanisms of Crop Plants
December 1, 2004	51.8	Biology of Plant-Microbe Associations
December 3, 2004	44.0	Animal Protection
December 3, 2004	41.0	Animal Reproduction
December 3, 2004	71.1	Improving Food Quality and Value
December 7, 2004	61.0	Agricultural Markets and Trade
December 7, 2004	32.1	Epidemiological Approaches for Food Safety
December 7, 2004	62.0	Rural Development
December 7, 2004	32.0	Food Safety
January 7, 2005	51.9	Biology of Weedy and Invasive Plants
January 10, 2005	23.1	Managed Ecosystems

January 11, 2005	54.3	Agricultural Plant Biochemistry
January 11, 2005	53.0	Developmental Processes of Crop Plants
January 14, 2005	71.2	Biobased Products and Bioenergy Production Research
January 14, 2005	75.0	Nanoscale Science and Engineering for Agriculture and Food Systems
February 1, 2005	51.3	Arthropod and Nematode Gateways to Genomics
February 1, 2005	25.0	Soil Processes
March 1, 2005	26.0	Watershed Processes and Water Resources
May 17, 2005	42.0	Animal Growth and Nutrient Utilization
June 15, 2005	28.0	Air Quality
June 15, 2005	43.0	Animal Genomics
June 15, 2005	43.1	Animal Genome Reagent and Tool Development
June 15, 2005	20.0	Animal and Plant Biosecurity
June 15, 2005	45.0	Functional Genomics of Agriculturally Important Organisms
June 15, 2005	31.5	Human Nutrition and Obesity

CHECKLIST

All applications submitted under the NRI must contain the applicable elements outlined in these guidelines. The following checklist has been prepared to assist in ensuring that the application is complete and in the proper order prior to mailing:

◆ Proposal Cover Page (Form CSREES-2002)

Have all blocks been completed?

Have all PDs and the AOR (when required) signed the form?

Does one copy contain pen-and-ink signatures?

Have you included a telephone number where a message may be left for you?

◆ Table of Contents

Are page numbers included for each item?

◆ Project Summary (Form CSREES-2003)

Has the Project Summary been included on the form?

Do the names and institutions of all PDs appear on the form, or on the following page?

Does the Project Summary include research, education, and/or extension objectives, as appropriate?

Has an issue area been identified in the Project Summary?

If an integrated project is being proposed, is this indicated in the Project Summary?

Does the Project Summary fit within the designated box on the form?

Has the appropriate "Proposal Type" box been checked?

◆ Response to Previous Review (for resubmissions)

Has the application been clearly and meaningfully revised and are the revisions briefly described? Are comments from the previous review addressed?

◆ Project Description

Is the project fully described?

If a renewal application, is a clearly marked progress report included?

Does this section adhere to the format and page limitations?

Does this section begin as page 1, as specified?

◆ References to Project Description

Are all references cited?

Are all citations referenced?

Do all citations contain a title, the names of all authors, and are they in accepted journal format?

◆ Facilities and Equipment

Have you given a description of your facilities and equipment, sufficient to indicate that you will be able to carry out this project?

◆ Key Personnel

(Vitae and Publication Lists) Are vitae included for all PDs, collaborators, and other senior personnel? Is the publication list complete and limited to the last four years?

◆ Documentation from Collaborator(s), Scientific Mentor, or Host Institution (where appropriate)

◆ Conflict of Interest List (Form CSREES-2007)

Has a list been completed for each person who must submit a C.V.? Does the list include the four categories as appropriate?

◆ Results from Prior NRI Support (if appropriate)

◆ Budget (Form CSREES-2005)

Are annual and summary budgets included?

◆ Budget Narrative

Are budget items individually justified?

◆ Matching (if required)

◆ Current and Pending Support (Form CSREES-2005)

Have all current and pending projects been listed and summarized, **including this one**, for each PD listed on the Proposal Cover Page (Form CSREES-2002)?

◆ Assurance Statement (Form CSREES-2008, where applicable)

Has the project been approved by necessary IRB(s)?
Has the form been signed by the AOR (where required)?

◆ NEPA (Form CSREES-2006)

Has the NEPA form been completed and included?

◆ Appendices to Project Description

Are they limited to 2 (as described in the instructions)?

◆ General

Have you included the Personal Data on Project Director(s) (Page B of Form CSREES-2002) **only** on the original application? Have you contacted the appropriate National Program Leader if you have questions about the suitability of the proposed work? Does the application conform to all format and page limitations and deadline requirements? Are there an original and 14 copies (except for applications for Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, and Seed Grants, which require an original and 10 copies) of the application? Are all copies complete?
