

**National Institute of Food and Agriculture Response to
National Research Council Report
“Spurring Innovation in Food and Agriculture:
A Review of the USDA Agriculture and Food Research Initiative Program.”**

Introduction

In 2012, the National Institute of Food and Agriculture (NIFA) requested the National Research Council (NRC) of the National Academies to review NIFA’s flagship competitive grants program, the Agriculture and Food Research Initiative (AFRI).

The purpose of NIFA’s request for the study was to have the NRC determine the quality and value of the research funded by the program, and to examine its overall effectiveness in advancing agricultural sciences (http://www.nifa.usda.gov/funding/afri/pdfs/afri_review_charge_1_5_2012.pdf).

On 9 September 2014, the NRC released its report: Spurring Innovation in Food and Agriculture: A Review of the USDA Agriculture and Food Research Initiative Program (<http://www.nap.edu/catalog/18652/spurring-innovation-in-food-and-agriculture-a-review-of-the>).

NIFA commends and thanks the NRC’s Committee for its comprehensive review of the AFRI program. The critically important AFRI program continues to make significant contributions to:

- Safeguarding our nation’s food supply;
- Improving the nation’s nutritional and health outcomes, the environment, and natural resources;
- Enhancing the competitiveness of American agriculture; and
- Bolstering the U.S. economy.

NIFA is firmly committed to fulfilling the AFRI priorities mandated in congressionally authorized legislative and appropriations language. NIFA appreciates and acknowledges the Council’s recommendations that identified a number of opportunities for improvement, implementation, and long-term success of AFRI, which are in line with NIFA’s own analysis and actions over the last two years.

In the first three months since the publication of the NRC review report, NIFA has thoroughly discussed and evaluated the report’s findings, conclusions, and recommendations. As a result, NIFA has developed a strategy for improvement as detailed in this document. It will communicate the agency’s progress to the public and its stakeholders on a recurring basis.

As AFRI was initially being established, discussion in the scientific community and within NIFA and USDA suggested the significant need to address the major societal issues related to food security, climate change, sustainable energy, natural resource stewardship, and nutrition and public health. Indeed, the scale, focus, and impact needed to tackle the societal challenges was going to take a complete re-thinking of the investment approaches used to support discovery, translation, and dissemination of knowledge. The conclusion was that tackling the specific societal challenges would require rather large, long-term investments through strategic, transdisciplinary research, education, and extension efforts.

Thus was born the idea of supporting large Coordinated Agricultural Projects (CAP) through the Challenge Area program to seek the best, integrated science to solve societal challenges. Underpinning these large, transdisciplinary, integrative approaches was the need for fundamental knowledge generated by smaller, hypothesis driven, and discovery grants supported through the Foundational Area Grants.

Many of the original decisions about investments in the Challenge and Foundational Areas, the balance between the two programs, and involvement of NIFA personnel and organizational structure were predicated on the expectation that major increases in funding for NIFA and AFRI would continue to occur in succeeding years. Unfortunately, the profound economic recession and downward budget pressures of the last few years significantly impacted the funding landscape, suggesting the approach developed previously was not going to be tenable and would require a significantly revised approach to tackling the societal challenges.

Consequently, starting over two years ago, the agency and its new director undertook a series of listening sessions and initiated a deep analysis of the situation. While continuing to adhere to the principles of scale, focus, and impact to invest in Challenge Areas and Foundational Areas, the responses included: better alignment with Farm Bill priorities; changes to the portfolio of funding and balance between Challenge and Foundational Areas; modifications to scale of grants and continuation awards in the Challenge Areas; increased investments to support education and training of students and post-doctoral students in the agricultural sciences; improved data gathering and reporting systems; grants modernization; and greater accountability.

Additionally, there was recognition of the need for external advice; therefore, the agency also sought an external review of AFRI by the NRC.

The motivation for this review was, thus, based on the need to continuously improve the implementation of AFRI in an effective, impactful, and accountable manner, in line with its legislative mandate.

In its commitment to continuously improving the effectiveness and management of AFRI, NIFA has already undertaken many actions to date since AFRI was established. Key actions, some of which are still being implemented include:

- Developing and implementing a new NIFA Strategic Plan;
- Realigning programmatic and operational functions to allow for more efficient and effective delivery and oversight of programs and services by designating Associate Directors for Programs and for Operations;
- Modernizing NIFA's grants management system, improvements to reporting systems and web access to information;
- Rebalancing AFRI portfolio resulting in significant changes in funding to the Challenge Areas and Foundational Areas, smaller CAP grants, and significantly reduced proportion of continuation awards;
- Under the constraints of Congressional action on annual budget appropriations and 2014 Farm Bill language pertaining to Matching requirements, Centers of Excellence, and support of Commodity Promotion Board priorities, ensure predictability to issuance of Requests for Applications (RFAs);
- Better alignment of AFRI priorities with Farm Bill priorities, and less prescriptive language in RFA priorities;
- Improving and flattening the grants process associated with AFRI through streamlining AFRI's request for applications and by providing applicants with a consistent, user-friendly process.

Additional process improvement steps include a planned, comprehensive review of all AFRI programs to ensure that investments strategically address Congressional priorities, science needs and gaps, and stakeholder input and concerns. AFRI projects will undergo a well-designed, external evaluation after every four years. These actions and further refinements will ensure that AFRI is administered in a transparent, accountable, strategic, consistent, predictable, and manageable manner.

In this three-month response NIFA describes its strategies for implementing the recommendations made by the NRC committee. Certain responses cut across some of the recommendations and answers to the sub-recommendations are also described in the lead recommendation. NIFA will continue to plan and work on its set of actions and prepare a follow-up report within the next six months and one and three years after release of the NRC study. All of our actions in response to the NRC report will be tracked and shared widely on a dashboard to be created on the NIFA website.

Key Recommendations and NIFA Response

RECOMMENDATION 1: The United States should strengthen its public investment in competitive agricultural R&D to ensure that it continues its role of a global leader in the innovation and technologies that are needed to promote health and well-being and to feed growing worldwide populations sustainably. AFRI's prospect for success in meeting stated goals and outcomes would improve if its funding and other support elements such as reporting structures and monitoring abilities were commensurate with the programs legislatively mandated scope.

Response

NIFA agrees with this recommendation. Sustainable production of food, fiber, and fuels for the projected nine plus billion population by 2050 will require transformative research, education, and extension efforts. NIFA and other USDA agencies are committed to establishing a complementary portfolio of extramural and intramural research responsive to the needs of American agriculture, with a priority placed on increasing the investments in competitively funded research, education, and extension programs. Indeed, the President's budget for USDA in the recent past has consistently incorporated incremental increases in requests for funding competitive programs. NIFA will continue to work with the Administration, its stakeholders, and Congress to continue to seek resources commensurate with the need to address the societal challenges.

AFRI's potential in providing a foundation for these efforts can be realized only with sufficient funding and a modern grant management infrastructure to handle increased workload resulting from the increased budget. NIFA is already engaged in efforts to provide new support structure for the AFRI and other funding functions of NIFA. In the last two plus years, NIFA has initiated several efforts to modernize its grants systems, including:

- Strengthening financial oversight;
- Providing transparency and simplification of processes for grantees;
- Allowing for "self-service" capabilities for applicants; and
- Improving management and reporting of data and results.

In addition, NIFA has increased its investments in its IT infrastructure and reporting capacity as part of a larger Grants Modernization Initiative to better serve its stakeholders and to provide the agency with the means to evaluate progress and change for better strategic planning, implementation, and evaluation of impacts.

NIFA is also committed to modernize its reporting structures and monitoring abilities to meet the needs of all legislatively mandated programs. Specific actions currently underway to achieve this include:

REReport: REReport is NIFA's new grant and formula project initiation and reporting system, building on and replacing the Current Research Information System (CRIS) web forms system. REReport implements the Research Performance Progress Report (RPPR), a standard progress report format that all federal research agencies are required to use for research grant reporting.

Grantor: After a careful comparison of electronic systems used by different agencies and an extensive fit-gap analysis, NIFA will implement Grantor, a USDA-wide granting portal being developed through collaboration with different USDA agencies.

RECOMMENDATION 2: NIFA should simplify the AFRI program structure by realigning it to more clearly address its specific mission and mandates as defined in authorizing legislation. Simplification of program structure to focus on the six foundation priority areas would improve efficiency, effectiveness and transparency.

Response

NIFA agrees that improving efficiency, effectiveness and transparency of AFRI should continue to be a priority. AFRI programs have always been responsive to the mandates in the authorizing legislation. During the successful establishment of NIFA, the AFRI program was organized to balance between investigator-initiated Foundational research and investigator-initiated use-inspired research to address specific challenges. The Foundational program areas directly correspond with the mandates in Congressional authorization, whereas the Challenge Areas address major societal problems, typically through integration of research, extension, and education in two or more mandated areas, as stated in each RFA. Solutions to the agricultural needs of today and challenges of the future will require a combination of Foundational knowledge and the derivative technologies resulting from the integration of diverse disciplines through approaches such as the Challenge Areas. NIFA's competitive funding opportunities, including AFRI, need to take advantage of various funding mechanisms to fulfill multiple requirements for basic and applied research, Food and Agricultural Science Enhancement (FASE) funding, integrated programs, and for research, education and extension activities, among others. NIFA will continue to strategically apply the use of Challenge Areas and the Foundational program within AFRI to maximize their effectiveness in achieving multiple mandates and objectives, in alignment with the Farm Bill priorities.

Considering the budgetary constraints and the need to balance single-investigator and multi-investigator projects, NIFA plans to invest in Challenge Areas, and undertake internal evaluations after every cycle, and will undertake external evaluation of different challenge topics after every four years. In the past two years, NIFA has aggressively rebalanced the AFRI portfolio resulting in significant changes in funding to the Challenge Areas and Foundational Areas. NIFA is already investing at least 40 percent of AFRI funds in the Foundational programs, and we expect to increase the proportion of funds invested for this program as we receive additional resources from Congress. NIFA will continue to engage the scientific community and stakeholders through various forums and undertake external evaluations and analyses to achieve the optimal balance of AFRI funding.

As part of improving the efficiency, effectiveness and transparency of AFRI, NIFA will communicate to stakeholders about AFRI programs, priorities, and management, along with NIFA's other competitive funding opportunities. To this end, NIFA is currently revamping its website and examining other tools to communicate the AFRI organization unambiguously.

RECOMMENDATION 2-A: To realign AFRI's portfolio with its legislative mandate, NIFA should give fundamental research top priority. That should include an emphasis on proposals that will generate fundamental knowledge to support novel technologies, provide platforms for extension and education, and educate the next generation of food and agricultural scientists.

Response

In agreement with this recommendation and the legislative priorities, AFRI already gives high priority to fundamental research in the agricultural sciences, and supports many projects that address fundamental questions on agricultural topics. As of FY2014 funding, NIFA is currently investing approximately 40

percent of AFRI funds in the Foundational programs, and hopes to continue to increase investments in future, commensurate with additional resources from Congress.

By law, AFRI is required to support **both** applied and basic research; in accordance with this mandate, fundamental and applied research projects receive, on average, 45 and 55 percent, respectively, of AFRI funding. Additionally, NIFA is the only source of competitive funding for applied food and agricultural research and extension, and stakeholders continue to express concern about diminishing funding for the latter and, therefore, it is critically important for NIFA to maintain funding opportunities for applied areas as well. AFRI's portfolio of funded applied projects builds on outcomes of fundamental research funded by AFRI, other NIFA funds, and other federal agencies. As part of reporting and data collection in REEPort, NIFA will track data on outputs and outcomes to ensure that indeed fundamental science is supported and that knowledge is integrated, adapted, and disseminated.

RECOMMENDATION 2-B: As part of its realignment, AFRI should be simplified by eliminating the Challenge-Area Program, and areas of research within the Foundational Program should be primarily investigator driven.

Response

While NIFA recognizes the need for increasing support for the Foundational knowledge needed in the agricultural sciences, it is critically important that such knowledge be integrated and used to develop tools and technologies to address the societal challenges of food security, climate change, nutrition and health, and natural resource stewardship. The approach used by NIFA to provide funding for Challenge Areas has proven to be an effective means of creating a team science approach to address major, complex scientific and societal issues. Indeed, outcomes from some of the transdisciplinary projects funded by NIFA are already significantly impacting farmers and production systems (see response below to Recommendation 2-D). We believe it is critically important that NIFA, in order to significantly tackle societal challenges, must continue to use this approach in a strategic manner by balancing its use for developing highly effective applied research, education, and extension programs underpinned by the basic research derived from the Foundational program. Our expectation is that we will continue to refine Challenge Areas (and Foundational Areas), but will retain their essential characteristics, in that:

- The RFAs address major challenges for the U.S. agriculture and invite proposals that integrate fundamental knowledge to address those challenges. The ideas for Challenge Area RFAs are synthesized from input from a broad community of stakeholders, including investigators. There is also a requirement that Challenge Area grants are driven by transdisciplinary teams of investigators.
- Based on a critical analysis of the Challenge Areas, a new emphasis on water has been included during FY2014. The intent is to continue to undertake internal and external evaluations of the AFRI portfolio, and continually refine them so that emerging problems are indeed addressed.
- In line with the Congressionally mandated priorities, complex agricultural problems require basic and applied research to be integrated.
- By supporting research using the matrix of Foundational program and Challenge Areas, NIFA has been able to support basic and applied research projects that foster creative solutions to major questions.

- Crosscutting programs are used by all Federal agencies to foster transdisciplinary and integrative research. NIFA's approach to use Challenge Areas allows support of large team projects that promotes integration of diverse expertise and approaches.

Because of the need to support integrative transdisciplinary research to address complex agricultural problems, NIFA will continue to use its matrix management approach and support research through both Foundational and Challenge Areas. In the past couple of years, as noted in the response to Recommendation 2-A, NIFA has aggressively rebalanced the AFRI portfolio resulting in significant changes in funding to the Challenge Areas and Foundational Areas. NIFA is already investing at least 40 percent of AFRI funds in the Foundational program, and we expect to increase the proportion of funds invested for this program as we receive additional resources from Congress. Additionally, the size of individual Challenge Area grants has been reduced significantly and the overall number of continuation awards has been reduced. Also, as noted above, we will use internal and external evaluations to ensure Challenge Area projects are indeed effective in meeting NIFA's objectives to address societal challenges.

RECOMMENDATION 2-C: AFRI should carefully examine the causes of the decline in the numbers of applicants, awardees, and trainees and adjust its grant programs to ensure that future generations of young scientists are not lost inadvertently from food and agriculture R&D because of funding policies.

Response

As recommended in the NRC report, NIFA will carefully monitor the number of applicants, awardees, and trainees in the AFRI program, and determine and address success rates. In general it should be noted that AFRI funding rates have averaged around 13 percent over the last three years, which is comparable to success rates at the National Science Foundation and the National Institutes of Health.

The most up-to-date data in the Figure below show that decline in the proposals noted by the NRC review committee did not represent a trend; rather, it was an anomaly resulting from the timing of the RFAs in FY2011 and FY2012. In addition, significantly fewer dollars were available for new awards in FY2011 than in previous years because of the high "mortgage" of AFRI funds for the previously funded large projects as continuation awards.

During the last two years, NIFA has rebalanced the standard and continuation grant awards through careful management of its future commitments. Consequently, funding rates in FY2012 and FY2013 were similar to funding rates in FY2009 and FY2010, and similar to funding rates in AFRI's predecessor, the National Research Initiative, prior to FY2009. Indeed, beginning with FY2014, NIFA is attempting to ensure that continuation awards in AFRI will constitute approximately 15 percent of total funding available for each year; and with the accompanying increases in appropriations, NIFA will be in a better position to provide funding for more applications. In addition, NIFA is developing several approaches to increasing success rates, including creation of the Exploratory Research Grants, offering grants workshops, and enhancing NIFA staff liaising with scientists at their home institutions and at professional society meetings. Finally, a task force under the leadership of the deputy directors has been established to help develop approaches to enhancing success rates.

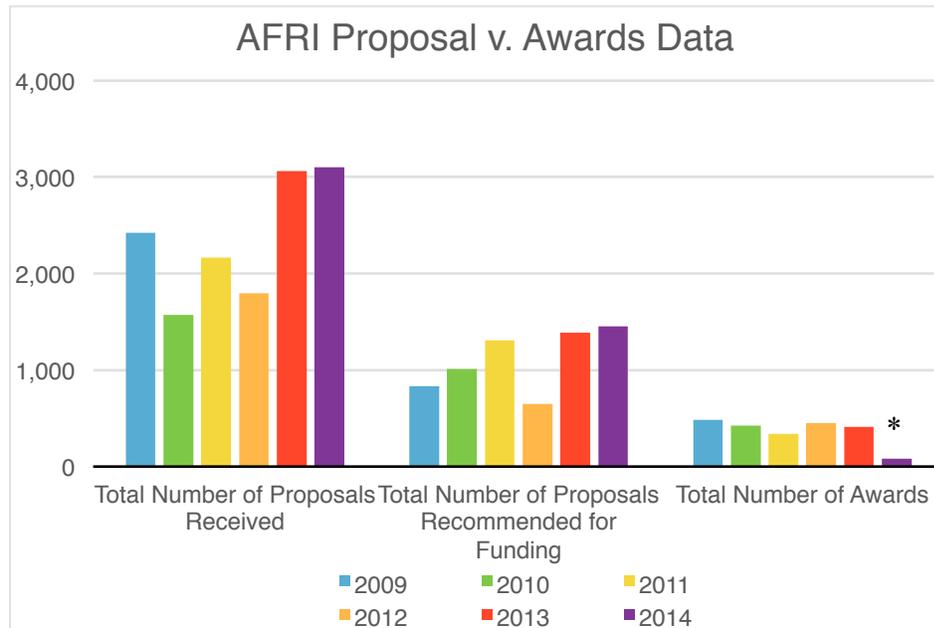


Figure 1. Total number of proposals received, proposals recommended for funding, and number of awards in each fiscal year from FY2009 to FY2014

The Total Number of Proposals Recommended for Funding includes proposals that were peer reviewed and received a rating of Outstanding, High Priority, and Medium Priority categories. These proposals could have been supported if funds were available.

***NIFA is still in the process of making awards for proposals submitted for FY2014 appropriated funds; thus the total number of awards in FY2014 is not final.**

RECOMMENDATION 2-D: AFRI should consider eliminating CAP grants as a grant category and committing more resources to other grant types.

Response

Coordinated Agricultural Project (CAP) Grants originated from the need to catalyze transdisciplinary approaches and integration of knowledge. Such grants have been in existence for about a decade (pre-dating NIFA and AFRI), and have been a vehicle to promote highly impactful, integrated research, education, and extension projects resulting in solutions to address problems such as Johne’s disease, sequencing of the rice genome, and porcine respiratory disease, to name a few examples.

NIFA will continue to use CAP grants as part of its portfolio of funding in AFRI and Specialty Crops Research Initiative to promote and utilize transdisciplinary team approaches to addressing intractable agricultural problems, but will, however, better define their use to achieve intended outcomes.

Many of the high impact AFRI investments have been through CAP grants. Critical features of the CAP grants include:

- Community based, large-scale, regional, transdisciplinary, multi-million dollar projects intended to promote collaboration, open communication and exchange of information, reduce duplication of effort, and to promote coordination of activities among individuals, institutions, states, and regions;
- Respond to emerging or priority areas of national need;
- Integration of research, education, and extension activities; and
- Project level flexibility in funding to accomplish time-critical objectives of national interest that the awardees may determine at a later date.

Several recent CAP grants supporting AFRI Challenge Areas have resulted in major impacts on U.S agriculture. For example, approximately 20 percent of the harvested wheat acreage and four percent of the harvested barley acreage in the United States are planted to wheat and barley varieties resulting from work undertaken by the AFRI-funded Triticeae-Coordinated Agricultural Project (T-CAP) and the previously-funded Wheat-CAP and Barley-CAP projects. In addition, studies supported by the T-CAP project have resulted in the publications of 186 peer-reviewed scientific articles in the first four years of the project, 66 of which were published in 2014 in such high impact journals as Science, Proceedings of the National Academy of Sciences, and Plant Cell. The T-CAP publications have been cited 1,839 times. Project investigators have thus far mentored 108 undergraduate students, 136 graduate students, and 25 postdoctoral researchers.

NIFA recognizes that a balance in the distribution of grants of different sizes is needed. In the recent few years, NIFA has purposely limited the size of typical CAP grants and their number to allow for a proper balance between large CAP grants and small single-investigator Foundational grants. NIFA believes that the progress of agricultural research requires a balanced portfolio of awards, which include CAP grants. NIFA will continue to provide greater attention to managing and evaluating CAP grants as a grant type and continue to monitor the balance among grants of different sizes.

RECOMMENDATION 3: AFRI should develop a Strategic Plan that identifies priorities for its overall program goals for meeting them and a framework for assessing the program's progress.

Response

In 2014, NIFA released its Strategic Plan (http://www.nifa.usda.gov/about/pdfs/strat_plan_2014.pdf), which provides guidance, goals, and milestones, and also evaluates and tracks the progress and accomplishments of NIFA's entire portfolio of funding, including AFRI, which is impacted by and is significantly leveraged by the other competitive and capacity programs. In addition to tracking accomplishments of the AFRI objectives and goals in NIFA's Strategic Plan, multiple mechanisms are used to help strategically prioritize AFRI investments, including:

- The Agricultural Act of 2014 and 2008 Farm Bill describe, in general, the topical areas for AFRI, and are used to prioritize AFRI investments.
- The USDA Strategic Plan and the Research, Education, and Extension mission-area Action Plan, along with NIFA's Strategic Plan, guide priority setting in AFRI.
- NIFA will continue to use a portfolio-based strategic planning, which describes a progressive five-year program that includes AFRI as a mechanism to achieve scientific objectives of NIFA through research, education, and extension. The portfolio Strategic Plan takes into account

stakeholder input, internal review, policy guidance, current science needs, and direction from USDA leadership, Office of Science and Technology Policy (OSTP), and Office of Management and Budget (OMB).

RECOMMENDATION 3-A: NIFA and USDA should lead interagency efforts to effectively coordinate and collaborate across agencies on food and agricultural research.

Response

NIFA agrees with this recommendation. NIFA has substantially increased its leadership in interagency efforts in the area of food and agriculture sciences. NIFA has been successful over the past few years in developing collaborative interagency initiatives, which have resulted in increased investments in basic and applied agricultural research funded by other agencies such as Department of Energy, National Aeronautics and Space Agency, National Science Foundation, National Institutes of Health, and the Environmental Protection Agency. In its collaborative activities, NIFA will take leadership in areas appropriate to its strengths and capacity. Current actions on this issue are as follows:

- NIFA will continue to increase its interagency efforts for scientific cooperation and funding with various federal agencies on a wide range of food and agricultural topics.
- NIFA will convene national conversations to prioritize the science needed to address various challenges impacting food and agricultural systems.
- NIFA will continue to increase its international collaborations through scientific cooperation and funding.

In addition, NIFA staff work closely with the Office of the Chief Scientist to effectively establish and maintain collaborations within USDA and across federal agencies. NIFA leadership coordinates with the Chief Scientist who sets the overall priorities for USDA science through the Congressionally mandated Road Map and the subsequent Action Plan. The USDA Science Council provides the forum for coordinating science policy and scientific issues throughout USDA, including the participation and leadership role of USDA in interagency working groups and their activities. Within the Research, Education, and Economics mission area, the leadership team of NIFA, Agricultural Research Service, Economic Research Service, and National Agricultural Statistics Service work with the Undersecretary/Chief Scientist in developing coordinated plans and responses to emerging issues such as pollinator health, antimicrobial resistance, and the bioeconomy.

RECOMMENDATION 3-B: NIFA should form an AFRI Scientific Advisory Council that consists of members who represent the food and agricultural research, education, and extension professional communities.

Response

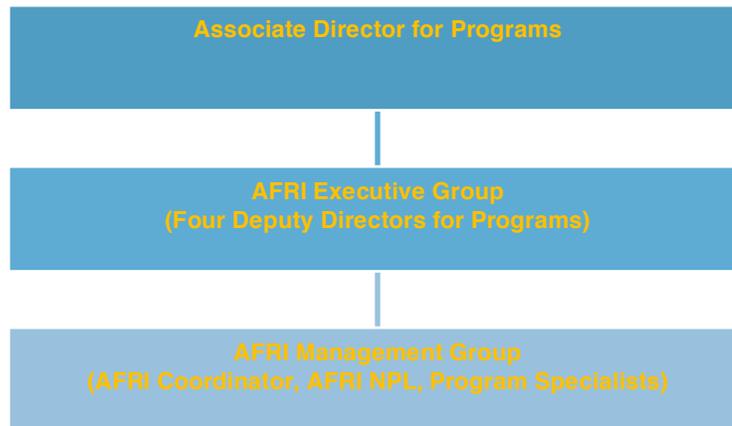
NIFA agrees that a Scientific Advisory Council or its equivalent could provide recommendations for improving the scientific and operational functions of AFRI. NIFA, however, believes, that such advice should not be limited to AFRI, but to NIFA's entire portfolio, which includes AFRI, as a mechanism of providing opportunities for research, education, and extension to achieve NIFA's mission. Current actions on this issue area as follows:

- NIFA will continue to work with the National Agricultural Research, Extension, Education, and Economics Advisory Board (NAREEEAB), which provides advice to the Secretary of Agriculture on top priorities and policies for food and agricultural research, education, extension and economics. NAREEEAB is the congressionally-designated Federal Advisory Committee Act (FACA) organization for NIFA and the other sister agencies in REE and USDA science in general. It is conceivable that a sub-committee of the NAREEEAB could advise NIFA in its programmatic priorities. This possibility will be explored further in consultation with the Undersecretary.
- NIFA will continue to receive formal and informal stakeholder input for AFRI and all other NIFA programs through federal register notices for listening sessions and through review panels.
- NIFA will continue to work with academic and professional science society groups to seek stakeholder input. Examples include organizations such as the Association of Public and Land-Grant Universities as well as the professional societies that serve various scientific disciplines in agricultural sciences, such as Tri-Societies, American Society of Plant Biologists, American Phytopathology Society, Entomological Society of America, Joint Animal Science Societies, and others.

RECOMMENDATION 4: To enhance program accountability and management, AFRI should have a dedicated leader who manages the program on a daily basis.

Response

NIFA agrees with this recommendation. During the period of NRC review, NIFA reorganized its structure to group all four program institutes together, and the Deputy Directors overseeing each institute report to the Associate Director for Programs. Together, this senior leadership team provides oversight to the management of AFRI. Consequently, AFRI’s management structure is now streamlined.



AFRI’s management structure is shown above.

- The four Deputy Directors for programs are the senior leadership group for AFRI, and work closely with their counterparts in the Office of Information Technology and Office of Grants and Financial Management for policy making and general supervision.
- AFRI’s management group includes a dedicated coordinator (GS-15 level) who provides leadership for the administrative and financial components of AFRI. In addition, a National

Program Leader (GS-15 level) with a half-time appointment dedicated to AFRI's scientific and programmatic component is a key member of the management group. Both the administrative and scientific leaders report to the AFRI executive leadership group. The functionality of these two leaders will be evaluated to achieve a high level of accountability and management for AFRI. In addition, NIFA plans to provide a program specialist to facilitate AFRI management.

- In addition to the AFRI-specific management structure, the NIFA-wide Science Leadership Council advises the NIFA Director regarding program, policy, and process decisions, including those impacting AFRI directly. This Council includes all senior executives of NIFA as well as the AFRI management group leaders. This allows integration of AFRI management in NIFA's overall strategies.

NIFA will undertake the following additional actions to improve management.

- The management structure will be communicated clearly to stakeholders through our revised website and other appropriate communication channels.
- The AFRI Senior Leadership will increase coordination with NIFA policy and budget staff to achieve efficiency and work flow of all AFRI processes.
- NIFA will evaluate the need for dedicated positions to achieve more efficient functionality for AFRI within NIFA's programmatic framework.

RECOMMENDATION 4-A: NIFA should establish a clearer organizational structure and lines of authority for AFRI, including a designated director to lead, manage, and speak for its program, and NPLs dedicated to AFRI alone.

Response

Please see response to Recommendation 4 above. NIFA agrees that it needs to do a better job of explaining the leadership structure of NIFA. The inability to host proposal writing workshops (owing to the significant budget challenges of the last few years) in the recent past has limited the opportunities for NIFA staff to explain the structure and function of AFRI. NIFA does not see functional and organizational value in having a set of NPLs dedicated to AFRI, because it is not compatible with the portfolio strategic planning approach NIFA uses to achieve its mission and goals. Current actions on this issue are as follows:

- NIFA NPLs will continue to take responsibility for a wide range of programs under their portfolio's areas of responsibility. To achieve the goals of the portfolio, all funding mechanisms, including AFRI, are used to balance the outcomes.
- NIFA will invest in better communication strategies, such as grant writing workshops and liaison visits to academic institutions and at professional society meetings, to better explain AFRI's structure and functionality, and provide better guidance and advice on AFRI's programs.
- NIFA will improve its website and identify the cognizant NPLs for various subject matters to provide advice to potential applicants not just on AFRI opportunities, but also other NIFA opportunities for extramural federal funding.

RECOMMENDATION 4-B: NIFA should have a more consistent and predictable program portfolio and funding strategy to enable better planning by the food and agricultural research community.

Response

AFRI does not have sufficient funds to cover all topical areas in one year. NIFA's approach has been to determine a set of priorities that can be implemented over a span of three to five years. In addition, the release of appropriated funds for AFRI has not been predictable because of the requirement for Congressional action on budget appropriations before the release of RFAs, which has made the timing of RFA publications inconsistent. Current actions on this issue are as follows:

- NIFA currently announces the future topical areas in a predictable manner in every AFRI RFA to provide information on upcoming areas of emphasis.
- NIFA has held listening sessions on priorities for funding, which has helped, for example, in deploying the Water Challenge Area.
- NIFA is working to flatten the awards cycle curve and achieve a regular schedule for the publication of AFRI and other RFAs, with the caveat that availability of funding to projects recommended for award will be dependent on Congressional action.
- NIFA will consider developing AFRI RFAs covering multiple funding cycles with minimal changes to subject areas of interest.
- NIFA will continue to solicit input to address scientific needs and will evaluate those needs on a regular basis.

RECOMMENDATION 4-C: NIFA should use a more robust information-management system that would provide a basis for AFRI policy and strategic planning. The system should allow detailed assessment and management of the food and agricultural competitive research funding pool.

Response

NIFA agrees that its current system for information and financial management is inadequate to meet the demand for robust and timely use of data for AFRI policy and strategic planning. NIFA has made significant progress in enhancing reporting systems, but needs to achieve full integration of its processes and completely eliminate paper records. Current actions on this issue are:

- NIFA is currently undertaking a Grants Modernization Initiative to create a modern grants system, reduce the grant award cycle, improve customer service, implement effective and efficient business processes improvements, financial accounting, and scientific reporting.
- REEport has replaced the former CRIS portal and includes new features for information management; REEport is being continuously updated with user and stakeholder input.
- NIFA continues to invest in improving its web-based interactive capability to ultimately create a self-service portal for its grantees, and includes the Research, Education, and Economics Information System (REEIS), which is a rich source of information.

RECOMMENDATION 4-D: NIFA should develop the capability to regularly evaluate AFRI projects in terms of their outcomes, which would allow assessment of the economic and social impacts of the research that AFRI supports.

Response

NIFA agrees that regular evaluations of AFRI and the other programs are essential to achieving the outcomes, including social and economic impacts. AFRI is one of many funding mechanisms used to achieve NIFA's mission and goals, and AFRI success and challenges are evaluated as part of the larger scope of NIFA's investments in various scientific areas. Current actions on this issue area include:

- An annual synoptic report on AFRI is prepared and available to the public. The report is used by NIFA staff to evaluate various components of the programmatic and administrative functions of AFRI, and make changes as necessary.
- All NIFA portfolios undergo an internal evaluation annually and an external evaluation every five years. The portfolio analysis includes all AFRI investments and their impacts.
- All large AFRI continuation awards are evaluated annually by teams of NPLs covering various subject matter expertise for adequate progress and achievement of milestones.
- All AFRI Challenge Areas will fund an external synthesis project after every four years to measure and critically evaluate outcomes and impacts of projects goals.

RECOMMENDATION 4-E: NIFA should establish standard operating procedures (SOPs) that provide greater opportunity for NPLs to contribute to final project-funding decisions.

Response

NIFA agrees that Standard Operating Procedures are needed to properly manage AFRI. In addition to the SOP, NIFA is developing approaches for NPLs to have greater opportunity and flexibility to make final decisions on awarded projects. Current actions on this issue are as follows:

- An internal Standard Operating Procedures manual for AFRI adapted from its predecessor, the National Research Initiative, has been in use since the commencement of AFRI. The manual is continuously updated to include new technologies for administrative and scientific management of proposal and awards.
- AFRI also has established policies from NIFA and the Research, Education and Economics mission area to comply with various statutes and regulations established by Congress and OMB.
- NIFA NPLs are responsible for making appropriate funding decisions to achieve a balance of awards that span topical, geographic, institutional, and applicant status. NIFA NPLs already exercise this authority to comply with the mandated allocations for Food and Agricultural Science Enhancement (FASE) awards, which includes funding for underserved States and Small- and Mid-sized institutions.
- NIFA has a standing Task Force dedicated to the evaluation and revision of Standard Operating Procedures for competitive programs and has made several recommendations over the past years to clarify language and properly define actions in response to review procedures.
- NIFA will further explore the role of NPLs in shaping the portfolio of awards and will develop guidelines for NPLs.