



United States  
Department of  
Agriculture

National Institute  
of Food and  
Agriculture

# AFRI

Agriculture and Food Research Initiative

## 2009 Annual Synopsis

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## Program Overview

The Food, Conservation and Energy Act of 2008, otherwise known as the 2008 Farm Bill, established the Agriculture and Food Research Initiative (AFRI), which assumed all of the authorities of its predecessor program, the National Research Initiative. AFRI is the premier agricultural competitive grants program in the United States. The program is authorized through fiscal year (FY) 2012 to fund high priority research, education, and extension competitive grants that address food and agricultural sciences.

### Competitive Program Solicitation

Fiscal year (FY) 2009 was the first year that AFRI solicited competitive grant applications. Forty programs solicited applications in FY 2009 addressing the areas of: Plant Health and Production and Plant Products; Animal Health and Production and Animal Products; Food Safety, Nutrition, and Health; Renewable Energy, Natural Resources, and Environment; Agriculture Systems and Technology; and Agriculture Economics and Rural Communities. A total of 2,424 competitive grant applications, requesting \$1,094,795,985, were received and reviewed through a competitive peer review process (Table 1).

### Peer Review Panel Characteristics

Over 500 experts from across the country participated in peer review panel evaluations to help select the most meritorious projects for funding. AFRI ensures the widest participation of qualified individuals in peer review by balancing the membership of panels carefully to reflect diversity in geographical region, type of institution, type of position, as well as gender and minority status. A breakdown of panel member characteristics is shown in Table 2. Additional expertise was brought to proposal evaluation by a number of scientists and other specialists through *ad hoc* reviews.

**Table 1.** The number of FY 2009 AFRI applications and total dollars requested, recommended for funding, and awarded.

Applications	Number	Dollars
Requested	2335	1,062,748,261
Recommended	835	704,323,465
Awarded	470	176,412,216

**Table 2.** Characteristics of FY 2009 AFRI peer review panelists by number and percent.

Characteristic	Number	Percent
<b>Geographic Region</b>		
Northeast	111	21.5%
North Central	148	28.6%
Southern	160	30.9%
Western	98	19.0%
<b>Type of Institution*</b>		
Land Grant University		
1862 Land Grant University	313	60.5%
1890 Land Grant University	28	5.4%
1994 Land Grant University	0	0.0%
Hispanic Serving	16	3.1%
Public non-Land Grant	52	10.1%
Private College/University	22	4.3%
Private Research	8	1.5%
Federal	56	10.8%
Industry/Other	24	4.6%
<b>Type of Position</b>		
Professor	149	28.8%
Associate Professor	130	25.1%
Assistant Professor	139	26.9%
Federal	57	11.0%
Industry	20	3.9%
Other (Senior Lecturer)	22	4.3%
<b>Expertise Representation</b>		
Researcher	337.6	65.3%
Educator	108.19	20.9%
Extension Educator	35.98	7.0%
Other	35.23	6.8%
<b>Gender/Minority Representation</b>		
Non-minority Male	228	44.1%
Non-minority Female	144	27.9%
Minority Male	100	19.3%
Minority Female	45	8.7%
<b>Total Panelists</b>	<b>517</b>	

\*Eighty panelists represented USDA EPSCoR states and 61 panelists represented Small and Mid-sized Institutions.

## Funding Portfolio

**Success Rate** - Awards totaling \$176,412,216 were made to the 470 highest-ranked applications. Table 3 (pages 4-5) shows the number of awards and total dollars awarded for each AFRI program area. An additional 365 proposals were recommended for funding by review panels and could have been supported provided an additional \$528 million was available to the program. The success rate for AFRI applications, calculated in terms of number of proposals funded excluding conferences, supplements, and continuing increments of the same grant divided by the number of proposals submitted for review, was approximately 18 percent.

**Award Types** - AFRI awards are made in the form of single-function research; single-function education; single-function extension; and integrated research, education, and/or extension grants. See Table 4 for a breakdown of the total dollars and percent of support to each type. The mean award size for research projects was \$398,096 for 2.8 years, excluding Food and Agricultural Science Enhancement Grants and Conference Grants. These excluded grant types are often shorter in duration and have lower budget limitations than do standard research awards.

**Table 4.** The total dollars and percent of funding for dimensions of FY 2009 AFRI awards.

Award Dimension	Dollars	Percent
Fundamental Research	105,737,333	60
Mission-linked Applied Research	70,674,883	40
Multi-disciplinary	121,661,048	69
Single Discipline	54,751,168	31
Integrated Research, Education, and Extension	51,547,894	30
Single Function Research	120,536,102	68
Single Function Education	3,499,579	2
Single Function Extension	828,641	<1

Integrated awards comprised 30 percent of the 2009 funding portfolio (table 4). These projects bring together at least two of the three components of the agricultural knowledge system (e.g., research, education, and extension). Integrated projects hold the greatest potential to produce, transfer, and apply knowledge directly to end users, while providing educational opportunities to assure the development of agricultural expertise in future generations. The average award for integrated projects was \$608,730 for 3.0 yrs, excluding Food and Agricultural Science Enhancement Grants and Conference Grants. This mean includes Coordinated Agriculture Projects, which 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.

AFRI provided funds totaling \$407,500 in support of 37 Conference Grants. These conferences brought scientists together to identify research, education, and extension priorities, provide an update on research information, and/or advance an area of science important to U.S. agriculture, food, forestry, the environment, and rural communities.

**Fundamental and Mission-Oriented Research** - Sixty percent of AFRI awards support fundamental research to deliver basic knowledge to advance applied research and conceptual breakthroughs in fields relevant to agriculture. Mission-linked awards accounted for the remaining 40 percent to fund applied work to address specific problems, needs, or opportunities in modern society (Table 4).

**Multidisciplinary Awards** - Multidisciplinary awards encourage collaborations between institutions, agencies, and fields of study to solve complex problems and seek to initiate research in new areas of science and engineering that are relevant to agriculture, food, forestry, the environment, and rural communities. As shown in Table 4, 69 percent of AFRI awards made in 2009 will be conducted by multidisciplinary teams.

**Table 3.** The number of awards and total dollars awarded for each AFRI program by area in FY 2009.

<b>Program Name</b>	<b>Number</b>	<b>Dollars</b>
<b>Plant Health and Production and Plant Products</b>		
Applied Plant Genomics Coordinated Agricultural Project (CAP)	4	4,455,000
Arthropod and Nematode Biology and Management: Organismal and Population Biology	19	5,561,463
Arthropod and Nematode Biology and Management: Protection of Managed Bees	1	1,000,000
Arthropod and Nematode Biology and Management: Suborganismal Biology	12	3,402,862
Arthropod and Nematode Biology and Management: Tools, Resources, and Genomics	12	3,535,675
Microbial Genomics: Functional Genomics of Microorganisms	7	6,000,000
Microbial Genomics: Genome Sequencing	7	5,000,000
Microbial Biology: Microbial Associations with Plants	22	7,400,000
Plant Biology: Biochemistry	17	4,255,000
Plant Biology: Environmental Stress	16	3,966,921
Plant Biology: Growth and Development	15	3,997,000
Plant Biosecurity	8	4,144,706
Plant Breeding and Education	12	5,993,248
Plant Genome, Genetics and Breeding	18	6,002,545
<i>Subtotal</i>	170	64,714,420
<b>Animal Health and Production and Animal Products</b>		
Animal Biosecurity CAP*	0	-
Animal Genome, Genetics and Breeding	20	11,000,000
Animal Growth and Nutrient Utilization	16	4,496,250
Animal Health and Well-Being: Animal Health	18	4,691,000
Animal Health and Well-Being: Animal Well-Being	17	5,712,000
Animal Health and Well-Being: Tools and Resources	3	672,000
Animal Reproduction	18	4,500,000
Integrated Solutions for Animal Agriculture	5	4,000,000
<i>Subtotal</i>	97	35,071,250
<b>Food Safety, Nutrition, and Health</b>		
Bioactive Food Components for Optimal Health	14	5,068,357
Food Safety and Epidemiology: Biological Approaches for Food Safety	17	5,322,487
Food Safety and Epidemiology: Epidemiological Approaches for Food Safety Solutions	4	4,577,639
Food Safety and Epidemiology: Practical Approaches for Food Protection	1	299,874
Human Nutrition and Obesity	11	11,000,000
Improving Food Quality and Value	18	5,643,971
<i>Subtotal</i>	65	31,912,328

Table 3 Continued

<b>Program Name</b>	<b>Number</b>	<b>Dollars</b>
<b>Renewable Energy, Natural Resources, and Environment</b>		
Air Quality	11	5,301,915
Biology of Weedy and Invasive Species in Agroecosystems	13	4,600,000
Enhancing Ecosystem Services from Agricultural Lands: Management, Quantification, and Developing Decision Support Tools**	0	-
Global and Climate Change	7	3,340,013
Managed Ecosystems	15	4,029,902
Soil Processes	20	4,348,068
Sustainable Agroecosystem Science LTAP	5	999,326
Water and Watersheds	15	4,300,000
<i>Subtotal</i>	86	26,919,224
<b>Agriculture Systems and Technology</b>		
Biobased Products and Bioenergy Production Research	20	7,395,000
Nanoscale Science and Engineering for Agriculture and Food Systems*	0	-
<i>Subtotal</i>	20	7,395,000
<b>Agriculture Economics and Rural Communities</b>		
Agribusiness Markets and Trade	16	4,600,000
Agricultural Prosperity for Small and Medium-sized Farms	13	4,800,000
Rural Development*	0	-
<i>Subtotal</i>	29	9,400,000
<b>Other</b>		
Rapid Response Food and Agricultural Science for Emerging Issues	2	499,994
Interagency Metabolic Engineering	1	500,000
<i>Subtotal</i>	3	999,994
<b>Grand Total</b>	<b>470</b>	<b>176,412,216</b>

\*The program did not solicit proposals in FY 2009.

\*\*Awards made from the Enhancing Ecosystem Services from Agricultural Lands: Management, Quantification, and Developing Decision Support Tools Program are counted in the total for the Global and Climate Change Program.

**Broadening the Funding Portfolio** - AFRI offers Food and Agricultural Science Enhancement (FASE) Grants designed to enhance institutional capacity and attract new scientists into careers of high-priority areas of National need in agriculture, food, and environmental sciences. FASE grants provide support for Postdoctoral Fellowships; New Investigators; and Project Directors at small, mid-sized, or minority-serving institutions with limited institutional success or at degree-granting institutions and state agricultural experiment stations in

**Table 5.** The number and total dollars of FY 2009 awards awarded for each category of Food and Agricultural Science Enhancement (FASE) Grants.

Type of Award	Number	Dollars
Post Doctoral Fellowships	13	1,623,516
New Investigator Awards	27	11,648,208
Strengthening Awards		
Research Career Enhancement Awards	1	99,775
Equipment Grants	7	189,182
Seed Grants	30	4,109,848
Standard Strengthening Research Project Awards*	51	21,847,437
<b>Total</b>	<b>129</b>	<b>39,517,966</b>

\*Thirty additional grants totaling \$9,138,396 were awarded to institutions eligible for, but not funded as, Standard Strengthening Research Projects Awards.

states in which institutions have been less successful in receiving AFRI funding (these states are identified by NIFA as Experimental Program for Stimulating Competitive Research, EP-SCoR, states). In FY 2009, approximately 22% of AFRI funds supported FASE grants. A breakdown of FASE awards is found in Table 5.

**Transcending Topic Areas** - AFRI makes awards that span several topics of major importance to USDA. Table 6 lists these crosscutting areas and identifies the number of awards and total amount of funding for each area.

**Institution Types** - AFRI engages a broad range of institution types including Land Grant Universities (1862, 1890, and 1994), Public Non-Land Grant Universities, Private Colleges and Universities, Private Research Foundations, Federal Institutions, and Industry. A breakdown of submitted applications, funded applications, and FY 2009 dollars awarded is provided by institution type in Table 7.

**Training** - Competitive grants administered by AFRI provide support to train the next generation workforce for agriculture. In 2009, AFRI provided funding for over 1,000 students and post-doctorates for over 1,600 years when added together. Table 8 provides an overview of student and post-doctoral support provided by programs areas within AFRI.

**Table 6.** The number of awards and total amount of funding for crosscutting areas of major importance to AFRI and USDA in FY 2009.

Areas	Number	Dollars
Animal Genome	25	13,610,000
Animal Health	55	20,765,459
Food Safety	34	13,605,020
Forest Biology	23	9,720,651
Global Change	36	10,709,654
Integrated Pest Management	46	19,419,480
Plant Genome	26	12,493,767
Sustainable Agriculture	44	14,032,181
Water Quality	29	8,850,356

**Table 7.** The percent of applications submitted, applications awarded, and total funds awarded by institution type for AFRI in FY 2009.

Type of Institution	Percent of Applications Submitted	Percent of Applications Awarded	Percent of Total Dollars Awarded
Land Grant University			
1862 Land Grant University	76.2	74.5	74.4
1890 Land Grant University	1.5	0.9	0.8
1994 Land Grant University	0.1	0.0	0.0
Public non-Land Grant	7.8	6.8	5.4
Private College/University	5.2	6.4	9.7
Private Research	3.8	5.3	3.6
Federal	4.6	5.7	5.8
Industry/Other	0.9	0.4	0.4

Table 8. The number and length of time of undergraduate, graduate, and postdoctoral support provided by AFRI FY 2009 awards.

<b>Program</b>	<b>Number Supported</b>	<b>Months of Support</b>
<b>Agriculture Economics and Rural Communities</b>		
Undergraduate Students	10	58
Graduate Students	33	747
Postdoctoral Researchers	2	7
<i>Subtotal</i>	45	812
<b>Agriculture Systems and Technology</b>		
Undergraduate Students	13	179
Graduate Students	37	762
Postdoctoral Researchers	7	162
<i>Subtotal</i>	57	1,103
<b>Animal Health and Production and Animal Products Total</b>		
Undergraduate Students	28	521
Graduate Students	63	1,799
Postdoctoral Researchers	39	996
<i>Subtotal</i>	130	3,316
<b>Food Safety, Nutrition, and Health</b>		
Undergraduate Students	35	257
Graduate Students	149	2,624
Postdoctoral Researchers	21	439
<i>Subtotal</i>	205	3,320
<b>Other (Rapid Response and Metabolic Engineering Programs)</b>		
Undergraduate Students	2	6
Graduate Students	3	45
Postdoctoral Researchers	1	36
<i>Subtotal</i>	6	87
<b>Plant Health and Production and Plant Products</b>		
Undergraduate Students	194	1,831
Graduate Students	158	3,560
Postdoctoral Researchers	102	2,686
<i>Subtotal</i>	454	8,077
<b>Renewable Energy, Natural Resources, and Environment</b>		
Undergraduate Students	62	697
Graduate Students	85	1,933
Postdoctoral Researchers	21	417
<i>Subtotal</i>	168	3,047
<b>All Programs</b>		
Undergraduate Students	342	3,563
Graduate Students	526	11,380
Postdoctoral Researchers	191	4,736
<b>Total</b>	<b>1,059</b>	<b>19,679</b>