

Thoughts from DOCE

The 2010-2015 Employment Opportunities for College Graduates predicted shortages of graduates in the food, agriculture, natural resources, and human sciences disciplines. NIFA increased its coordination and funding for education to address these gaps, but more in-depth evaluation suggests that the academic community needs further assistance.

DOCS increased funding for its education programs by \$14.3 million in FY 2015. In FY 2102, AFRI provided direct support to 2,160 students with scholarships and fellowships. In FY 2014, DOCE funding provided 134 scholarships and also indirectly supported 32,312 other students through recruitment programs, courses, and distance education. In this issue of Ed-Facts we have included two examples of AFRI projects that achieved significant results. You will read how new technology allows DOCE to mine data on NIFA-funded education activities in order to create opportunities for applicants to build stronger educational components within their NIFA-funded projects. Our question for the academic community is this: What else can DOCE do to help you use NIFA funding to promote science learning? Let the division director know at SSURESHWARAN@NIFA.USDA.GOV.

Supporting Education: A NIFA-Wide Priority



A major funding opportunity for education is in the Agriculture and Food Research Initiative (AFRI), which is NIFA's largest competitive grants program. AFRI provides funding for fundamental and applied research, extension, and education projects to address food and agricultural sciences.

The AFRI Education and Literacy Initiative provides support for undergraduate, doctoral, and post-doctoral fellowships. Individual students apply for the pre- and post-doctoral fellowships, thereby gaining valuable experience in preparing and submitting a grant proposal. Educational institutions receive grants for undergraduate fellowships so they may support mentoring, research, and extension-based experiential learning for undergraduates to help them enter the agriculture workforce with exceptional skills.

AFRI Foundational programs focus on fundamental research, but permit applicants to include support for students who work on the research projects. AFRI Challenge Area grants generally are integrated programs in the multi-million dollar range. NIFA's integrated programs bring the three components of the agricultural knowledge system (research, education, and extension) together around a problem area or activity and can support a broad range of educational activities, such as curriculum development, faculty development, and assistantships.

NIFA encourages the inclusion of students and the integration of education in the AFRI Foundational and Challenge grants programs. Support for students may also be included in applications to most other NIFA competitive grant programs. Funding support for students may also be available through capacity-funded research and extension programs provided by NIFA to institutions. Information about [NIFA grants](#) is available online.

Educational Activities Funded in NIFA Challenge Areas

NIFA acquired a knowledge discovery tool, Pushgraph™, last year as part of an ongoing effort to measure program impacts. The software “reads” NIFA project reports, scanning for topics, concepts, and relationships in the text. Pushgraph produces color visualizations of the information that illustrate relationships among programs and program trends from the various projects that NIFA funds. DOCE uses this software to gather insights from project directors’ annual reports.

DOCE was able to query the CRIS database in Pushgraph to find out how many NIFA-funded awards, outside of DOCE programs, contain a component that meets one of the six education need areas (below). Concept words related to the need areas were searched and cross-analyzed against concepts pertaining to NIFA’s six challenge areas.

NIFA Challenge Area	Education Priority						Non-DOCE Total By Challenge Area For Education
	Curricula Design	Faculty Preparation	Instructional Delivery	Teaching Instrumentation	Hands-on Learning	Recruitment/Retention	
Childhood Obesity	8	4	7	0	18	8	45
Climate Change	0	1	2	1	1	0	5
Food Safety	15	19	8	3	25	1	71
Food Security	12	2	7	0	10	0	31
Bioenergy	1	2	1	0	3	2	9
Water	0	1	1	0	4	0	6
Non-DOCE Total	36	29	26	4	61	11	167

A total of 167 awards from FY2003-2012 matched the search criteria. Education related programs accounted for 11.6 percent of all 1,441 non-DOCE awards in one of the NIFA challenge areas. These projects received \$68.4 million in funding, only 9.4 percent of the total \$728 million awarded in the challenge areas. A majority of the projects were in the food safety challenge area and in student experiential learning. Very few education-related projects were identified in the climate change challenge area and teaching instrumentation. DOCE will use Pushgraph’s capabilities as one approach to analyze and share the trends in educational funding to help identify opportunities for projects that integrate education.

EDUCATION IMPACT: Washington State University

A plant scientist with Washington State University used part of his \$500,000 AFRI Plant Health grant to launch a major science education initiative. He gave paid internships to four students (one graduate and three undergrads) to work in his laboratory as part of his weed biology study. He also led an outreach program with hands-on science that reaches more than 600 students annually, engaging them in science and moving beyond textbooks to show how science impacts their daily lives.

EDUCATION IMPACT: Texas A&M University

An animal geneticist used part of a \$1.8 million AFRI grant to study dairy cow genetics to provide science education to youth. The grant funded a post-doctoral student and provided a course module to teach animal science and veterinary students about genomic selection practices in the dairy industry. In addition, the researcher used a portion of the grant to involve students in research activities to stimulate interest in graduate school and food animal oriented careers. He also provided educational outreach to local 4-H and Future Farmers of America groups.

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