August 6, 2014
Volume 1, Issue 3

NIFA Ed-Facts

National Institute of Food and Agriculture, Division of Community and Education (DOCE)

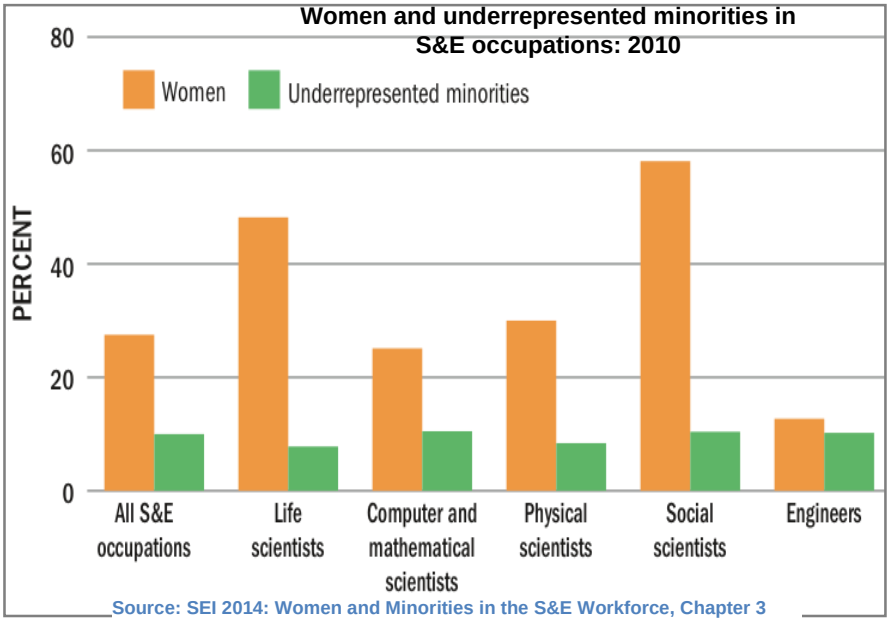
Ed-Facts shares information about new initiatives and activities in the realm of education at the National Institute of Food and Agriculture (NIFA) and highlights the impacts of past projects. We hope ***Ed-Facts*** will help promote the visibility of evidence-based impacts of NIFA funded education programs.

News Highlights

Minority-Serving Institutions: Moving the Future Forward

Research confirms what NIFA leadership has been saying about the importance of minority-serving institutions (MSI).

In a video message to the members of Thurgood Marshall Fund, NIFA Director Dr. Sonny Ramaswamy said that MSI graduates would help to fill the U.S. demand for 60,000 professionals in the food and agricultural sciences over the next decade. The Thurgood Marshall Fund is a non-profit organization representing students at 47 historically black colleges and universities (HBCU), including medical and law schools.



Source: SEI 2014: Women and Minorities in the S&E Workforce, Chapter 3

As indicated in the chart above, minorities are underrepresented in science and engineering fields (National Science Foundation, NSF). In their 2014 Science and Engineering Indicators Digest, NSF reported that, "although underrepresented minorities—blacks, Hispanics, and American Indians or Alaska Natives—have made substantial strides, their representation in science and engineering jobs remains below their proportion in the population." **All minority-serving institutions funded by NIFA seek to move the trends toward greater participation in the sciences for all under-represented groups, particularly in the agricultural sciences.**

Other research suggests faculty play a pivital role in engaging minority students in science and helping them graduate. A peer-reviewed paper in the *Journal of Social Issues* (Soc Issues. 2011 September; 67(3): 553–579.) found that "faculty members play a key role in the identification and training of the next generation of scientific talent." The article also found that African-American students at HBCUs reported having more support from their professors than students at other institutions. **NIFA provides funding to support faculty development in the use of new technologies, curriculum development, and pursuing advanced degrees so that professors at minority serving institutions can increase their own knowledge of subject matter to better serve their students.**

NIFA: Addressing Challenges in Education

At a recent discussion of the NIFA education portfolio, Dr. Suresh Sureshwaran, director for the Division of Community and Education (DOCE), addressed how NIFA programs are meeting the three major challenges in food, agriculture, natural resources, and human sciences education. Those challenges are shortages of trained graduates, skills mismatch, and demographic changes.

"All four of our National Needs Fellows have had great work opportunities after graduation. Three got multiple interviews.

"One entomology major decided she wanted to do international work. After an internship through our program in Ghana, she found a job at the Borlaug Institute for International Agriculture at Texas A&M."

Gary Hein, Director of Plant Health, University of Nebraska, Lincoln, on National Needs Funding

"We're planting seeds here; some of the kids from the poorer communities will have a better future, thanks to our Hispanic-serving institution (HSI)-funded programs.

"The kids ask their teachers when they can go take care of their garden or when the next on-campus visit will be."

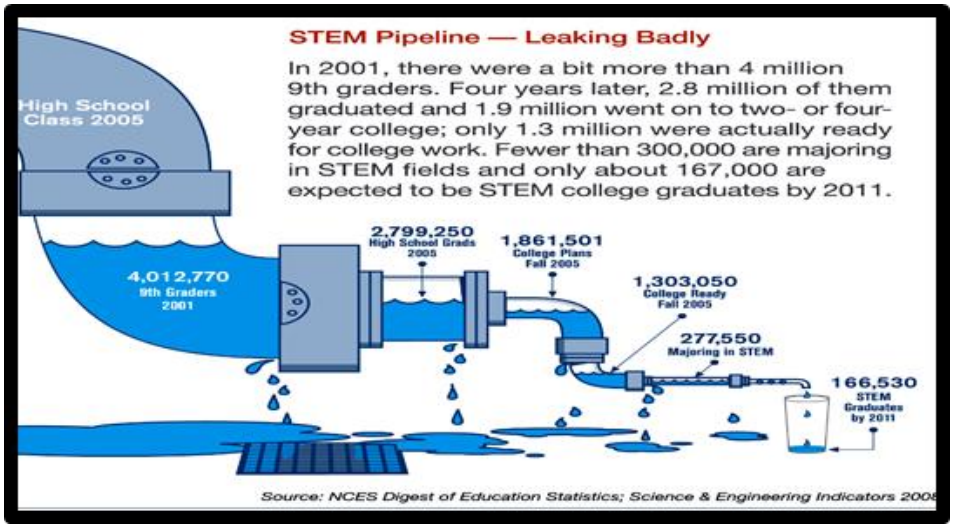
Felix Roman, University of Puerto Rico, Mayaguez, HSI grant recipient

Shortages of STEM/Agriculture graduates: A Purdue University study shows the demand for graduates in food, agriculture, and natural resources is on the rise. From 2010-15, there will be 54,400 new jobs annually in the food and agricultural sciences, but only 53,500 qualified graduates are available annually. Of those 53,500 graduates, 29,300 (55 percent) will have degrees from colleges of agriculture and life sciences, forestry and natural resources, and veterinary medicine. The remaining 45 percent will come from allied disciplines, including biological sciences, engineering, health sciences, business, and communication. NIFA is determined to bridge this gap by investing $10 million in FY 2014 appropriations for programs primarily targeted to workforce development, i.e., NIFA Fellowships, the National Needs Graduate Fellowships, and the Multicultural Scholars Program.

Skills mismatch: Several studies indicate that university graduates do not have the necessary non-cognitive skills required by potential employers. Dr. Ramaswamy recently discussed the need to promote and develop experiential learning and non-cognitive education to help produce graduates with skills needed to address the challenges of the 21st century (Ed-Facts, May 2014). Through the Higher Education Challenge, the non-land-grant colleges of agriculture, and other MSI grant programs, NIFA is challenging universities to design and implement new curricula and programs to provide students with the necessary training required by employers. In FY 2014, NIFA has approximately $12 million appropriated for these learning and developmental programs.

Changes in demographics and implications for workforce development: MSIs represent populations that will comprise the majority of both the U.S. population and workforce entrants in next 25 years. Minority students, however, have lower graduation rates and levels of enrollment in science, technology, engineering, and mathematics (STEM) programs. Approximately $60 million was appropriated for MSIs in 2014.

The FY 2015 President's budget proposal includes a new initiative to support hands-on learning through research and extension for undergraduates that will address all three of the challenges described above. This program will provide opportunities for underrepresented students from MSIs, community colleges, and other universities to obtain hands-on experience at larger land-grant universities and USDA laboratories. The ultimate goal of this program is to provide students with the necessary training to join the agricultural workforce or pursue graduate studies in food, agriculture, natural resources, and human sciences. This initiative also aligns with the recommendations made in the December 2012 President's Council of Advisors on Science and Technology report to the President on "Agricultural Preparedness and the Agriculture Research Enterprise."



NIFA: Addressing Challenges in Education Continued from page 2

Dr. Sureshwaran also discussed the "leaks" in the STEM pipeline, see Figure on Page 2, and the need to encourage secondary students to pursue higher education; currently, 50 percent of 9th graders do not pursue a college education. In FY 2014, NIFA has approximately $1.5 million appropriated for programs that target secondary education. "The challenge for the Division of Community and Education," Sureshwaran said, "is to grow and expand programs such as Agriculture in the Classroom and the Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Challenge Grants Program, for K-14 education to attract students for careers in food and agriculture."

Farm Bill Changes for DOCE Programs

The 2014 Farm Bill did more than designate three new land-grants (see Ed-News May 2014), it gave 1994 land -gants more flexibility in planning research projects.

Prior to the new farm bill, the 1994 land-grant institutions were required to partner with an 1862 or 1890 land-grant university under the Tribal College Research Grant Program. The 2014 Farm Bill doesn't take away the partnership mandate, but it gives tribal colleges new options for their required partner. They may now choose to partner with USDA's Agricultural Research Service or with a non-land-grant college or university.

The new farm bill also defined eligibility for non-land-grants. This is important for applicants to the Capacity Building Grants for Non-Land-Grant Colleges of Agriculture (NLGCA) Program. Non-land-grants must provide NIFA certification as part of their grant application documents in both tribal research and NLGCA. To obtain a NIFA certificate the schools should visit NIFA's website at http://nifa.usda.gov/form/form.html

Improving Post-Awards Management

In an effort to ensure NIFA funds achieve program goals, DOCE staff are working to ensure recipients draw down their award money and file their reports in a timely manner and provide NIFA with meaningful impacts. The DOCE team has increased training and communication to help grant recipients succeed.

DOCE staff set up training time for NIFA project directors at the annual North American Colleges & Teachers of Agriculture's conference. Adam Preuter, from NIFA's Planning, Accountability & Reporting Staff (PARS), gave a talk about providing documentation in REEport. Bruce Mertz, NIFA lead grants and agreements specialist, provided training on post-award management, and Karl Maxwell, from PARS, provided guidance on impacts. Josue Lopez, with DOCE, organized a forum of successful project directors who were able to give insights on overcoming programming obstacles and making projects a success.

In addition, DOCE staff has stepped up communication with their grant recipients on funding expiration dates. The tribal program found that sending grant recipients quarterly email notifications on their remaining balance and expiration dates reduced fund loss. Other program leaders are now testing whether this method will be beneficial to their grantees.

In addition, grantees are asked to acknowledge NIFA funding in all their presentations, publications, blogs, and news releases. Acknowledgement of the impacts of NIFA funding is essential to help sustain and grow the grant programs, especially in the current environment where there is increased emphasis on accountability. Please use the following sentence to acknowledge NIFA funding: "This work is/was supported by the USDA National Institute of Food and Agriculture, [insert project type, e.g. Hatch/Evans-Allen/McIntire Stennis] project [insert grant number]".

"What did I enjoy about my NIFA internship in Washington, DC?

"The work we are doing matters and people count on me. I feel good about the mission of this agency."

Fernando Bonaparte, University of Puerto Rico, Mayaguez, 2014 HSI NIFA Intern

"Most of the people where I come from will never see or experience all of the things I have on this trip.

"I feel privileged to be part of this delegation."

Clinton Williams, a student at Delaware State University, on a NIFA-funded agricultural tour of Ghana

MORE INFORMATION

For questions, comments, and/or suggestions please contact:

Muquarrab Qureshi, Deputy Director, Institute of Youth, Family, and Community

Suresh Sureshwaran, Director, Division of Community and Education

Jill Lee, program specialist, Division of Community and Education

Visit the NIFA website for more information on DOCE programs, National Institute of Food and Agriculture, Waterfront Centre, 800 9th St. SW., Washington, DC 20024, Mailing Address: 1400 Independence Avenue SW., Stop 2201; Washington, DC 20250-2201

Five New Impacts of NIFA Education Programs

Delaware State University is promoting **global competence** by supporting a small delegation of students from that institution and University of Maryland, Eastern Shore to study agriculture production in Ghana. Students toured an organic banana farm, a dried fruit processing plant that trades with Europe, and a communal farm. They also learned about Ghana's ecosystems, traveling to animal preserves and Boti Falls Natural Resource Area. The highlight was their meeting with John Dramani Mahama, Ghana's president. "I feel privileged to be a part of this delegation," said Clinton Williams, a student at Delaware State University. "Most of the people where I come from will never see or experience all of the things I have on this trip," he said. A video of the trip is available at: https://www.youtube.com/watch?v=5MBWGknbHoo. Funding for this project was competitively awarded to Delaware State University through NIFA's 1980 Capacity Building Grants Program.

The University of Texas At El Paso received an HSI Grant to train 10 undergraduate and graduate students in bioinformatics, an innovative project that combines computer science, biology, and statistics to enhance research in the life sciences. The project focus is a parasitic cattle tick (*R. microplus*.) that adversely impacts both livestock health and ranchers' profits worldwide. The estimated annual global costs associated with ticks and tick-transmitted pathogens in cattle amounted to between $13.9 billion and $18.7 billion. As part of the grant, students assisted Dr. Felix Guerrero, a scientist with the USDA's Agricultural Research Service lab in Kerrville, TX. The project director also incorporated the research project into her statistics and bioinformatics courses through web-based modules.

Alabama A&M University is using its 1890 Extension program funding to teach science to inner-city and at-risk youth. Using 4-H curriculum "*Ready? Get SET to Explore Forensics,"* students participated in lectures and solved a mock robbery using research activities. More than 90 percent of the youth in the workshops said the activity taught them science concepts that they didn't get at school. Twenty-three students attending George Washington Carver High School in West Montgomery, AL, also participated in the crime-solving activity. As the university is continuing the program, more students will have this opportunity when they return to in August. Programs that enhance interest in science education are critical for communities such as West Montgomery, where 36 percent of the population lives below poverty level and fewer students continue their education. This is only part of the school's 4-H Science, Engineering, and Technology plan that also includes lessons in robotics, solar-powered cars, and college students demonstrating their research for local high school students.

Faculty at Tennessee State University used a grant through NIFA's 1980 Capacity Building Grants Program to study the economics of food deserts and their effect on the demand for fruits and vegetables. Food deserts are defined by USDA as low-income communities where at least 500 citizens or 33 percent of the community live a mile or more away from a supermarket or grocery store with fresh produce. The inaccessibility to fresh, healthy foods has been linked to higher rates of obesity. The project director and a graduate student conducted surveys, food assessments, and statistical analysis. Their findings led to the development of a new graduate-level course entitled "Food Marketing and Retail Management." The project will address USDA's Research, Education, and Economics goals of reducing childhood and adolescent obesity and enhancing food security. The program addresses nutrition and the problem of income inequality as it relates to healthy food choices.

Dr. Thomas L. Slewinski, an AFRI NIFA Fellowship recipient, is researching biofuel production from poplar trees. By exploring the biochemistry of carbon transport in poplar trees he was able to confirm that manipulating certain biological reactions may produce more biomass, increasing their bio-fuel production. It appears that the trait is common among most plants grouped as angiosperms, whose main characteristic is flower production. This discovery could have important implications for biofuel production across various plant species. The grant also afforded him extra time to hone his teaching skills by serving as a science teacher at a local prison.