

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

## News Highlights

The 2014 Farm Bill adds three new land-grant schools

Education is a NIFA responsibility.

Hispanic-serving institutions make a difference.

Impacts of educational programs –

- ✓ **Creating new markets at home and abroad**
- ✓ **Powering a healthy rural economy**
- ✓ **Local food and food safety**

## NIFA Welcomes New Land-Grants

The 2014 Farm Bill added three new members to the land-grant family – two tribal colleges that joined the 1994 land-grant community and one historically black university that became an 1890 land-grant.

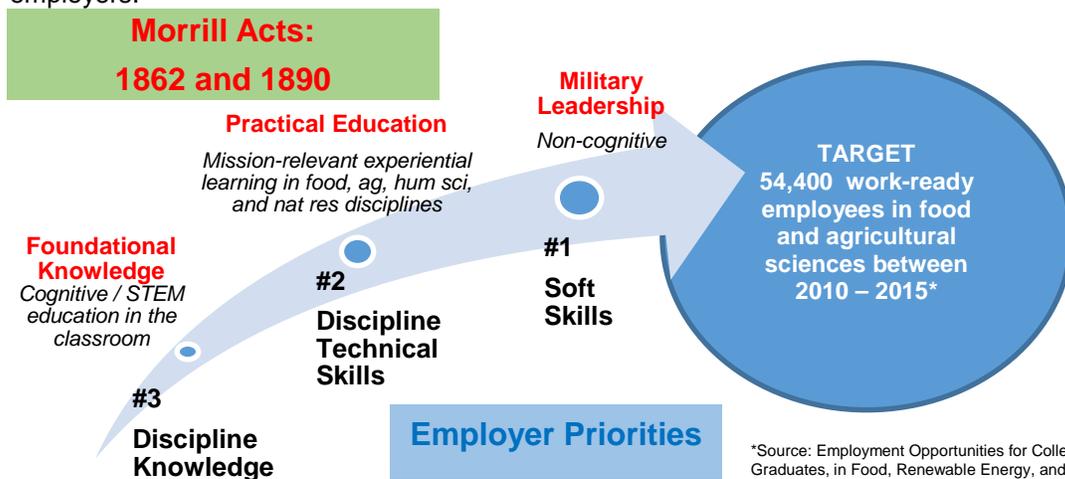
**College of the Muscogee Nation**, a 1994 land-grant in Okmulgee, Oklahoma, has a staff of 30 and 491 students. The school offers classes in biology, physical science, human anatomy, computer science, and mathematics. President Robert Bible wants students to know, *“The College of the Muscogee Nation was established to serve Muscogee citizens and other citizens with the history, government, and culture of the Muscogee people as its primary focus.”*

**Keweenaw Bay Ojibwa Community College**, a 1994 land-grant, in Baraga, Michigan, has 3 full-time professors to serve 86 students. The college has an environmental science program and offers associate degrees in science and applied science. The college’s mission statement is *“To provide post-secondary education rich in Ojibwa culture, tradition, and beliefs to support life-long learning. It serves as the principle higher educational institution for the L’Anse Indian Reservation and surrounding communities by providing quality academic programs rich in Ojibwa culture that empower students to fulfill their dreams of a superior education.”*

**Central State University** is the new 1890 land-grant in Wilberforce, Ohio. This 4-year university has approximately 2,150 students. It has 112 full-time and 93 part-time faculty. President Cynthia Jackson-Hammond tells students, *“Since our founding 127 years ago, Central State has been in the business of transforming lives through higher education. That is why we say, ‘CHANGE IS CENTRAL.’”*

## NIFA Director: Refocus on the Ideas of Morrill Acts

NIFA Director Sonny Ramaswamy told about 60 NIFA employees that the messages and ideas of the Morrill Land-Grant Acts of 1862 and 1890 are more resonant than ever. In fact, he said, the acts’ focus on practical education and leadership training gives the United States its best opportunity to train an agricultural workforce with the skills most desired by employers.



\*Source: Employment Opportunities for College Graduates, in Food, Renewable Energy, and the Environment, United States, 2010-2015, Purdue University

Ramaswamy noted that a Purdue University study shows the demand for graduates in food, agriculture, and natural resources is on the rise. Between the years 2010-15 there will be 54,400 new jobs annually in the food and agricultural sciences, but only 53,500 qualified graduates are available each year, of which an estimated 29,300 graduates (55 percent) 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

In the presentation entitled, "Feeding 9 Billion – Back to the Future of Education," Ramaswamy reviewed the history of major education policy from the Morrill Acts to present day. He suggested that U.S. educational priorities that have moved away from practical education and leadership training, emphasized in the Morrill Acts, may have to refocus on experiential learning and non-cognitive education to help produce graduates with skills needed to address the challenges of the 21<sup>st</sup> century. He closed with a blueprint for the future of NIFA education efforts, with many ideas for partnerships between colleges, high schools, government, and industry. He emphasized the importance of experiential learning and enhancing agricultural literacy for everyone from school children, to consumers, farm workers, researchers, and extension support staff.

*"When I was accepted to North Carolina A&T, I was a psychology major. I changed it to agriculture during freshman orientation, with aspirations of managing my own organic farm. I really did not know what I wanted to do, but I knew that I wanted to work in the agriculture industry."*

Kaila Tanksley

*Impact of:  
Current NIFA Multicultural  
Scholar, North Carolina  
A&T University, 2014*



*"Because Dr. Chin's hibiscus research project received a NIFA grant many doors of opportunity opened for me. I never thought I would be doing so many interesting things in science and entrepreneurship."*

Ryan Nicolas  
Currently: Ph.D.  
candidate, Southern  
University

*Impact of:  
1890 Capacity Building  
Grant, Southern University,  
2013-13*

## Education: A NIFA-Wide Responsibility

NIFA supports learning and development in food, agriculture, natural resources, and human sciences through several programs housed in the four programmatic institutes and in the Center for International Programs.

### **One example is the International Science and Education Competitive Grants Program.**

Although this program's last appropriation was in 2011, the projects it funded continue to have impacts. The program was designed to internationalize agricultural research, teaching, and extension programs at U.S. universities. In one project, faculty and graduate students at the University of California–Riverside and Ben Gurion University of the Negev, in Israel, are actively engaged in curricular sharing for courses at both undergraduate and graduate levels in environmental science and engineering. This project also supports Ph.D. student and faculty exchanges—both United States and Israeli—with many publications and collaborative projects as a result.

**NIFA's Integrated Programs** define educational activity as formal classroom, laboratory instruction, or practicum experience in the food and agricultural sciences. Faculty development, student services, curriculum development, instructional materials, equipment, and innovative teaching methodologies are also covered.

Most **Agriculture and Food Research Initiative (AFRI)** programs must include an educational component that addresses one or two of the following key strategic actions:

- Train students for associate, baccalaureate, master's, or doctoral degrees; and/or
- Prepare K-12 teachers and higher education faculty to understand and present food and agricultural sciences.

A majority of AFRI integrated projects support graduate students who assist with their professors' research. For example, a project director at Washington State University (WSU) trained some of her plant biology students and involved them in a study of nitrogen transport in plants. One of those students, Ray Collier, a post-doctoral fellow, is now a USDA scientist in California. The WSU research gave him hands-on experience in molecular biology, genetics, biochemistry, and plant physiology. The AFRI Foundational Program in Agricultural Economics and Rural Communities project at University of North Carolina at Asheville provided undergraduate internships, externships, classroom projects/activities, and opportunities for student-led research on how to market locally-produced foods. The project resulted in 80 students presenting posters at a campus food day event.

In addition to integrated programs, many other research grants support experiential learning and research assistantships for students. Graduate students on a **Mcintire-Stennis** project learned to evaluate how sustainable timber harvesting can affect salmon habitat in Freshwater Creek, California. The project director reported that the project increased the knowledge of graduate and undergraduate students and contributed to their understanding of how sediment sources impacted water quality and endangered salmon stocks in North Coast forested watersheds.

## Program Focus: Hispanic-Serving Institutions

The Hispanic-Serving Institutions (HSI) Education Grants Program made 18 awards totaling \$8.1 million in 2013. In total, 15 schools in 4 states and Puerto Rico received funding. This funding included two awards to support science, technology, engineering, agriculture, and math (STEAM) education. The projects involve groups of two or more HSIs in a multifaceted intervention to recruit, retain, and graduate underrepresented students to the fields of agriculture, food science, natural resources, and human sciences, and nutrition.

Since its beginning in 2011, a total of 40 HSIs have participated in this program, including the 7 lead colleges. By the second year of this project, 2012-2013, 486 students have been impacted by these 7 projects, including 382 bachelors, 83 masters, and 22 Ph.D. students. In a recent survey most students report a GPA between 3.00 and 3.99 and almost half said they obtained a career experience or job shadowing with a USDA agency.

West Hills Community College, in Coalinga, California, used an HSI grant to create a hands-on learning for Hispanic students in irrigation technology. "With the decrease in natural resources throughout California's west side, the industry needs to conserve every drop of water, every kilowatt of energy, and every acre of grazing land," said project director Joy Cowden. "There is a shortage of students entering into irrigation and natural resources. Education is key to expanding and diversifying this workforce. One of our students, Herman Delgado, passed the Certified Agricultural Irrigation Specialist exam." Cowden added that irrigation specialists can make as much as \$60,000 in California, especially if they are bilingual. Another student, Katelyn Vagas, built an ethanol generator during this project. She will attend Iowa State University this fall.

Title III of the Higher Education Act of 1965 developed the criteria for HSIs. Only public or other non-profit HSIs are eligible to apply for this program. To qualify as an HSI, institutions must, at the time of application, have an enrollment of undergraduate full-time equivalent students that is at least 25 percent Hispanic. In 2014, approximately 370 schools, both 2- and 4-year, are certified as HSIs. Not all the HSIs have an agricultural program or receive funding from NIFA. A [map](#) of these institutions, which shows the 38 currently receiving NIFA funding, is available on the HSI program page.

"In addition, the Farm Bill contains a group of HSIs that are now considered Hispanic Serving Agricultural Colleges or Universities," said Irma Lawrence, NIFA national program leader. "This means that they have a program in food and agriculture and related biological sciences and 15 percent of the graduates are Hispanic."

## NIFA Education Programs in the News

The Secretary of Agriculture announced that NIFA provided the 1890 land-grant universities \$35 million to support research, teaching, and extension activities, including \$17.6 million for the Capacity Building Grants Program. The 76 grants for food science also include awards made under the 1890 Facilities Grants Program that builds structural capacity, such as laboratories and libraries. "For nearly 125 years, the 1890 land-grant institutions have played a vital role in ensuring access to higher education and opportunity for underserved communities," said Secretary Tom Vilsack. "These competitively-awarded grants support high quality research, teaching, and extension activities and support the continued leadership of 1890 institutions. A [NIFA press release](#) provides the entire list of awards.

Tennessee State University (TSU) Dean Dr. Chandra Reddy announced in a press release how TSU will use its \$2.6 million. "[We will] help to build capacity in new areas of agricultural research, teaching, and outreach, as well as help in remodeling and building research facilities."

**"One thing I can say, West Virginia State University is lucky to have a professor like Dr. Reddy. The quality of science he is conducting with RNA and grafting technology is comparable to any world-class laboratory."**

*Hugh Lee Dalton  
Currently: MBA  
candidate, Keller School  
of Management*

*Impact of:  
1890 Capacity Building  
Grant, West Virginia State  
University, 2011-12*



*"Without the USDA National Needs fellowship, it is doubtful that my career would have progressed as it has. I am now director of the University of Minnesota Food Industry Center. Having the fellowship as a graduate student offered me an opportunity to focus on developing my teaching, research, and communication skills."*

*Mike Boland  
Currently: Koller endowed  
Professor; Director, The  
Food Industry Center;  
University of Minnesota.*

*Impact of:  
National Needs Fellowship  
Purdue University, 1992-95*

## Five new Impacts of NIFA Education Programs

Troy Runge, at the University of Wisconsin (UW) Madison, along with collaborators at UW Stevens Point and UW Platteville, is using a Higher Education Challenge Grant to create an online resource of research labs in bioenergy. The project goal is to make it easy and affordable to teach the latest concepts in bioenergy to undergraduate students. “Too often we teach bioenergy concepts only by talking about it. It is factual, but not inspiring. The first time I included a lab on combustion, along with the lecture, I could see how much more engaged my students were,” said Runge. “We have tested a few of these labs with juniors at the three campuses. In our surveys so far, about 20 percent of the students who participated in the labs have indicated that the labs sparked their interest in learning more about **bioenergy and sustainability** beyond just the lecture material.” The project will design 12 labs, ranging from biodiesel, combustion, gasification, fermentation, and anaerobic digestion, to help colleges with modest budgets to provide hands-on laboratory experiences for their students. Greater student interest in the new bio-economy will help **power a healthy rural economy**.

University of Maine is using a Women and Minorities in STEM grant to launch its first bio-products and bio-energy summer science adventure for rural high school students. The purpose of this camp is to enhance mentoring for female high school students so that are better prepared to attend the **Forest BioProducts (FBP) research programs at the University of Maine**. This camp will pair high school sophomores in a mentoring relationship with female undergraduates who are enrolled in STEM degree programs at the university. “We plan to launch about 12-20 mentoring pairs,” said Project Director Hemant Pendse. “The teams will create their own experiments in sustainable forest management and the new and highly interdisciplinary field of forest bio-products.” These rural high school students, energized by the summer camps, will be **more motivated to learn when they return to school** in August.

The Federally Recognized Tribes Extension Program at North Carolina State University provided garden kits to 750 families from the Eastern Band of Cherokee Indians. Vegetables from these seeds will provide each family fresh produce valued at \$600. This project potentially contributes nearly half-a-million-dollars-worth of nutritious foods to Cherokee families. The garden kits include many seeds from traditional foods, such as yellow squash and cucumbers. Other seeds include Sugar Ann pea, boc choy, and spaghetti squash. This will increase the consumption of **local foods** and enhance **food safety** and food security.

Kit Chin at Southern University, an 1890 land-grant university in Baton Rouge, Louisiana, used funding from NIFA’s 1890 Research Capacity grant to study the roselle hibiscus. This plant, with its striking red calyce-enclosed fruits, could give Louisiana farmers a new niche crop that **supports trade, local agriculture, and economic development**. His research found roselle hibiscus accessions from Nigeria, Jamaica, and Senegal thrive in Louisiana’s climate. More than 65 farmers, homemakers, and retired church volunteers from various parishes attended the project director’s workshop and grew hibiscus in their home gardens. A 12-member roselle hibiscus grower’s cooperative also visited the lab. One Ph.D. student, Ryan Nicolas, joined four Southern University business majors to develop a hibiscus business plan for Louisiana. The team placed third among 13 student groups presenting at the 2013 Opportunity Funding Corporation’s Venture Challenge. “This NIFA-funded project has given me the focus of my doctorate work,” Nicolas said. “Because Dr. Chin’s hibiscus research project received a NIFA grant, many doors of opportunity opened for me. I never thought I would be doing so many interesting things in science and entrepreneurship. It would not have happened if Dr. Chin had not been able to pursue his research goals.”

Umesh Reddy of West Virginia State University used NIFA’s 1890 research capacity grant to research grafting watermelons and calabash (*Lagenaria siceraria*). This process would combine the fruit producing part of the watermelon with the root system of the calabash. The resulting plant resists fusarium wilt and is suitable for West Virginia growing conditions. It was, however, less flavorful. Reddy used part of his NIFA grant to hire a graduate student to help him sequence the watermelon RNA for flavor. That student, Hugh Lee Dalton, recently graduated with a master’s degree in biotechnology. **The project will lead to new local agri-markets**. “One thing I can say is West Virginia State University is lucky to have a professor like Dr. Reddy,” said Dalton. “The quality of science he is conducting with RNA and grafting technology is comparable to any world-class laboratory.”

### 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

[Lindell Williams](#), 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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, DC 20250-9410, or call 800-795-3272 (voice) or 202-720-6382 (TDD). USDA is an equal opportunity provider and employer.