

# Increasing Student Learning and Career Development Through Agricultural and Natural Resources Based Research



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## ABSTRACT

Texas A&M University-Kingsville (TAMUK) is a teaching, research and service institution that provides access to higher education to an ethnically and culturally diverse population of students. The mission of the University is to develop well-rounded leaders and critical thinkers who can solve problems in an increasingly complex, dynamic and global society. This grant "Increasing Student Learning and Career Development Through Agricultural and Natural Resources Based Research" is consistent with this mission and aimed at increasing the recruitment and retention of South Texas students through experiential learning in science-based research. Furthermore, the central theme of this proposal (providing for an effective mentoring relationship between undergraduate/graduate students and faculty) will contribute significantly to the desire of the university to provide a learning-centered and caring environment dedicated to the future success of our students. The purpose of this proposal is to reach an underserved student population (who are primarily first-generation college students) with the aim of enhancing their competitiveness for graduate school and the job market.



## Introduction

This project addresses all four HSI-Education Grants Program Priority Areas in that it:

- (1) supports research activities to enhance educational equity for underrepresented students,
- (2) strengthens the educational capacity of Texas A&M University-Kingsville (TAMUK) through collaboration with Texas Agricultural Experiment Station (TAES), USDA-Agricultural Research Service (ARS) and APHIS (Animal and Plant Health Inspection Service),
- (3) provides financial assistance to attract and support undergraduate and graduate students from underrepresented groups, and
- (4) facilitates a cooperative initiative between TAMUK, TAES, USDA-ARS and USDA-APHIS to maximize the use of resources to improve student training in the food, agricultural, and natural resource sciences.

## Grant Objectives

- 1) to provide research experiences and support for several undergraduates and graduate students enrolled in the agricultural and resource science programs at TAMUK;
- 2) to enhance the educational and research experience of these students through collaborative research partnership between TAMU-Kingsville, Texas A&M University Agriculture Experiment Station, and US Department of Agriculture; and
- 3) to engage these student research aides in the professional research arena to facilitate their transition into advanced degree (M.S. or Ph.D.) programs.



## Expected Impact

The combined strength of these four institutions (TAMUK, TAES, USDA-ARS, and USDA-APHIS) in providing experiential learning-based training supports the majority of the USDA strategic goals and CSREES Strategic Objectives (2004-2009). Specifically, the scientists trained in this program will have the knowledge and technical skills to generate new or improved high quality products for the agricultural sector, conduct research/education programs aimed at reducing the incidence of food-borne illnesses and contaminants, promote healthier food choices through research, and provide science-based knowledge to improve the management of soil, water and rangeland resources and enhance the environment.

## Project Activities & Beneficiaries

A main priority of TAMUK is quality undergraduate education. A disadvantage shared by almost all baccalaureate Hispanic students is a lack of "hands-on" work experience that will prepare them for future employability. This project provides students with technical training using high-tech lab equipment, then provides financial support to stay in school and obtain research training under the direction of a faculty member in their field of study. The student research aides present their research results at professional meetings which provides them public speaking experience. The scientific community benefits by having well trained individuals for science-oriented careers or students prepared for graduate school.

## Results and Measurable Outcomes

The major product results/outcomes from this project is the graduation of highly knowledgeable, technically skilled students. The beneficial aspect of this grant is the emphasis on hands-on education and career development to better train a primarily Hispanic, underserved South Texas student population. Given past experience with similar research mentorship programs provided by faculty and scientists at TAMUK and TAES (see table below), we expect a high percentage of students to continue into M.S. and Ph.D. programs after graduation. This project will increase the number of underrepresented students obtaining advanced degrees and assuming leadership roles in the agriculture and food sciences. An additional output/result arising from this project is increased research and educational collaboration between a Hispanic Serving Institution (TAMUK), state government (TAES) and Federal government (USDA-NRCS and USDA-APHIS) entities.

## Academic & Career Progress of Students in Program

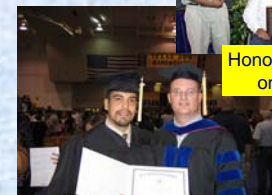
Names of HSI Funded Students	Status When in Program	Minority in Science	Year of Graduation	Graduate School Currently Enrolled	Employed in field? and/or Major Discipline
Rain Uskoo	M.S.	Yes	2009	PH.D. TAMUK	Food Health
LeeRoy Rock Luna	M.S.	Yes	2008	M.S. TAMUK	Yes-Citrus Industry
Jill Langrebe	B.S.	Yes	2006	M.S. TAMUK	Animal Science
Kimberley Cottant	B.S.	Yes	2006	M.S. TAMUK	Animal Science
Marcella Torres	B.S.	Yes	2007		Animal Science
Andrea Galindo	B.S.	Yes	2007	Plans for M.S.	Food Health
Jose Reyes	B.S.	Yes	2006		Yes-Horticulture
Delfino Rodriguez	B.S.	Yes	2006	M.S. TAMUK	Horticultural Science
Osair Bejar	B.S.	Yes	2006		Yes-Biology Teacher
Carlos Pena	B.S.	Yes	2007		Yes-Crop Sciences
Javier Yela	B.S.	Yes	2006		Yes-Ag Science
Eli Borrego	B.S.	Yes	2008	Plans for M.S.	Plant Science
Bryan Shook	B.S.	No	2008	Plans for M.S.	Yes USDA-NRCS
Justin Tanner	B.S.	No	2008		Horticulture Science
Uma Madhura	M.S.	Yes	2007		Animal Science
Elizabeth Gonzales	B.S.	Yes	2007	M.S. TAMUK	Animal Science
Noe Saenz	B.S.	Yes	2008		GIS-Geosciences
Orlando Gonzalez	B.S.	Yes	2008		GIS-Geosciences
Antonio Rios	B.S.	Yes	2008		Horticulture Science
George Lozano	B.S.	Yes	2008	Plans for M.S.	Horticulture Science



**Ronald E. McNair Research Scholars**



**Honored Graduates Continuing on to Master's Programs**



## Dissemination Plans

The project and subsequent results will be disseminated through multiple mechanisms. Information regarding program existence and student success within the program will be posted on the College of Agriculture and Human Sciences website highlighting past student projects and presentations funded by the USDA-HSI program ([aghs.tamuk.edu/research\\_hsi02.html](http://aghs.tamuk.edu/research_hsi02.html)). This website will be updated with new student results and accomplishments. Moreover, undergraduate and graduate students at TAMUK will receive information about the program through personal communication with faculty, classroom announcements, and postings in the College of Agriculture and Human Sciences. Dissemination of program results will also occur at the regional and national level through student presentations at professional conferences and peer-reviewed publications.



**Experimental Techniques in Research Training Course**



**US Hispanic & Mexican National Student Research Collaboration**



**Faculty-Student Mentoring**



**Field and Lab Oriented Research**



**Club Presidency Leadership**



**Student Awards for Research**