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The University of Texas
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.....
Center for Sustainable Agriculture
& Rural Advancement

THE
UNIVERSITY OF TEXAS
RIO GRANDE VALLEY

OFFICE OF THE
EXECUTIVE VICE PRESIDENT
FOR RESEARCH,
GRADUATE STUDIES, AND
NEW PROGRAM
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Program Information:
The SARA Report shares
the research, education,
outreach, and extension
activities in
sustainable agriculture
and rural advancement
at UTRGV

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To share feedback/questions or to join our mailing list, please e-mail Dahlia Vela at dahlia.vela@utrgv.edu.

Research & Education

1. USDA grant proposes institute for professional development in agroecology

SARA co-director, Dr. Alex Racelis, recently submitted a proposal to the USDA Agriculture and Food Research Initiative's Education and Workforce Development Program to establish the Agroecology Professional Development Institute (APDI) at UTRGV. The proposed APDI would expose local-area high-school STEM teachers to real-world, locally-relevant agricultural issues through the coordination of field trips and visits to research farms and other locations across the region. Teachers would learn about ongoing research and careers in agriculture, and use these visits as foundations for culturally relevant pedagogy in relevant STEM courses. More than 10 local school districts have signed support letters for this initiative. SARA will help support the proposed institute by helping coordinate visits to USDA and other research facilities. For more information, contact Mr. Tim Sears at tim.sears@utrgv.edu or Dr. Alex Racelis at alexis.racelis@utrgv.edu.

2. Soil Ecology Lab has a new lab space and Instagram page

The Soil Ecology Lab, led by Dr. Engil Pereira, has recently moved to the new wing of the Science Building. The lab will be studying the interactions between soil biota, nutrients, and crop management. For more information on the lab's activities and interests, you can follow their Instagram page where they share highlights from field and laboratory work: www.instagram.com/UTRGV_SoilEcology. "We hope that through social media we can not only expose our work to a broad audience, but also attract student interest to learn about soil science," says Dr. Pereira.

3. CoS Seed Grant to study the composition of soil microorganisms in RGV soils

The College of Sciences granted Dr. Engil Pereira (SEEMS) and Dr. Kristine Lowe (Biology Dept.) a Research Enhancement Seed Grant to study the distribution of microorganisms in Rio Grande Valley (RGV) soils. Master's student Eli Ruiz will collect soil samples across a variety of soil types in the RGV and use state-of-the-art molecular techniques to identify microbial habitat preferences. Soil microorganisms perform many important functions such as mineralization of plant nutrients and degradation of toxic compounds. Findings from this study will improve the understanding of microbial metabolic potential under a variety of soil conditions and resource availability.

4. Teaching abroad: Dr. Pereira engages Brazilian students with soil microbiology

Over the summer, Dr. Pereira spent two weeks teaching a course to graduate students in Agricultural Sciences at Sao Paulo State University (UNESP) in Ilha Solteira, Brazil, located in the northwestern region of the state of Sao Paulo. The course introduced the theoretical and practical background of molecular methods used in soil microbiology, including DNA extractions, gene detection, and gel electrophoresis. The trip was also an opportunity to touch base with research partners. "It was great to see the progress of some collaborative projects and plan future research tasks," remarked Dr. Pereira. As for the future of the teaching activities, Dr. Pereira says, "I hope this collaboration can grow into an inter-institutional partnership to one day bring UTRGV students for a summer class and expose them to agriculture in areas with distinct soil and climatic challenges". Funding was provided through UNESP's program for visiting professors.

5. USDA grant proposes student-led research in on-farm nanomaterials

Associate professor Dr. Yuanbing Mao, a SARA-affiliated faculty member, recently submitted a proposal to the USDA Agriculture and Food Research Initiative's Education and Workforce Development Program

to establish student-led research on the exploration of novel nanomaterials to remediate the micro-environment of the saline-alkaline soil with enhanced retaining capacity in the Rio Grande Valley. The proposed project, entitled *“Exploration of NanoFARM (Nanosized Food and Agriculture Relevant Materials) for the Rio Grande Valley of South Texas”*, can play an important role qualifying under-graduate students for careers related to food, agriculture, and natural resources. SARA is committed to supporting this proposed project through outreach, administrative, and engagement activities. For more information on this proposal, contact Dr. Yuanbing Mao at yuanbing.mao@utrgv.edu.

6. UTRGV offers new BS major in Sustainable Agriculture and Food Systems

Beginning this fall, The University of Texas Rio Grande Valley (UTRGV) will offer a brand-new Bachelor of Science major in Sustainable Agriculture and Food Systems, adding to the master’s degree already offered by UTRGV in Agricultural, Environmental, and Sustainable Sciences. The new bachelor’s degree will offer four tracks, including: Agriculture and Ecology, Food and Health, Food and Society, and Business and Policy. This new interdisciplinary major includes courses that will be delivered from four colleges—College of Sciences, College of Health Affairs, College of Liberal Arts, and the Robert C. Vackar College of Business & Entrepreneurship. Dr. Christopher Gabler, assistant professor in the UTRGV School of Earth, Environmental, and Marine Sciences (SEEMS), will serve as program director for this new undergraduate degree. “Our hope is that this program will grow enrollment at UTRGV by offering an obtainable agricultural degree right here in the Valley, and keep those interested in this topic here to serve the community,” stated Dr. Gabler. For more detailed information, see the entire article by Valley Morning Star journalist Vicky Brito at <https://www.utrgv.edu/en-us/about-utrgv/news/press-releases/2018/july-18-utrgv-gains-new-interdisciplinary-major-in-sustainable-agriculture-and-food-systems/index.htm>

Learn more about how to apply to UTRGV by calling 888-882-4026 or 956-882-8983 or by emailing admissions@utrgv.edu. Learn more about how to apply to the College of Sciences by calling 956-665-2404 or 956-882-6701 or emailing cos@utrgv.edu.

7. Edinburg Research Garden prepares for USDA-funded high-tunnel hoop house

The certified-organic research garden at UTRGV’s Edinburg campus will soon include a high-tunnel hoop house to assist UTRGV students doing research in organic and sustainable agriculture. The 2,100 sq. ft. hoop house will be constructed near the northwest corner of the Agroecology Research & Community Gardens and will complement the existing greenhouse on the south end of the Gardens. As the hoop house is constructed, UTRGV’s Center for Sustainable Agriculture and Rural Advancement (SARA) will participate in providing a two-day workshop on hoop-house construction.

Hoop houses are a type of greenhouse that are relatively inexpensive and allow for higher production and extended growing seasons, increasing on-farm revenues. The hoop house will also allow UTRGV agricultural researchers to better control crop-production variables, and to assist farmers in developing best practices for high-tunnel production in the Rio Grande Valley of South Texas. “Much of the research done on hoop-house production focuses on the cooler regions of the U.S. With this on-site hoop house, we should be able to make significant contributions to best practices for hoop-house production in the sub-tropical Rio Grande Valley,” states SARA co-director Dr. Alex Racelis.

Funding for the high-tunnel hoop house is being generously provided by USDA’s Natural Resources Conservation Service (NRCS). For more information on this project, please contact Dr. Alex Racelis at alexis.racelis@usda.gov

8. UTRGV engineering student presents energy-audit findings to corporate leadership

Anality Trevino, a senior in UTRGV's mechanical-engineering program, recently presented the results of energy audits done for Valley Telephone Cooperative, Inc. (VTCI), a South Texas telecommunications company headquartered in Raymondville, Texas. VTCI is a growing telecommunications company in the South Texas region with over \$100 million in annual revenues and 75 building structures. The energy audits, which UTRGV engineering students helped develop, demonstrated that changing to LED lighting in 10 of these building structures would save \$71,000 over a 10-year period. Anality presented to the CEO, CFO, and COO of the telecommunications company, "presenting to corporate leadership was a bit scary," stated Trevino, "but it went well, and I learned from the experience."

9. SARA supports proposal for post-doctoral fellowship plan

UTRGV's Center for Sustainable Agriculture and Rural Advancement (SARA) recently supported a proposal submitted by doctoral candidate Ms. Hannah Gray (University of Minnesota) to USDA's Education and Workforce Development Program for her post-doctoral fellowship plan. Her proposed research builds on her budding expertise in agroecology and pest management, with the ultimate goals of uncovering environmental and ecological drivers of pest population viability and helping address some of the challenges faced by local, sustainable agriculturalists in the Rio Grande Valley and beyond. SARA has pledged to help Hannah find opportunities to collaborate with local area farms and local field research sites, and assist her with technical staff and other resources, including videographers, information-technology specialists, and agriculture specialists.

10. Students join MS program in Sustainable Agriculture through fellowships

The USDA-funded *Integrated Approach to Graduate Research, Education, and Engagement* (IAGREE) includes a comprehensive fellowship plan to recruit eight students into UTRGV's newly developed master's program in Agriculture, Environmental, and Sustainability Sciences (AESS). Students beginning the AESS this fall semester include Ashley Bowers, Allison Kaika, and Joy Youwakim.

Ashley Bowers graduated this summer from the University of Florida with a Bachelor of Science in Sustainability and the Built Environment. She is interested in finding architectural and technological solutions for climate change with a focus on agriculture, "I'm very interested in studying how the entire system can be more efficient and less detrimental to the earth," states Bowers. Allison Kaika graduated from Boston College this past May with a major in Environmental Studies, a concentration in Food and Water Systems, and a minor in Management and Leadership. She is interested in quality-of-life and social issues experienced by farmers and in documenting successful farm models. Joy Youwakim received a BA in Economics from UT Austin this past May and is very passionate about the intersection of food, economics, mathematics, and people.

For more information about IAGREE and its fellowships, contact SARA co-director Dr. Alex Racelis at alexis.racelis@utrgv.edu

11. Graduate student in AESS to focus on use of unmanned aerial systems in agriculture

Matthew Kutugata is beginning his MS degree this fall semester at UTRGV in Agricultural, Environmental, and Sustainability Sciences (AESS) while working on a USDA grant-funded project that focuses on the use of unmanned aerial systems (UAS) in agriculture. The UAS project is operated in partnership by UTRGV and Texas A&M University-Corpus Christi. Matt states that, "unmanned aerial systems are becoming an important agricultural tool used to estimate crop yield, weed pressure, and plant stress among other things. I'm excited about working with this innovative technology to help bring actionable results to farmers in the Rio Grande Valley." Kutugata received his BS degree in 2012 from the University of Texas

at Austin, and his research interests include using unmanned aerial information to help identify sustainable agriculture practices. Matt Kutugata can be reached at matthew.kutugata01@utrgv.edu.

12. Participatory research is developing better wines from South Texas grapes

UTRGV's Center for Sustainable Agriculture and Rural Advancement (SARA) is working closely with Rio Farms, Inc. and Bonita Flats Vineyard and Winery to develop the best possible wines from grapes grown in the Rio Grande Valley of South Texas. The South Texas Region is plagued by Pierce's Disease, which is a vector-borne bacterial infection that kills most grape varieties and prevents the commercial growing of classic *Vitis vinifera* wine grapes. South Texas vineyards must use disease-resistant hybrid grapes developed by crossing *Vitis vinifera* with native American grapes. However, winemakers have been unable to make great wines with these hybrid grapes. "This season we have over 70 side-by-side comparisons using mostly disease-resistant hybrid grapes such as Black Spanish, Blanc du Bois, Convent, and Champanel. We're using wild Mustang grapes too. These side-by-side comparisons are done by changing one variable at a time, creating large data sets. If great wine can be made from local hybrid grapes, we'll figure it out," states SARA co-director George Bennack.

13. SARA seeks graduate student in AESS for research in enology

The Center for Sustainable Agriculture and Rural Advancement (SARA) and the Agroecology Lab at the University of Texas Rio Grande Valley (UTRGV) are seeking a student interested in pursuing an M.S. in Agricultural, Environmental, and Sustainability Science (AESS), starting spring semester 2019. A living stipend plus tuition support for two years will be available for top candidates, including international students, via a concurrent application to the UTRGV Presidential Graduate Research Fellowship.

The focus of this position will be enology—the science and study of wine and winemaking—with an emphasis on wines from: 1) Grapes that are resistant to Pierce's Disease that are currently grown in the Rio Grande Valley (Blanc du Bois and Black Spanish grapes); 2) Convent grapes developed by sisters of the Incarnate Word and Blessed Sacrament Convent in Brownsville; 3) Wild grapes and fruits native to the Tamaulipan Mezquital Ecoregion, including Mustang Grapes, Prickly Pear, Barbados Cherry, and Mesquite-bean pods; 4) Peruvian Apples and other fruit from disease- and drought-resistant *Cereus repandus*, and; 5) Grapefruit and oranges grown in the Rio Grande Valley.

The Rio Grande Valley and other areas of South Texas aim to develop a notable wine grape in an industry dominated by *Vitis vinifera*—the classic wine grape grown in Europe, California, and elsewhere that cannot be grown in South Texas due to disease pressures. UTRGV, through SARA, is in a unique position to positively impact grape and wine growing in the RGV and South Texas through the analysis of existing, detailed data sets collected by SARA from over 150 trial batches of wine made from grapes, citrus, wild fruit, and other fruits grown in the RGV of South Texas. As part of their research, graduate students will help investigate the best yeast and bacterial fermentations for these local and native fruits, as well as the residual sugars, acid profiles, pH, titratable acidity, volatile acidity, ethanol content, free and total SO₂, and other chemical factors that affect wine quality, including color, aroma, taste, and shelf life. This is a community-engaged research collaboration with SARA, Rio Farms, Inc., Dos Rios Winery, Bonita Flats Vineyard and Winery, and other stakeholders.

Application deadline is October 31, 2018 for a spring admission in January 2019. Interested applicants should send a letter of interest, CV, and GRE scores to Dr. Alexis Racelis, Assistant Professor, at alexis.racelis@utrgv.edu

Outreach & Extension

14. SARA moves organizationally within UTRGV and to a new location

UTRGV's Center for Sustainable Agriculture and Rural Advancement (SARA) has recently moved organizationally from the College of Sciences to the Office of the Executive VP for Research, Graduate Studies and New Program Development. Co-directors for SARA continue to be Dr. Alex Racelis and George Bennack. SARA staff have also recently moved their office locations to the ECESS Building in the northwest corner of Expressway 281 and Freddy Gonzalez. For more information, or to visit the new location, please contact Dahlia Vela at dahlia.vela@utrgv.edu.

15. Planning begins for the 2018 Texas Hispanic Farmer and Rancher Conference

UTRGV's Center for Sustainable Agriculture and Rural Advancement (SARA) is collaborating with other stakeholders to host the 2018 Texas Hispanic Farmer and Rancher Conference tentatively scheduled for December 6 and 7 at the Casa de Palmas Renaissance Hotel in McAllen, Texas. While the National Center for Appropriate Technology (NCAT) will be the lead organizer, SARA will help support the conference, along with the Texas/Mexico Border Coalition CBO (TMBC), Hope for Small Farm Sustainability (HOPE), and the South Texas Young Farmers Coalition. For more information on this planned conference, contact Colin Cain at colin.cain@utrgv.edu

16. SARA partners with Farm and Ranch Freedom Alliance to hold workshop

The UTRGV Texas Rural Cooperative Center (TRCC), a SARA program, has partnered with the Farm and Ranch Freedom Alliance (FARFA) to develop a full-day workshop for farmers and ranchers looking to develop cooperative approaches to producing, processing, and marketing their products. FARFA is a national organization that supports independent family farmers and protects a healthy and productive food supply for American consumers. The workshop will explore how cooperatives can build strong, resilient, farmer-and-rancher networks as well as a committed, reliable, customer base. Topics include:

- Reducing expenses and increasing market access through co-ops
- Co-op start-up process
- Roundtable discussion with existing Texas agricultural co-op participants
- Co-op business planning and design
- Facilitated mentoring sessions with experienced cooperative leaders.

This workshop will take place on Sunday, October 14, in McKinney, Texas, and is a part of FARFA's annual Farm and Food Leadership Conference. To register for the conference and the workshop, visit FARFA's [website](#). For more information on the workshop, contact Colin Cain at colin.cain@utrgv.edu

17. TRCC client vies for H-E-B's prestigious award; Quest for Texas Best

H-E-B has named Cappadona Ranch, a client of the Texas Rural Cooperative Center (TRCC), as one of the finalists in its annual Primo Picks Quest for Texas Best, which is an annual competition for Texas specialty-food purveyors to get their goods on H-E-B shelves. Cappadona Ranch, located about 25 miles north of Edinburg, produces an array of food products from mesquite beans. Owners Victoria and Justin Cappadona use the mesquite beans on their ranch to produce jellies, coffee, flour, and other value-added products. TRCC, a SARA program, helped Cappadona Ranch launch their business and expand their value-added production by helping them secure a USDA Value-Added Producer Grant (VAPG). TRCC partnered with the Small Business Development Center's Rural Business Program to provide assistance in business

planning, feasibility, market strategy, and financial modeling to help Victoria and Justin with their start-up and expansion.

Visit the Cappadona Ranch [website](#) and try their mesquite-bean products. For more information on TRCC's assistance to Cappadona Ranch, please contact Colin Cain at colin.cain@utrgv.edu

18. TRCC partners with non-profit to provide financial-planning workshops for farmers

UTRGV's Texas Rural Cooperative Center (TRCC), a SARA program, has partnered with HOPE for Small Farm Sustainability (HOPE), a community-based non-profit organization focusing on food security and beginning-farmer incubation, to provide four Spanish-language trainings on business and financial planning. These interactive sessions will focus on collaborative approaches to farm planning for Hispanic producers, including production planning, budgeting and projecting sales, and cooperative marketing. These trainings will be held at the HOPE headquarters in Harlingen, Texas, on September 7th. For more information on the workshop, please contact Colin Cain at colin.cain@utrgv.edu

19. SARA and UTRGV's B3 Institute experience sustainable agriculture in Colombia

Juan Raygoza, project director for SARA's Beginning Farmer and Rancher Development Program, and Francisco Guajardo, Ph.D., Executive Director for UTRGV's B3 Institute, traveled to Colombia, South America, in late July to attend the IV Curso Internacional, *Restauración Agroecológica, Resiliencia frente al Cambio Climático*. The trip allowed for an international exchange of ideas on the environmental, economic, and social sustainability of agriculture. In addition to discussing climate change, the two UTRGV program directors toured agricultural value-added operations where Colombian farmers processed cocoa beans, preserved vegetables and fruit, and produced soil amendments and bio-pesticides to grow tomatoes and medicinal herbs. Also toured were silvopastoral systems characterized by an integration of trees and native forages, with livestock production, to create a more resilient agroecological system.

The travel to Colombia helped build institutional relationships among CIPAV (Centro para la Investigación en Sistemas Sostenibles de Producción Agropecuaria) in Colombia, UC Berkeley, and UT Rio Grande Valley. Francisco Guajardo, Ph.D., states, "This experience helps UTRGV gain insight into best practices relative to agroecology in places where innovative and cutting-edge work is being done. But the experience also allows us to build relationships and partnerships that both bring the world to UTRGV and take UTRGV to the world. Es trabajo que vale la pena."

20. SARA submits two grant proposals for funding related to cooperative development

UTRGV's Center for Sustainable Agriculture and Rural Advancement (SARA) recently submitted two proposals to USDA Rural Development related to rural-cooperative and rural-economic development. One proposal was for a \$270,000 one-year cooperative-development project, supported by \$200,000 in funding from the Rural Cooperative Development Grant (RCDG) Program, and the other proposal was for \$175,000 to assist minority groups in their efforts to establish rural cooperatives and other mutually-owned rural businesses. For more information about these two grant proposals to USDA Rural Development, contact Colin Cain at colin.cain@utrgv.edu

21. SARA assists Laredo College with the construction of on-campus hoop house

UTRGV's Center for Sustainable Agriculture and Rural Advancement (SARA) assisted Laredo College (LC) with the construction of the College's on-campus hoop house, which was provided to LC through a \$10,500 grant from USDA's Natural Resources Conservation Service (NRCS) for this Urban Conservation Project. Hoop houses are a type of greenhouse that are relatively inexpensive and allow for higher production and extended growing seasons. SARA agriculture specialist Cruz Salinas helped construct the

hoop house, which is located at the LC Environmental Science Center, along with a community garden. States Dr. Nora Garza, VP for Resource Development at Laredo College, “Cruz was the best, so knowledgeable and kind. We appreciate the assistance that UTRGV has provided. This new hoop house will help Laredo College support sustainable agriculture and provide our students with hands-on learning.” For more information on hoop house construction, contact Cruz Salinas at cruz.salinas@utrgv.edu.

22. SARA agriculture specialist assists USDA with technical training

Cruz Salinas, an agriculture specialist with UTRGV’s Center for Sustainable Agriculture and Rural Advancement (SARA), assisted USDA’s Natural Resources Conservation Service (NRCS) and the Minority Landowner Magazine with training presentations on June 8th and 9th. On June 8, Salinas provided training, held at Bentsen Rio Grande Valley State Park, on greenhouse production of fruits and vegetables and on drip irrigation. On June 9, Salinas supervised a team of training participants, at Sunshine’s Bounty Farm in Palmview, on the construction of a cost-effective greenhouse called a high-tunnel hoop house. For more information on hoop house design and construction, contact cruz.salinas@utrgv.edu

SARA Staff in the News

Dahlia Vela and Catalina Resto have been designated as PeopleSoft “Super Users” and will be serving as resources in our division and department for providing assistance with PeopleSoft 9.2 applications. They have both received extensive training in PeopleSoft 9.2 in recent months. On August 31, Hector Solis received a Certificate of Achievement demonstrating completion of the CompTIA Security+ Boot Camp, which covers a host of IT security issues. Colin Cain led efforts to submit two USDA proposals requesting \$375,000 for rural and cooperative development (see article #20), with both competitive proposals due in late July on the same day! Juan Raygoza traveled to Colombia, South America, in late July to attend a conference that provided an international exchange of ideas on the environmental, economic, and social sustainability of agriculture (see article #19). Cruz Salinas received accolades for his expertise and assistance with hoop-house construction from both Laredo College and USDA (see articles #21 and 22). George Bennack has registered for intensive training from Texas Tech University on Winery Design, Utilities, and Operations, which will allow UTRGV’s Center for Sustainable Agriculture and Rural Development (SARA) to better support research in enology (see articles #12 and 13) and the development of future USDA Value-Added Producer Grants.