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Contact Information:

pes_social@ad.nmsu.edu

575-646-3405



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Introduction



Based on the trees and shrubs that already were blooming, spring seemed to have prematurely emerged. While we know that we will transition to summer, I wonder whether the newly emerged flowers and swollen buds will succumb to a cold event. As of this writing, that has not happened, and the chances of this happening are getting slimmer. Interestingly, what causes early spring and how we can protect economically –important crops from early springs frosts are two of the many questions that scientists in Plant and Environmental Sciences are addressing.

In this newsletter, you will notice that one of our faculty initiated his work despite the weather, and two faculty had peer-reviewed articles that graced the cover of the journal in which their paper was published. You will also observe that our faculty continued their international work and the friends of the department supported another successful winter luncheon.

Equally certain as a transition in season, is the transition that occurs in academic departments. Last year, Dr. Suman Bagga, the Senior Agriculture Specialist who work with Dr. Gopalan, transitioned into retirement.

This newsletter's faculty profile also is about a transition that of Dr. Micheal 'Mick' O'Neill who retired at the beginning of this year. We thank Mick for the many contributions he made to the Department of Plant and Environmental Sciences. In speaking of transitions, several of our students graduated last fall and this prompts me to let you know that this newsletter has an article about the Plant and Environmental Sciences Student Liaison Program. This program is designed to support and strengthen the recruitment and retention efforts that are underway in the department. As students transition out of the department, we will need to attract the new cohort of students into the department.

Dr. Rolston St. Hilaire
Department Head

A handwritten signature in blue ink that reads "Rolston St. Hilaire". The signature is written in a cursive, flowing style.

Students Activity, Awards and Achievements

All PES Graduates for Fall 2017

Bachelor of Science in Agriculture

HORT- Alfredo Aragon –Dr. Picchioni
AGRO- Ariel Arrizon Carranza –Dr. Grover
AGRO/HORT- Alfonso Sanchez Carranza Dr. Grover
AGRO- Joshua Elmore –Dr. Holguin
HORT- Samantha Hilborn –Dr. Picchioni
AGRO- Crystal Mendoza –Dr. Cramer
HORT- Susan Muilenberg –Dr. Picchioni
HORT- Hannah Rheay –Dr. Cramer
HORT- Jose Rodriguez –Dr. St. Hilaire
HORT/AGRO- Daniel Zaragosa Patino –Dr. Grover/Dr. Picchioni

Bachelor of Science in Environmental Science

Kaitlin Cordova –Dr. Carroll
Jaylen Fuentes –Dr. Carroll

Bachelor of Science in Genetics and Biotechnology

Christian Ortiz –Dr. O’Connell

Master of Science in Plant & Environmental Sciences

Gaspar Martinez –Dr. Zhang

Master of Science in Horticulture

Rachel Gioannini –Dr. St. Hilaire
Kimberly Rodriguez –Dr. Bosland

Master of Science in Water Science Management

Logan Bridges –Dr. Carroll
Justin Milavec –Dr. Carroll

PES Graduation Ceremony – December 2017



Bottom (left to right) Ariel Carranza, Christian Ortiz, Rachel Gioannini, Hannah Rheay, Kimberly Rodriguez, Top (right to left) Samantha Hilborn, Gaspar Martinez, Alfonso Carranza, Jose Rodriguez, Susan Muilenberg, Joshua Elmore, Daniel Patino

Students Activity, Awards and Achievement

EPSGSO Activity Report

Jack McCoy



The Environmental and Plant Science Graduate Student Organization (EPSGSO) has been very active this past year. In spring semester 2016, EPSGSO members voted to change the name (formerly Plant and Environmental Science GSO) to achieve greater inclusivity for our EPPWS members. In fall semester 2016, we hosted our annual fall plant sale, with numerous varieties of cool-season vegetables with the annual pumpkin sale following soon after. With help from our members, over 1,200 lbs of pumpkins were harvested from the Student Education and Research Garden and sold to both the local and campus communities.

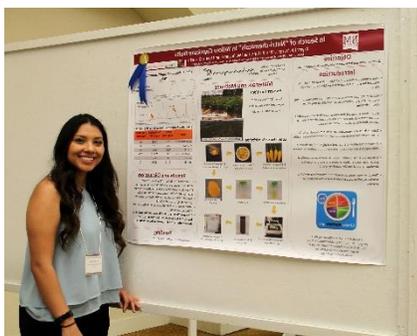
Spring 2017 ended with a potluck hosted by the new advisor, Dr. Ivette Guzman, and

recognition of our graduating members, Kimberly Rodriguez, Rachel Gioannini, Gasper Martinez, and Paul Lambert. It was a success for both the EPSGSO and Skeen Hall community bringing researchers and students together in an informal setting, creating a greater sense of community. The start of 2018 has been exciting for the EPSGSO as we began a new fundraising venture, growing over 100 flats of vegetable starts for local farmers including La Semilla Food Center and Sol y Tierra Growers Cooperative. This cooperation creates a mutually beneficial relationship where local farmers can utilize NMSU facilities to improve production and EPSGSO members can form relationships in the local food system and learn about real commercial growth practices.

The EPSGSO will also host a spring plant sale Saturday, April 7th, at the Fabian Garcia Science Center. Numerous varieties of summer garden plants will be offered including tomatoes, peppers, squash, cucumber, herbs, flowers, and more! Keep an eye out for our 2nd annual spring potluck, happening near the end of the semester.

PES Student wins first place in conference poster presentation

Danise Coon



Krystal Vargas presenting poster at the NM Chile Conference.

Every year at the New Mexico Chile Conference a student research poster session is held during the afternoon after the program presentations. Any student who is currently working on a project that involves chile peppers is invited to create and present a poster on their research. For several years the NMSU Agriculture Experiment Station has generously provided the winning poster recipient with a \$1500 stipend to be used towards presenting the research poster at a professional research conference of their choosing. This year the winning poster was presented by Krystal Vargas. Krystal is an undergraduate researcher and a master's accelerated program student majoring in Horticulture and minoring in Nutrition. Krystal is partially funded through the work-study and USDA NIFA sponsored Broadening

Agricultural Science for Hispanics or BASE. She will be presenting her Chile research titled “In Search of Nutri-chemicals in Yellow Capsicum Fruits” at the 2018 American Society for Horticultural Science Conference in Washington, DC.

Research

PES Faculty with a group of students travel to Oak Ridge National Laboratory KC Carroll



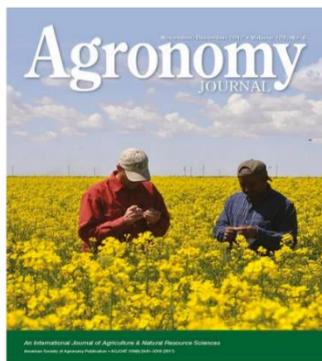
“Despite the cyclone bomb and freezing temperatures, Kenneth (KC) Carroll and an interdisciplinary team of students (Chia-Hsing Tsai (Water Science & Management Grad. Student), Justin Milavec (Water Science & Management Grad. Student), Julian C. Umeh (Chemical Engineering Grad. Student), and Simon Blevins (Soil Science Undergraduate Student) shown (right to left) in the photo traveled to the Oak Ridge National Lab (ORNL) and injected a salt tracer solution into a contaminated stream to quantify transport and help ORNL investigate contamination sources. The other photo illustrates the tracer monitoring with sensors instrumented in the stream and water sample collection.”

Dr. Nicole Pietrasiak’s Article makes the cover of Phycology Journal Rolston St Hilaire



Congratulation to Sergei Shalygin and Nicole Pietrasiak for their cover article (cited below). Shalygin, S., Shalygina, R., Johansen, J.R., Pietrasiak, N., Berrendero, E., Bohunická, M., Mareš, J. & Sheil, C.A. 2017. *Cyanomagarita* gen nov. (Nostocales, Cyanobacteria): Convergent evolution resulting in a cryptic genus. *Journal of Phycology*, 53: 762-777. The cover page of the *Journal of Phycology* in which their article was published is now on PES’ Wall of Cover Pages on the first floor of Skeen Hall.

Dr. Sangu Angadi’s Article makes the cover page of Agronomy Journal Rolston St Hilaire



Congratulation to Sultan and Sangu for their article (cited below) that made the cover of *Agronomy Journal*. The cover page of *Agronomy Journal* in which their article was published is now on PES’ Wall of Cover Pages on the first floor of Skeen Hall. Citation: Begna S., S. Angadi, M. Stamm, and A. Mesbah. 2017. Winter canola: a potential dual-purpose crop for the United States southern Great Plains. *Agronomy Journal* 109:2508-2520. doi:10.2134/agronj2017.02.0093.

Outreach & Recruiting

PES Student Liaison Program

Christopher Cramer



PES student liaisons: Evan Evens and Taylor Hartshorne

In October of 2017, the PES Student Liaison Program was created. The objective of the program is to have undergraduate student majors within the department promote all aspects of the department to prospective students, recruit prospective students to the department, and represent the department at different functions. Simon Blevins, Evan Evens, and Taylor Hartshorne were chosen as the first cohort of liaisons. Simon is a junior majoring in soils; Evan is a senior majoring in horticulture; and Taylor is a sophomore majoring in Genetics and Biotechnology. Since they started, the three have met with local high school students, spoken with 4-H students, given tours of Skeen Hall and the NMSU campus, and contacted numerous prospective students whom have expressed an interest in NMSU and one of the majors offered by PES. If you know of an event that would benefit from or a prospective student who like to meet one of the liaisons, please contact Dr. Chris Cramer (cscramer@nmsu.edu, 575-646-2657).

ACES faculty visits Northwest A&F University, China

Manoj Shukla



Dr. Shukla giving a talk at Northwest A&F University

Dr. Manoj Shukla, a Professor of Soil Physics, visited Northwest A&F University, Yangling, China from July 17- Aug 3, 2017 at the invitation of the University. Dr. Shukla taught a course on Natural Resources (Soil and Water). About 32 students attended the intensive summer course (3-cr). Dr. Shukla also visited the Agriculture Experiment Station of NWAU Univ., Buddhist Pagoda, and Qin mountains. During the visit, Dr. Shukla interacted with several faculty members and discussed opportunities for joint research and student exchange. A tentative plan was prepared for the visit of undergraduate students from NWAU University during the summer of 2018 and 2019. Currently, Dr. Li Peiling a faculty member at Jiangxi Agricultural University and NWAU University Alum is doing a sabbatical with Dr. Shukla in the PES department.

PES faculty at the Sonoma Elementary STEM Night

Kenneth Carroll



“Kenneth Carroll (PES) taught elementary students about rocks, soils, seeds, and water at the Sonoma Elementary STEM Night Friday, Feb. 23. The students were interested to know which seeds were used for agriculture in NM, and they got to see the rocks of the Organ Mountains and the soils that form when they erode. Many were interested in becoming future scientists.”

ACES faculty visits Israel

Manoj Shukla



Dr. Manoj Shukla, a Professor of Soil Physics, visited Israel from June 1-14 as part of the Faculty Fellowship sponsored by Jewish National Fund. Dr. Shukla visited Tel Aviv, Haifa, Jerusalem, Golan Heights, Negev, and others. Universities visited include Technion, Heifa, Tel Aviv, Hebrew, and Ben Gurion. He also visited Tel Hai College, Bar Ilan, and Volcani Center. During the visit, Dr. Shukla interacted with several faculty members and discussed opportunities for joint research and student exchange. Israel has made extraordinary progress in reusing and recycling the available water through desalination and treatments. This has solidified Israel's standing as a leader in water conservation and agriculture. Arava International Center for Agricultural Training has a special program for young farmers on sustainable agriculture. Faculty visited ministry of foreign affairs, parliament, and Dead Sea. They also interacted with a holocaust survivor and two members of the congress. Israel, although originally a desert, has a vast area under agriculture and has all the traits of a highly advanced nation, and a leader in water and salinity management. At the end of the trip, each faculty member planted a tree at the Neot Kedumim Biblical forest. Dr. Shukla gave a talk on June 14th at the Volcani Center on "irrigation water management for water scarce southwestern New Mexico".

PES and AXED at East Picacho Elementary

Kenneth Carroll

AXED and PES combined forces to help East Picacho Elementary school students learn about soils, erosion, and rocks. About 85 second graders got a chance to get their hands dirty on Thursday, March 1 during a field trip to the Zuhl Museum and windmill technology area on the west side of NMSU campus. Faculty and grad students from both departments set up learning stations where the kids could look through a microscope to see nematodes and other soil fauna, practice soil texture-by-feel, identify rocks and see how compost is made. Other lessons included the filtering properties of soil, how covering a soil helps reduce erosion, and what kind of products come from soil. The highlight was getting a personalized tour through the new Zuhl Museum.

April Ulery, Carlos Rosencrans, Nicole Pietrasiak and their students from AXED and PES partnered with Abigail Matter, Mindy Tapia, Jesus Casillas, and Darby Hoffman at East Picacho Elementary School to create this field trip experience for the kids.



Departmental Events

PES Winter-Break Luncheon Had a Great Turnout



The PES Department thanks all who helped make last year's luncheon a success. There were over 60 in attendance!

PES Ice Cream Social



The PES Department thanks all who helped make this year's Ice cream social a success.

Michael K. “Mick” O’Neill, NMSU faculty for over 18 years



When did you start your career at New Mexico State University?

I began my NMSU career in 1999, moving to Farmington with my family as an Assistant Professor in the Agronomy Department and Superintendent at the Agricultural Science Center following the retirement of Joe Gregory. I came to New Mexico State University by a circuitous route having spent the majority of my professional career overseas. I graduated from Concordia University in Montréal with a B.S. in Biology/Chemistry, started an international career in Africa (Ghana and Burkina Faso) with Peace Corps, received my M.S. (1979) and Ph.D. (1982) from the University of Arizona, and then returned to Africa. This included stints in several countries (Mali, Niger, Kenya, and Rwanda) and work with consulting companies, the University of Missouri, and two international agricultural research institutes, the International Research Institute for the Semi-arid Tropics (ICRISAT) based in Hyderabad, India and the World Agroforestry Centre (ICRAF) with headquarters in Nairobi, Kenya.

What classes have you taught and what is your teaching philosophy?

I believe the role of a teacher is both within and outside the classroom. Since I did not hold a formal instructional assignment, all of my teaching has been through other mechanisms. I was the major advisor for several graduate students and sat on the advisory committee for others. I supported internships for Native Americans at ASC Farmington and provided funds to support African Women in Agricultural Development (AWARD) Fellowships through the José Fernández Memorial Chair in Crop Production. As part of a Partners of the Americas project with the Universidad de La Salle – Bogotá, I led an NMSU student/faculty group to Colombia and received a reciprocal student/faculty group from Colombia on the NMSU campus. Continuing my association with La Salle, I taught World Food Security in Bogotá during their 2016 Summer Academy and volunteered for the Farmer-to-Farmer CanDo project with La Salle and Salva Terra in northern Colombia.

Briefly describe the research you have done over the years.

My main research included the use of drip irrigation systems, the adaptation of hybrid poplar for agroforestry systems in arid/semi-arid regions for the production of woody biomass, and the production of oilseed crops for biofuels. My hybrid poplar research is an internationally recognized program with collaborative links through the Western Regional Research Committee dealing with microirrigation, partnerships with colleagues in New Mexico and other states. In addition to my agroforestry work, I also oversaw the crop variety trial program at ASC Farmington. Over the years, I have led variety trial research with alfalfa, soy, and tepary, camelina, canola, chiles, corn, oats, onions, potatoes, sunflower, and wheat (spring and winter). Results from the hybrid poplar program and the variety trials have been disseminated through crop variety releases, journal articles, NMSU variety test reports, book chapters, oral and poster

presentations, and the ASC-Farmington annual report, which is produced on an annual basis with the full compendium of research conducted at the center.

What are some of the notable achievements of your graduate students?

My first graduate student, Dr. Kevin Lombard, successfully completed his Ph.D. program in 2007. Returning to ASC Farmington after a horticultural Leave of Absence in Namibia, Dr. Lombard assumed the joint NMSU – San Juan College faculty position that was developed through the common 2007 MOU. Dr. Lombard developed a unique partnership between a Tier 1 Land Grant University and a Community College. Completing the circle of responsibility, Dr. Lombard accepted the position as Superintendent of ASC Farmington in 2015. Many of my other graduate students and advisees (both in the US and Africa) have made positive contributions in agriculture, education, community development and other fields.

What are some of the highlights of your career?

So many meaningful experiences and positive friendships come to mind as I reflect on my long career both in Africa and in the US. One of the most meaningful experiences for me was during my time as a senior ICRAF scientist in Embu, Kenya. For seven years I worked with a team of forestry and agricultural agencies carrying out extensive on-station and on-farm agroforestry research. A 2005 impact survey conducted five years after I left Embu indicated that over 200,000 farmers in Kenya, Tanzania, Uganda, and Rwanda were using the fodder technologies for increased milk production that my team initiated in the central highlands of Kenya. As superintendent at ASC-Farmington for my initial 10 years, we were able to build the recurrent budget from an annual allocation of \$49,000 to nearly \$300,000 and successfully petitioned the legislature for a supplementary \$300,000 in non-recurrent capital outlay funding. This enhanced budget made possible additional positions at the center for a faculty horticulturist, two exempt staff agricultural research scientists, and two non-exempt agricultural technicians, as well as the acquisition of modern computer systems, software and communications technologies.

My sabbatical leave with the World Agroforestry Centre (ICRAF) provided an opportunity to work in Kenya and Rwanda with international scientists associated with ICRAF and other organizations. This collaborative work culminated in the production of the book, *Rwanda Irrigation Master Plan*, which has over 2450 reads on ResearchGate. This led to several additional assignments in Kenya, participation and presentations at the International Poplar Symposia in China and Italy, the World Forestry Congress in South Africa, the Farmer-to-Farmer Common Pastures volunteer assignment in Mali, and work with the Utopia project, Summer Academy, and Farmer-to-Farmer Can Do project with the Universidad de La Salle in Colombia. As a member of the multi-state research committee working with microirrigation, we received awards of excellence from the Board on Agriculture Assembly, Experiment Station Committee on Organization and Policy and the Western Association of Agricultural Experiment Station Directors. Since 2009, I have been one of several coordinators for the Peace Corps Paul D. Coverdell Fellows and Master's International programs at NMSU for which we received a Certificate of Appreciation from the United States Peace Corps. Above all, I am honored to have been part of the NMSU family for over 18 years, and I look forward to staying in touch with friends and colleagues as I embark on new endeavors.