

# Summer 2022 Newsletter



Department of Plant and Environmental Sciences | <https://aces.nmsu.edu/academics/pes/>

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## Introduction

On May 6<sup>th</sup>, 2022, we celebrated the graduation of twenty-four undergraduates and four graduate students from the department. This graduating class excelled in the face of the challenges that the pandemic brought. In this newsletter, you will notice that one of our students was recognized as the NMSU Alumni Association Outstanding Undergraduate Student and another was recognized as an Outstanding Undergraduate Horticulture Student by the American Society for Horticultural Science. After graduating from the department, our students will be engaged in activities that will range from working at national labs to pursuing their graduate education in the department and at other institutions. I know our graduates will do well. On page two of this newsletter, you can catch up on some of the activities of our former students. I am always delighted to learn of the outstanding accomplishments of our alumni.

In this newsletter, you will notice that our current students and faculty are engaged in co-curricular activities. HortForum students had a successful trip to Tucson and the students raised part of the funds needed to support their participation in this co-curricular activity. Our Soils Judging Team competed at National Soil Judging competition at The Ohio State University from April 19<sup>th</sup> to 23<sup>rd</sup>. Students on our Floriculture Judging team are in the middle of their preparations for participation in the National Floriculture Judging Competition which will be held from July 2<sup>nd</sup> to July 9<sup>th</sup> in Las Vegas, Nevada.

Our group of faculty and students who participated in NASA's Plant the Moon Challenge won the Most Innovative Experiment Award. Briefly, the Plant the Moon Challenge is a NASA-sponsored international science competition. The objective of the competition is to grow crops in lunar highland simulated substrate to make the moon soil habitable. I encourage you to read about this fascinating story on page five.

In speaking of student competitions and co-curricular activities, I thank our faculty and staff who spend many hours mentoring and coaching our students. I also thank our alumni, friends, and supporters of the department who provide financial and other resources in support our student activities.

## Department Head



*Robston Sh. Hilaire*

## In This Issue:



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# SSSA President, Dr. April Ulery, Addresses The Annual Meeting

At the recent Soil Science Society of America meeting in Salt Lake City, President April Ulery caught up with some of our former NMSU students.

In the first photo (left) she is posing with Derrick Platero (Soils – Environmental Management Bachelor of Science in 2019) now working on his graduate degree at the University of Georgia.

The second photo (right) is President April Ulery offering some remarks to the Soil Science Society of America.



**Soil Science Society of America**  
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2021 SSSA President April L. Ulery speaking at the SSSA Awards earlier today at the Annual Meeting in Salt Lake City.

Thank you April for everything you've done for the society!  
#ACSmgt



🌐 25

2 comments

Celebrate

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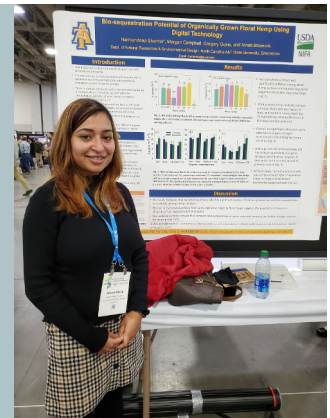
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## PES MS Student Now Employed at the North Carolina Agriculture and Technical University

Harmandeep Sharma received her Master of Science in Plant and Environmental Sciences in 2014 and is now employed at the North Carolina Agriculture and Technical University in the Department of Natural Resources and Environmental Design. Here she is presenting her research entitled

"Bio-sequestration Potential of Organically Grown Floral Hemp Using Digital Technology." For more information on her research, go to:  
<https://www.mdpi.com/2077-0472/10/4/129/htm>



## Former PES Student Listed on the CSA News Cover Page



Debjani Sihi (Emory University), Gaurav Jha (University of California–Davis), and Biswanath Dari (North Carolina A&T State University) use Nix Pro in the field. Photo by Aneesh Chandel.

Former PES Graduate student, Gaurav Jha, is highlighted on the cover page of the CSA News article for his use and promotion of the "Nix Pro" in his study. This tool allows one to "measure soil color, right there in the field, to quantify important soil properties, all without sending soil samples back to the lab..." The Nix Pro is a small handheld color sensor that allows researchers to identify the quantity of iron in soil. This tool is

a spectrometer widely used by painters, graphic, designers, etc., would be a great product to use in a very different field. The study, performed by Jha, Et al., "makes use of the small, inexpensive Nix Pro to create models of soil total iron content. It's a first step for a handy tool that could make life easier for scientists seeking quantifiable iron content measures to make management decisions in the field... Among other projects,

the researchers hope to find correlations between shades of soil color and the species of iron in the soil, whether it's the bioavailable Fe<sup>2+</sup> or the unavailable Fe<sup>3+</sup>. The researchers are also interested in investigating other minerals that influence soil color. For more information, visit: <https://access.onlinelibrary.wiley.com/doi/10.1002/acl2.20050>



# Horticulture Students Tour the Controlled Environment Agriculture Center at the University of Arizona

Eleven students from HORT 300, Hydroponics, recently toured the Controlled Environment Agriculture Center at the University of Arizona in Tucson. Their tour guide was NMSU alumni, Dr. Triston Hooks, who showed them the Mars/Lunar Greenhouse, where plants are growing in simulated systems designed to travel via

rocket to space then be set up to grow plants to feed the space travelers. They were also shown the Vertical Farm which was experimenting with different levels of light. Their last stop was the teaching greenhouse, where Dr. Hooks showed them the large scale NFT systems that are growing tomatoes, cucumbers and peppers.

In the photo, left to right: (Standing) Alberto Lozano, Christopher Gomez, and Anastacio Ortiz. (Kneeling) Mia Herrera, Alia Kee, Rachel Gioannini, Maximo Smith, Tyra Trumble, Katie Overman, Elora Roberts, Cristina Benitez and Alfredo Chavez.



## Plant Sale-Funded Trip Takes Horticulture Students to Tucson

A group of ten Horticulture Forum Club members visited Tucson at the beginning of Spring Break, March 5-8<sup>th</sup>. The days were packed with fun and activities, including visits to Tucson Botanical Garden, Tohono Chul Garden, Biosphere Two, Agua Caliente Park, a hike in Saguaro National Park East and two nurseries. The students also took the tram up to the top of Sabino Canyon and some hiked back to the visitor's center. The trip was funded from club plant sales and also supported by PES and Dr. St. Hilaire. Members on the trip included club President Jade Stott, Treasurer Giovanni Cisneros, Historian Tyra Trumble and members Elora Roberts, Kathryn Overman, Mia Herrera, Carolina Camacho, Joaquin Munoz, Christopher Gomez and Mireya Ferran and were chaperoned by co-advisor Rachel Gioannini.



Photo Legend (Bottom photo left to right): Kathryn Overman, Mia Herrera, Rachel Gioannini, Christopher Gomez, Mireya Ferran, Elora Roberts, Giovanni Cisneros, Jade Scott, Tyra Trumble (Photographed by unnamed person). Missing in the photo who also attended the trip: Carolina Camacho, Joaquin Munoz.





# PES Soils Major Takes 10th Place at the National Soil Judging Contest

Ashley Riggs, a Soils Major from the Department of Plant and Environmental Sciences, took 10th place out of approximately 120 competitors at the National Soil Judging Contest on April 19<sup>th</sup> and the 23<sup>rd</sup> at Ohio State University. This year's team consisted of Ashley Riggs, Justin Broomfield, and Tianna Peterson. They were accompanied by Dr. Colby Brungard. This competition marked the first renewal of the meeting since 2019. The National Soil Judging Contest has been held at a different host institution each year since 1961 (except for 2020 and 2021 due to COVID-19). Soil contestants arrive at various soil pits and are expected to correctly identify, evaluate, classify, and describe three soil profiles. Students in soil judging participate in regional and national contests held annually in different states. These contests are an enjoyable and valuable learning experience, giving students an opportunity to obtain a first-hand view of soils and land use outside their home areas. This was NMSU's second soil judging team. Both teams qualified for the national event, but the first contest was canceled due to Covid. This is the first time that NMSU has participated in a national soil judging contest. Our success bodes well for future teams.



NMSU soil judging team describing soils at the National Collegiate Soil Judging Contest





# NMSU Team, Bio Luna, Wins "Most Innovative Experiment" in NASA's Plant the Moon Challenge

Team Bio Luna, led by Mikaela Hoellrich, Maya Gabitzsch, and Kaitlin Marry, won the award for Most Innovative Experiment in the Undergraduate/Professional Division of the Plant the Moon Challenge in May 2022. The team was made up of undergraduate and graduate students Karina Tovar, Ashley Riggs, Jonathan Consford, McKenzie Stock, and Ryan Salcido with faculty advisors Drs. Nicole Pietrasiak and April Ulery from the Department of Plant and Environmental Sciences. The competition is linked to NASA Artemis' near future mission to return to the moon requiring astronauts to spend a considerable amount of time in space necessitating the availability of healthy food for the crew over a long period. Sustainable plant production on the moon could help optimize logistics and economics of the mission. The team's objective was to design and conduct space biological research to test a variety of experimental conditions in which to grow healthy and nutritious food in simulated moon soil or 'regolith'.



NMSU PES Plant the Moon Challenge Team, led by Mikaela Hoellrich, Maya Gabitzsch, and Kaitlin Marry, accompanied by Karina Tovar, Ashley Riggs, and Jonathan Consford, as well as Dr. Nicole Pietrasiak and Dr. April Ulery.

The team grew Anasazi beans in the Skeen Hall teaching greenhouse. Anasazi beans are nutritious, drought tolerant legumes that are adapted to low fertility soils and have been grown in New Mexico for centuries. Students monitored plant growth, soil pH, and leachate chemistry regularly. To support bean growth, compost was added as a source of organic matter using the justification that on an established space station, any excess organic waste from food or horticultural practices could be added to an extant compost pile and recycled back into gardening (in case you're wondering, we did not use human waste as an organic source as seen in film "The Martian"). The addition of vermiculite was selected in order to help aerate the soil, and, in the context of a space mission, could be used as a packing material, acting as a buffer and an absorbent during shipping and thereafter being used for plant growing. The most innovative part of the experiment was the inoculation of the pots with either cyanobacteria (soil aggregate forming blue-green algae) or biocrust (a mixture of microbes found on the surface of desert soils).

This is the second year we've participated in this competition. Last year, under the mentorship of Drs. Adriana Romero-Olivares (Biology Dept), Dr. Ulery, and Dr. Pietrasiak, the NMSU student team grew Anasazi beans, green onions, and Lion's Mane mushrooms. Using some of the lessons learned, we reduced the number of crops grown, added microbial inoculants, and amended the lunar regolith with compost made by the Environmental Science Student Organization at NMSU. "We thought we weren't going to be able to compete this year when we found out that the heaters in the Skeen Hall greenhouse weren't working, but thankfully, Dr. Steve Hanson (EPPWS) let us use his light tables in the Skeen Hall third floor growth room to germinate the beans and Dr. Picchioni (PES) offered us the use of one of his greenhouse rooms" reported Dr. Pietrasiak. "In addition, Dr. Willis Fedio (FCS) in the Food Safety lab, let us use his lab's autoclave since the Skeen Hall general use autoclave was not operational at the onset and for the duration of our experiment". All of the team leaders agree that we are fortunate to have such supportive and helpful colleagues at NMSU and we thank them all, especially Barbara Hunter and Jose Ortega-Carranza for their help in the lab. Sponsors included the NM Space Grant Consortium, NMSU URS AMP and MARC programs, and the Department of Plant & Environmental Sciences in the College of Agricultural, Consumer, and Environmental Sciences.

Some of the students got one credit for a special topics course (ENVS 451) and in addition to their greenhouse responsibilities, read multiple peer-reviewed published journal articles and short communications related to astro and space biology, which were discussed in class every week. ENVS 451 is a Spring semester 2022 special topics course that provided experiential learning that explored the conditions that may be needed to successfully grow food on the moon. The overarching course objectives were to 1) design and conduct space biological research on growing nutritious food using a moon-like substrate by applying principles of soil science, soil microbiology, and horticulture, and 2) translate the findings into a final report and disseminate the project outcomes at a virtual symposium hosted by NASA.

## Student Awards:

### PES Student Chosen as the NMSU Alumni Association's Outstanding Undergraduate Student for ACES



Liam St. Hilaire is earning a Bachelor of Science from the College of Agricultural, Consumer and Environmental Sciences, maintaining a 3.95 GPA while also minoring in biochemistry and music. Although his minor in music requires a number of additional courses not required for his bachelor's degree, his major in genetics and biotechnology is a challenging program that few students complete.

Liam's time at NMSU helped him prepare for medical school at the University of California San Francisco (UCSF), where he will attend in the fall. While working as an intern at Ann Mercer Medical Associates, Liam shadowed medical specialists during their rounds and interacted with patients. He also gained valuable research experience working as an undergraduate research assistant in the molecular genetics laboratory with Dr. Jennifer Randall. This included extracting nucleic acids, isolating bacteria, conducting various forms of microscopy and analyzing genetic information using bioinformatic tools.

His experience also prepared him to attend the annual conference of the poster and oral presentations about the genetic control of flowering in pecans.

At the 2021 conference, he earned third place in the undergraduate student oral presentation competition. Both presentations resulted in published abstracts.

Liam has been on the Dean's List each semester that he attended NMSU and is a member of the NMSU chapter of the Phi Eta Sigma National Honor Society. For the past two years, he served as tenor drum section leader for The PRIDE of New Mexico Marching Band. In this role, he directed his section of musicians and coordinated with the rest of the band. For the same two years, he also served as tenor drum section leader for the Desert Winds Indoor Ensemble. In addition, he volunteered at the El Caldito Soup Kitchen and the NMSU Southwest Drum Summit.

After medical school, Liam plans to match up with an internal medicine residency program and then pursue a fellowship in infectious diseases. He has dreamed of doing this since he was a child, but the pandemic helped further elucidate the need for such physicians. For more information on NMSU's Outstanding Graduates, go to: <https://www.nmsualumni.org/outstanding-graduates.html>

### Outstanding Undergraduate Horticulture Student Award

PES Horticulture student, Amelia L. Crossley, has been recognized as an Outstanding Undergraduate Horticulture Student Award Winner by the American Society for Horticulture Science (ASHS). Each university around the country having a horticulture academic program may nominate their top horticulture student. Students are selected on the basis of their academic achievements, leadership abilities, participation in campus / club activities, and service to their departments. The ASHS Outstanding Horticulture Student Awards officially recognizes exceptional undergraduate horticulture students in baccalaureate programs. Students enrolled in horticulture or in a plant science/crop science department with an emphasis or major in horticulture are eligible. Amelia also graduated with her Bachelors of Science in Agriculture. Congratulations Amelia!

For more information, go to: <https://ashs.org/page/OutstandingUndergradAwardWinners>







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## Student Awards (Continued):

### American Society for Horticulture Science Collegiate Scholars

NMSU Horticulture Students Giovanni Cisneros, Christopher Gomez, Michael A. Grace, Stacy A. Oporto, Kathryn D. Overman, Maximo Smith, and Tyra L. Trumble were each selected by the American Society for Horticulture Science as ASHS Collegiate Scholars. This award honors the academic achievements of junior and senior undergraduates from departments of horticulture, or plant and crop science, who are majoring in horticulture. Students must be in the top 15% of their class, based on academic standing. Congratulations! For more information, go to: <https://ashs.org/page/2022ASHSCollegiateScholarsAwardWinners>

### PES Graduate Students Win ASHS Travel Grants

PES graduate students Diksha Sapkota, Govinda Sapkota, and Suman Sharma were each selected by the American Society of Horticulture Science (ASHS) to receive travel grants of \$500 to attend the 2022 annual ASHS Conference in Chicago, Illinois. The conference will be held in person after having a virtual meeting in 2020. Each of the Graduate Students will present their work at the time of the conference. Congratulations!

## PES Spring 2022 Graduation Ceremony

The Department of Plant and Environmental Sciences hosted a Graduation Reception on Friday, May 6th, in the Skeen Hall Rotunda. Graduating students brought family and friends to witness their achievements and enjoy each other's company. Department Head, Dr. Rolston St. Hilaire, led the reception in congratulating the students. Faculty members and student advisors from the department were present for the celebration as well.



The NMSU Graduating Class of Spring 2022 from the Department of Plant and Environmental Sciences included: (Back left to right) Robert Wojcikiewicz, Nathan Martinez, Amelia Crossley Miles Davis, Liam St. Hilaire, Madison Cross, Jonathan Consford, Joseph Delgado, Naomi Suessbrich-Joaquim, Grace Igwe, Natalie Franco, and Justin Broomfield. (Front left to right) Nidia Aguirre Mendoza, Aaron Waller, Fabiola Lujan, Juliana Barela, Holly Meadows, Patricia Castrejon, Rosa Villalba, Lorena Rizo, Jordyn Gallegos, and now Drs. Marwah Sobhan-Neyaz, and Yi Zhu. Non-pictured graduates include, Ryan O'Connor, Jessica Payne, Alyssa Castaneda, Rodolfo Ramirez, Cheyenne Stice, and now Dr. Brianna Lind.

The College of Agricultural, Consumer and Environmental Sciences is an engine for economic and community development in New Mexico, improving the lives of New Mexicans through academic, research, and Extension programs. New Mexico State University is an equal opportunity/affirmative action employer and educator. NMSU and the U.S. Department of Agriculture cooperating.