

CLIFF-GRADS Alumni Profiles

Round 4

Argentina Edition

Argentina Alumni

Ana Veronica Juarez Sequeira (*Faculty of Agricultural and Forest Sciences. National University of La Plata*) hosted by *La Molina National Agrarian University, Peru*



I love my work. I am passionate about ruminal nutrition and studying food alternatives to mitigate the emission of greenhouse gases. I have a lot of fun in my work with my colleagues and that makes me very happy. I am the mother of 2 children, Sofia and Santiago, if I balance my work and family times. I love soccer, I play in a women's team every

weekend, it's my ground wire. I love going to the field to see my favorite soccer team.

During my CLIFF-GRADS experience, I initially joined a project different from what I had applied for due to high demand at my host institution, which led me to work on database analysis comparing dry matter intake (DMI) data from Latin America with IPCC 2019 estimates. Despite pandemic-related delays and a postponed in-person stay in Peru, I worked remotely with strong mentorship and became a member of the Low Carbon Livestock Research Network (LCL-RN). This allowed for regular collaboration with international researchers, improving my skills in statistical analysis and livestock nutrition. The experience also led to a formal agreement between my home university (National University of La Pampa) and my host institution (UNALM, Peru), and I received valuable technical training in methodologies such as SF₆ gas measurement and chromatography. My stay in Peru began in January and included visits to contrasting livestock production areas in the Amazon and Andes, where I interacted with academic

institutions, government agencies, and local producers. These experiences provided me with a deeper understanding of regional agricultural systems and enriched my research and teaching perspective. The CLIFF-GRADS program also enabled me to participate in the LCL-RN's Mentor-Mentee Program, enhancing my academic network and thesis support. While language remained a challenge—particularly for fast communication in English—this opportunity significantly improved my English proficiency and inspired me to promote multilingual exchange in future programs. Overall, it was a culturally and academically transformative experience that has opened doors for further professional growth.

Andrés García (National Institute of Agricultural Technology) hosted by Veterinary Institute for Tropical and Altitude Research (IVITA), Peru



During my CLIFF-GRADS research stay under the supervision of Dr. Cesar Pinares-Patiño, I conducted field and lab work focused on measuring methane emissions from alpacas using the SF₆ tracer technique. This involved monitoring 16 pregnant female alpacas and evaluating individual forage intake at multiple grazing stations using the hand-plucking method. In the lab, I learned to analyze methane using chromatographic techniques with Claurus 680 detectors (FID and ECD), and practiced canister preparation and sampling. Academically, the workflow in Peru was similar to my home institution in Argentina, allowing for smooth integration into the research team. The experience significantly expanded my technical and analytical skills in animal science and environmental monitoring.

Culturally, the experience was deeply enriching; I was fascinated by Peru's blend of pre-Hispanic and Hispanic traditions and had the opportunity to visit iconic sites such as Machu Picchu, the Sacred Valley, and Lake Titicaca. I built strong professional and personal relationships within an international research environment and contributed to a scientific abstract for a regional conference on camelids. While I faced some challenges—such as equipment availability and logistical issues like accessing cash—I adapted well overall. This opportunity was invaluable for both personal growth and professional development, and I look forward to applying the knowledge gained to Argentina's scientific community.

Catriel Mateo Espinosa (University of Buenos Aires) hosted by Massey University, New Zealand

I am passionate about the history of all parts of the world. I love to travel, learn about other cultures and learn a lot from them. In my spare time I like to play basketball, hang out with friends and go on a trip. I enjoy nature and walk outdoors. I feel lucky to be able to work on what I do, spending a lot of time in the field with animals and learning more and more about it. I am very interested in being able to contribute to agricultural production so that it can be more efficient and friendly to the environment.

During my research project, I evaluated various management strategies aimed at improving nitrogen use efficiency in cattle systems. Three experiments were conducted: the first assessed how the location of the water source (inside the paddock vs. 600 meters away) influenced cattle behavior, excreta distribution, soil nutrients, and weight gain. I am currently analyzing results and writing the discussion section of my thesis, with the goal of completing it by the end of this year.

I gained hands-on experience with laboratory techniques for analyzing soil samples—measuring phosphorus, nitrogen, nitrate, and ammonium using an autoanalyzer. I also processed soil samples to observe mycorrhiza using electron microscopy, worked on soil carbon stock analysis, and learned valuable data processing methods. Participating in the Framed Landscapes Research Centre's annual conference enriched my understanding of New Zealand agriculture. Beyond the technical skills, the most impactful aspect of the visit was the friendships formed and the experience of working in a collaborative, international research environment.

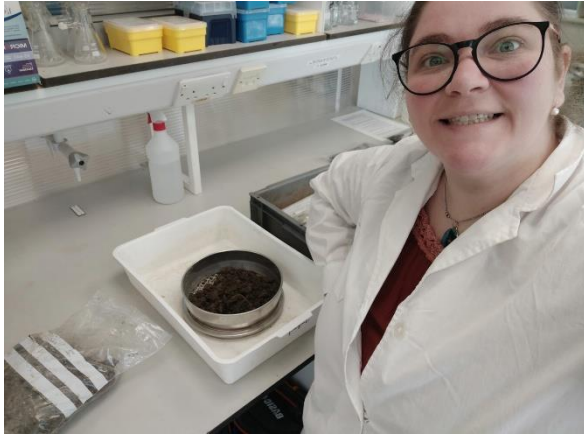
Paula Re (University of Buenos Aires) hosted by CSIC, Spanish Research Council

I enjoy traveling, experiencing and interacting with other cultures, especially from my own country. In my spare time I frequent singing, playing the guitar, taking care of my plants (I love plants!), yoga, listening to music, reading. I believe in the “mother nature” (here in Argentina we call it “Pachamama”) and it’s our duty

to take care of and respect her while we are passing through here on earth. I want to contribute to global agricultural greenhouse gas emission mitigation, because I want a better and fairer world.

During my stay, I participated in various field activities such as vegetation sampling for plant carbon input assessment, water erosion measurements, and almond harvest monitoring. These field trips allowed me to explore the geography, climate, and agricultural practices of the Murcia region, as well as gain hands-on experience with the methodologies used by the SWC research group. In the laboratory, I learned several analytical techniques aligned with the group’s ongoing projects and my personal research goals. These included physical soil organic matter fractionation, soil texture analysis, and measuring organic carbon mineralization rates, all of which enriched my technical skills and understanding of soil health indicators.

My main research focus was on the European Horizon 2020 "Diverfarming" project, which explores the benefits of diversified cropping systems under low-input management to enhance productivity and sustainability. This involved assessing soil and crop responses in both rainfed almond and irrigated mandarin orchards intercropped with various species. As a result of this work, we prepared two joint publications for submission to the 8th International Symposium on Soil Organic Matter. I also had the opportunity to visit additional laboratories, learn about advanced analytical equipment, and engage with other students and researchers. Attending academic defenses on regenerative agriculture and crop diversification further enriched my learning experience and broadened my perspective on sustainable farming practices.

Valeria Esther Alvarez (Universidad Nacional de San Martín) hosted by Bangor University

I have always been attracted to learning new things. This is why I love meeting people and learn about their cultures and customs and their way of seeing the world. Hence, I have the certainty that travelling abroad is an unforgettable and enrichment experience, and a good way to create people networks that can think and work for a better place to live. I have a curious mind worried about environmental and

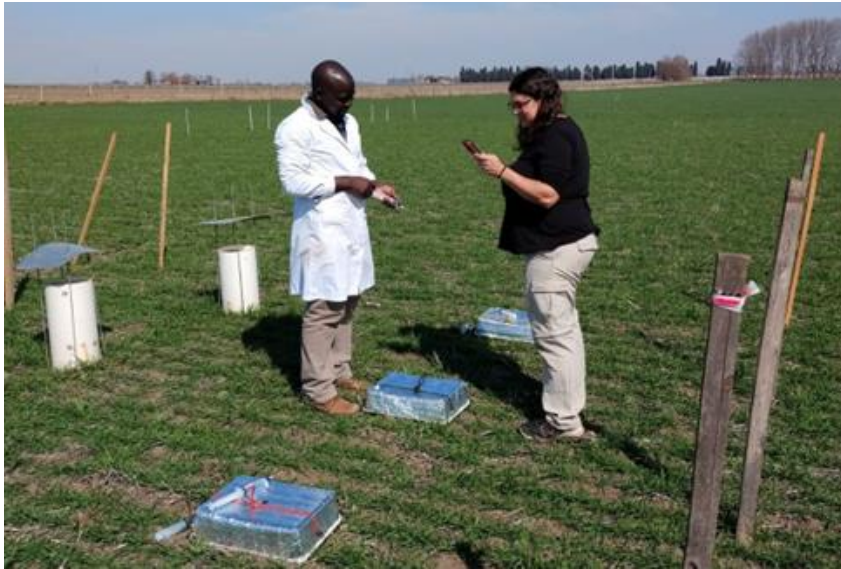
social matters. I am passionate about contributing to the scientific knowledge of nature and I would like to contribute and work especially for the sustainability of food systems. In my spare time, I love to read, take photographs, draw, play the piano, practice archery or just go out for a walk with friends and shared some “mates” with them in a beautiful landscape.

The CLIFF-GRADS Programme at Bangor University was a transformative six-month experience, combining rigorous academic training with enriching cultural and social exposure. Under the mentorship of Prof. Davey Jones and Dr. Karina Marsden, the project focused on investigating the role of microbial necromass in soil carbon storage—an essential component of climate-smart agriculture and sustainable food systems. Using advanced techniques, including ^{14}C -labelled tracers, the study examined how different physical and chemical factors influence the turnover of microbial necromass in soils from contrasting environments in Wales and Patagonia. The project aimed to generate insights into carbon cycling under various land uses, with findings to be published in a high-impact journal.

This research visit also marked a significant leap in the application of isotopic techniques in Argentina, contributing to the scientific understanding of underexplored regions like Patagonia—an ecologically rich area facing climate change pressures. Despite challenges posed by the COVID-19 pandemic, the programme enabled valuable skill development, international collaboration, and future research partnerships. Beyond the lab, the experience was enriched by exploring Welsh cultural heritage and landscapes, fostering both personal and professional growth. The knowledge gained is now being shared with colleagues in Argentina, supporting further research and application in soil carbon studies.

Alumni hosted in Argentina

Armwell Shumba (University of Zimbabwe) was hosted by the National Institute of Agricultural Technology (INTA)



Armwell Shumba is a Zimbabwean and Systems Agronomist buttressed by a Soil Science background. I am pursuing a doctorate in soil organic carbon sequestration and greenhouse gas mitigation under low input cropping systems. I describe myself as an organized, ambitious,

positive and an honest and tolerant team player. I am an ardent advocate of sustainable agriculture intensification to end extreme hunger and poverty within vulnerable communities.

During my research stay in Argentina, I was mainly attached to the Soils Institute at INTA-Castelar. Most of my research was centred on mitigation of N₂O emission and NH₃ volatilization through the use of different synthetic fertilizers and animal waste (urine and manure).

The main project for my research visit was hinged on GHG mitigation through the use of nitrification inhibitors. However, on the same project, mitigation potential of different ammonification inhibitors was measured. It was my first time to measure ammonia (NH₃) volatilization and it was a completely new experience to me. I also had an opportunity to witness CH₄ analysis using gas chromatography for enteric CH₄ emission studies. However, this was limited by time constraints due to other pressing commitments. Nevertheless, I really appreciate the little exposure.

I can safely say my resume has now been enriched through hands-on expertise in static chamber fabrication and deployment in the field. I was given a good platform to fabricate static chambers through installing air-tight septa as well as insulating the chambers against possible diurnal temperature changes in the chamber headspace due to the radiative heat from the sun using aluminium foils.

Beatriz Elisa Bizzuti (*University of São Paulo*) was hosted by the *National Institute of Agricultural Technology (INTA)*



The experience provided by the CLIFF-GRADS program at INTA-Manfredi was fantastic—both personally and professionally. I had the opportunity to engage with new cultures, learn a new language, meet wonderful people, and explore new methodologies. This experience broadened my perspective, helped me understand diverse techniques, and introduced me to different ways of approaching scientific work.

At the Forage Laboratory in INTA-Manfredi, I had access to advanced equipment such as the FOSS system, which is highly modern and efficient for determining nitrogen content in feeds, urine, rumen fluid, and soil samples. I also participated in seminars and visited farms and agricultural companies, which enriched my understanding of the practical applications of our research.

During my stay, I had the opportunity to present my PhD research to the INTA team. It was a challenging but rewarding experience that helped me improve my public speaking skills and facilitated valuable discussions and knowledge exchange on my research topic.

The research project we conducted focused on tannin supplementation for cattle grazing on alfalfa pastures. The objective was to mitigate enteric methane emissions and reduce nitrogen excretion from beef cattle. We estimated animal intake, measured enteric methane using the SF₆ technique, recorded body weight periodically, and collected feces and urine for various analyses, including fiber content, nitrogen, and purine derivatives. In the laboratory, I also participated in routine tasks such as fiber determination, in vitro degradability assays, nitrogen analysis, and data management.

Lumena Souza Takahashi (*University of São Paulo*) was hosted by the *National Institute of Agricultural Technology (INTA)*



In Buenos Aires, at the pathobiology unit, I started the training period by participating in the preparation of materials that would be used in the Jujuy enteric methane emissions experiment, in addition to sample analysis using gas chromatography. So, together with my supervising hosts, I went to Experimental Station Abra Pampa, located in a beautiful region surrounded by mountains, where we stayed in the guest house of the experimental station. The *in vivo* experiment used llamas as an animal model, which for me was amazing and special, because in my home country we don't have this type of animal, besides being one of my favourite animals.

The period of the experiment was a great opportunity, in addition to handling an animal species that I had never worked with, the immersion in contact with the researchers and other workers at the research station was an excellent work, linguistic and cultural experience, and it certainly was an intense period of learning. All staff were extremely receptive and friendly, which provided a great rapport between me and the group, in all aspects. During this period, in addition to the very fruitful day-to-day work with the entire team, the stay at the guest house provided an even more complete experience.

The techniques used during this project were essential for my technical training, since much of what was done will also be applied to my PhD project with sheep, which was very good to develop more skills with the development of the project. A new cultural and academic life in that period was just amazing, I didn't face any difficult cultural or academic, I just have to thank everyone who crossed my path along this project!

I can only thank the CLIFF-GRADS program for this opportunity! I hope that this program can continue to include many other scientists at the beginning of their careers so that more people have the same opportunity that I had.

Manuel Camilo Valencia Molina (*University of the Llanos*) hosted by the *Salta Experimental Station, National Institute of Agricultural Technology (EEA Salta INTA)*



During my stay, I had the opportunity to contrast the practical differences between Argentina and Colombia in the use of the "static chamber" method for GHG sampling. I learned additional strategies for data quality control and the bias correction method of calculated GHG fluxes. I acquired scientific writing skills and criteria for presenting the results of your thesis.

During the research stay (6 months), I supported field sampling and data analysis for two experiments:

Experiment 1: The objective was to determine the effect of the use of plant growth promoting bacteria (PGPB) on growth, yield and N₂O emissions compared to traditional N fertilization in sugarcane. The trial was established under greenhouse conditions at the EEA Salta; with a randomized plot design with three replications. Seven treatments were established: T1) *Gluconacetobacter diazotrophicus* strain PAL5 (PAL5); T2) *Gluconacetobacter diazotrophicus* strain PAL5 (PAL5) plus microbial nutrients (trace elements); T3) *Pseudomonas fluorescens* and *Azospirillum brasilense* strain AZ39 (P+AZ39); T4) *Pseudomonas fluorescens* and *Azospirillum brasilense* strain AZ39 (P+AZ39) plus microbial nutrients (trace elements); T5) Urea (110 kgN ha⁻¹); T6) Urea with urease inhibitor (110 kgN ha⁻¹) and T7) Unfertilized control.

Experiment 2: The objective was to determine an appropriate rate of sugarcane crop residue removal based on its impact on greenhouse gas (GHG) emissions, soil carbon (C) balance, and crop growth. A field trial was established in the cultivation area of the Ledesma sugar mill, Jujuy province, Argentina, under a randomized block design. The treatments applied were: 0, 35, 70, and 100% crop residues on the crop area.

Maxwell Adebayo Adeyemi (Obafemi Awolowo University, Nigeria) was hosted by the National Institute of Agricultural Technology (INTA)



I am passionate about meeting and interacting with people of diverse culture and background as well as creating strong niche of academic and professional network which could enhance career development, future career opportunity, research collaboration and ultimately producing outcomes that could benefit mankind. In my leisure time, I love to cook, play games and explore nature.



The CLIFF-GRADS project was obviously a demonstration of opportunities to understand the different dairy productive strategies and possible mitigation options in Argentina. The project aim was to conduct technical analyses of data collection for the estimation of GHG emissions and carbon footprint at the system level in order to select dairy farm practices environmentally friendly and economically

sustainable as part of a GHG mitigation plan for Argentinean dairy farms.

The project estimated GHG emissions using the IPCC estimation methods for the dairy cows on the different feeding management systems. An alternative to the estimation is the actual feeding trial, which could be conducted in the closed-circuit chamber, which is also available at the Institute in Balcarce.

I had the opportunity to make a holistic survey of the different productive strategies of both the beef and dairy systems, as well as the rain-fed and irrigation cropping systems of farms in the South and North of Argentina.

The research stay opportunity led to a number of scientific publications, part of which was a paper titled: “A paradigm shift to CO₂ sequestration to manage global warming – With the emphasis on developing countries”, published by “Science of the Total Environment” in 2021.

I am one of the luckiest CLIFF-GRADS alumnus; I had a fantastic research stay that was glazed with a lot of experiences. I want to especially thank CLIFF-GRADS for this wonderful innovation of building young career scholars via research stay experience in the world’s most challenging topics. Please, continue with the excellent deeds.