



UNIVERSITY of NEBRASKA  
LINCOLN



Nebraska  
Water Center

Daugherty Water for Food Global Institute



LEHIGH  
UNIVERSITY

NIFA



ENGINEERING AND  
NEW  
TECHNOLOGIES  
PROSPECTS AND  
APPLICATION



ENVIRONMENTAL  
SUSTAINABILITY



RISK  
ASSESSMENT

DISCUSSIONS  
AND INSIGHTS

VISIT OUR WEBSITE

[watercenter.unl.edu](http://watercenter.unl.edu)



2024

# Fertilizers from waste:

RECOVERING AND REUSING NUTRIENTS VIA CIRCULAR  
PROCESSING OF AGRICULTURAL RESIDUES

SEP 10-12

University of Nebraska

EAST CAMPUS UNION

LINCOLN, NE

# Conference Organizers



**Dr. Jonas Baltrusaitis**  
Lehigh University



Learn more about his work  
[Dr. Baltrusaitis Google Scholar](#)



**Dr. Júlia Farias Stiles**  
US Arid Land Agricultural  
Research Center, USDA-ARS



Learn more about her work  
[Dr. Farias Stiles Google Scholar](#)



**Dr. Chittaranjan Ray**

Nebraska Water Center



Dr. Chittaranjan Ray is the director of the Nebraska Water Center and has extensive experience with leadership and as conference organizer. Dr. Ray's research uses mathematical tools and big data concepts to understand water use efficiency and water productivity of irrigated agriculture. He also tries to focus on the overall sustainability of such production systems which examining the potential for soil and ground water, impacts to urban and rural drinking water systems, and future climatic scenarios. Some of the projects of his research group include, development of a water productivity atlas for Nebraska and estimation of water footprint for agriculture and energy related industries operating within Nebraska, integrated assessment of surface and ground water systems to reduce impacts on stream ecosystems in areas undergoing intensive irrigation and assessment of the vadose zone for soil quality and hydraulic properties to develop a publicly database for Nebraska. Learn more about his work [Dr. Ray researchgate](#)



**Dr. Clinton Williams**  
US Arid Land

Agricultural Research  
Center, USDA-ARS



Dr. Clinton Williams is the Research Leader of Plant and Irrigation and Water Quality Research units at US Arid Land Agricultural Research Center. Dr. Williams has been actively engaged in environmental research focusing on water quality and quantity for over 20 years. He looks for ways to increase water supplies through the safe use of reclaimed waters. His current research is related to the environmental and human health impacts of biologically active contaminants (e.g. PFAS, pharmaceuticals, hormones and trace organics) found in reclaimed municipal wastewater and the associated impacts on soil, biota, and natural waters in contact with wastewater. His research is also looking for ways to characterize the environmental loading patterns of these compounds while finding low-cost treatment alternatives to reduce their environmental concentration using byproducts capable of removing the compounds from water supplies. Learn more about his work [Dr. Williams USDA bio](#)



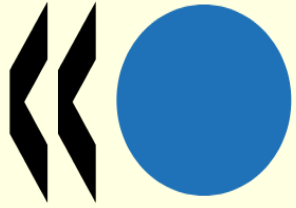
**Dr. Lisa Durso**

US Agroecosystem  
Management Research  
Center, USDA-ARS



Dr. Lisa Durso is a Microbiologist with USDA Agricultural Research Service in Lincoln, Nebraska. Her work focuses on microbial ecology of microbes in manure including antibiotic resistance in agricultural production systems, environmental dimensions of zoonotic foodborne pathogens, water quality and soil health. She began her scientific career working for state and federal public health agencies, served as an Emerging Infectious Disease Training Fellow at the CDC in the early days of the One Health approach, and currently focuses on applied research related to innovate manure-base fertilizers. Learn more about her work [Dr. Durso USDA bio](#)

OECD



Tuesday Sep 10 2024

## Welcome - OECD Co-operative Research Programme : Sustainable Agricultural and Food Systems



Dr. Marie Russel, Programme Coordinator, Trade and Agriculture Directorate, OECD, is a Policy Officer at the OECD in Paris. She coordinates the activities of the OECD Co-operative Research Programme (CRP). Before joining the CRP, she worked for nine years as Senior Programme Officer for the OECD Agricultural Codes and Schemes on the standardisation of produce moving to international trade in the agricultural sector. Before joining the OECD, she worked at the French CNRS and INRAE on research management and European cooperation in the fields of sustainability and resilience of ancient and contemporaneous agricultural and food systems. She holds a food science and engineering degree (MSc) from the ENSAIA, Nancy, France, and a doctorate in historical archaeology of food from the University of Provence at Aix-en-Provence, France.

Dr. Marie Russel

CRP Programme, OECD



Dr. Andy Sheppard, Chief Research Scientist in CSIRO having joined the organisation in 1986 based in France. Based in Australia working on biosecurity and invasive species management. Since 2006 has been a CSIRO Research leader of three different programs on plant, animal and environmental biosecurity and terrestrial biodiversity management. He was Research Director in the CSIRO Health & Biosecurity business unit from 2015-2021. Current primary role is a secondment into the Commonwealth Department Agriculture Fisheries and Forestry as Co-Executive Director of DAFF-CSIRO Catalysing Australia's Biosecurity Initiative after instigating this partnership across both agencies. This \$50-\$100M Mission launched in early 2024. He is the non-residential Director of CSIRO's European Laboratory in Montpellier since 2002. He serves on a number of boards/advisory committees including the OECD Cooperative Research Programme Governing Board and the Scientific Advisory Body under the Trade and Agriculture Division, the Federal Government National Biosecurity Committee, and the Federal Government Threatened Species Scientific Committee. He is also the IUCN Species Survival Commission Focal Person for the IUCN National Committee (NC) of Australia. He has led a portfolio of research projects in weed and pest and invasive species management based on Australia, South Africa and France. He was elected to the Australian Academy of Technology & Engineering in 2019 and International Fellow of the Académie d'Agriculture de France in 2020

Dr. Andy Sheppard

CRP Scientific Advisory Board representative

Wednesday Sep 11 2024

## Panel 1: Engineering and new Fertilizer Technologies



**Solid nitrogen fertilizer recovery from liquid biogenic waste: from new concepts to new technology**

Lehigh University

**Dr. Jonas Baltrusaitis**

Dr. Jonas Baltrusaitis has been an associate professor in Chemical and Biomolecular Engineering at Lehigh University (Bethlehem, PA, USA) since 2019. He received his BS in 1998 and MS in 2000 from Kaunas University of Technology (Kaunas, Lithuania), and he earned a PhD in physical chemistry (Department of Chemistry) from the University of Iowa (Iowa City, IA, USA) in 2007. He currently serves as an inaugural Editor-in-Chief of Sustainability Science and Technology and his academic and educational mission is bringing together research disciplines to help find sustainable solutions in support of a greener economy. His research interests include sustainable process design and catalysis, surface chemistry and analysis, the use of alternative energy sources (light, electrons, plasma) to substitute for conventional thermal reaction pathways as well as developing novel concepts in sustainable nutrient cycling for agriculture. These involve new concepts in nutrient extraction from biomass digestate in a form of solid and stable nitrogen fertilizers. Learn more about his work [Dr. Baltrusaitis Google Scholar](#) [Dr. Baltrusaitis researchgate](#)



**Anaerobic digestion for effective nutrient recycling – opportunities and threats**

Lithuanian Research Centre for Agriculture and Forestry

**Dr. Vita Tilvikienė**

Dr. Vita Tilvikienė is a Chief Researcher in Agrobiology Laboratory and Deputy Director for Research at the Institute of Agriculture, Lithuanian Research Centre for Agriculture and Forestry since 2021.

She earned a Doctor of Agricultural Sciences (Agronomy), with the dissertation “Management of tall fescue, cocksfoot and reed canary grass swards for biogas, biomass quality and energy value”. Her research interests include the agronomic practices of non-food crops and sustainable use of non-traditional organic fertilizers. Research is focused on environmental and economic evaluation of digestate use for crop fertilization with the main focus on soil quality and crop biomass quality and productivity. Learn more about her work [Dr. Tilvikiene researchgate](#)



**Implementation of urine diversion for nitrogen and phosphorus recovery**

Arizona State University

**Dr. Treavor Boyer**

Dr. Treavor Boyer is an associate professor in the School of Sustainable Engineering and the Built Environment (SSEBE) at Arizona State University. His projects are broadly focused on water sustainability, and spans drinking water and wastewater treatment, and natural aquatic systems. His research interests span water quality and treatment with numerous projects on innovative applications of ion exchange technology such as contaminants removal from impacted water and nutrient recovery from source separated urine. Learn more about his work [Dr. Boyer Google Scholar](#)

Wednesday Sep 11 2024

## Panel 1: Engineering and new Fertilizer Technologies



**Optimizing nutrient synergy through the development of organomineral fertilizer formulations**

International Fertilizer Development Center

**Dr. Kiran Pavuluri**

Dr. Kiran Pavuluri is the director of innovations at International Fertilizer Development Center (IFDC). Before joining IFDC, he worked in Yara and Anglo America companies for the development biostimulants, coatings, and foliar fertilizers and associated agronomy projects. With a Ph.D. in Crop and Soil Science from Virginia Tech, USA he is working on advancing sustainable agriculture through fertilizer innovation and development. His primary area of interest is nutrient use efficiency and the development of new nutrient solutions. He is currently working on screening enhanced efficiency fertilizers, developing formulations based on green ammonia and organo-mineral fertilizers and partial acidulation of rock phosphate-based fertilizers. Learn more about his work [Dr. Pavuluri Google Scholar](#) [Dr. Pavuluri researchgate](#)



**Recovery of nutrients from different waste streams**

Lithuanian Research Centre for Agriculture and Forestry

**Dr. Donata Drapanauskaite**

Dr. Donata Drapanauskaite is the senior researcher in Agrobiolgy laboratory at Lithuanian Research Centre for Agriculture and Forestry since 2022. She received her BS (Applied Chemistry) in 2012 and MS (Chemical Engineering) in 2014 from Kaunas University of Technology (Kaunas, Lithuania). She earned a PhD in Agronomy (Agricultural Sciences) from Lithuanian Research Centre for Agriculture and Forestry in 2020 with the dissertation “Effect of different chemical composition and structure of liming materials on acid soil neutralizing”. Her research interests include liming material, mineral fertilizers and soil improvement materials and plant nutrients recovery using secondary raw materials and sustainable use of soil resources for climate change. Learn more about her work [Dr. Drapanauskaite researchgate](#)

Wednesday Sep 11 2024

From farm to table, with a lot of science in between

Special guest Brett Reinford, Reinford Farms



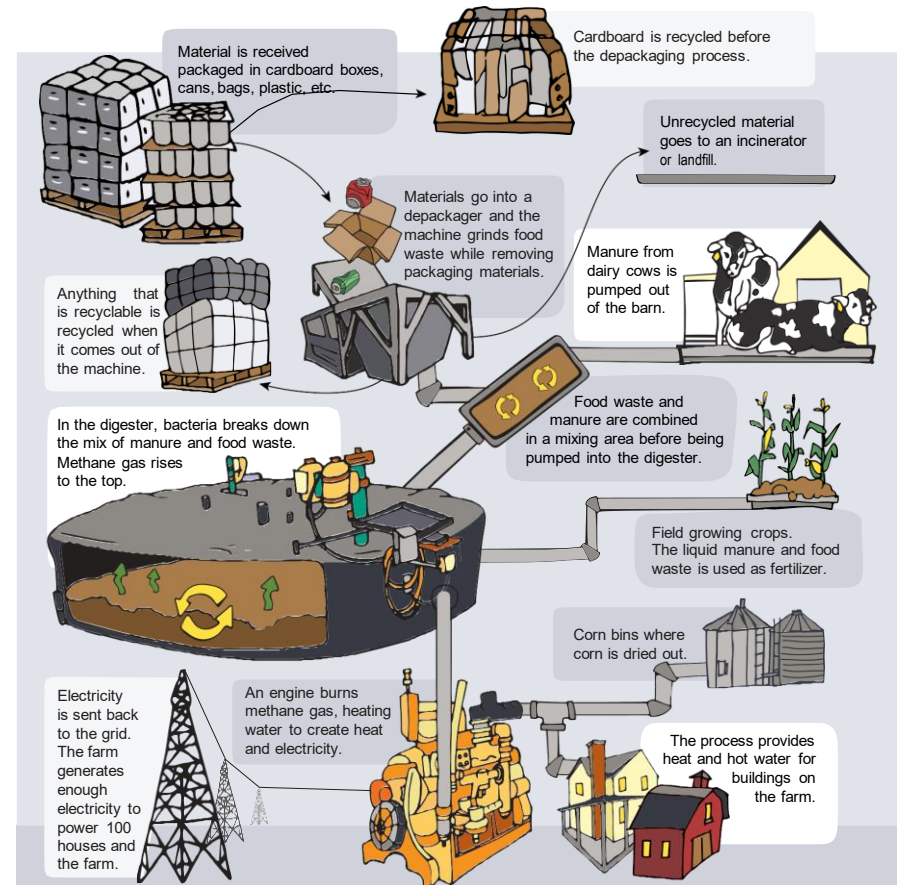
Brett Reinford manages the business end of Reinford Farms in Mifflintown, Pennsylvania. With his parents Steve and Gina Reinford, and brothers Chad and Drew, Brett is part of the innovative team that has built a 57-cow dairy in 1991 into today's 800 cows' operation with 32 employees and two profitable anaerobic digester systems that has put them at the forefront of renewable energy and environmental stewardship.

Reinford Farms, has had great success using anaerobic digesters. Converting cow manure and food waste into methane gas used to generate electricity for hundreds of homes.

The manure comes from the farm and food waste comes from grocery stores, warehouses and food manufacturing clients. It not only keeps the food waste from going into landfills but avoids the methane emissions that would be generated in the landfills, and instead converts emissions into electricity for homes. Brett is also involved in dairy advocacy opportunities and has served on several dairy related boards since coming back to the farm in 2012. Brett and his wife Meredith live in Mifflintown, PA and have four young future dairymen.



## How We Make Power



Reinford Farms Read our full story at  
[reinfordfarms.com](http://reinfordfarms.com)

Learn more at [Reinford Farms](http://Reinford Farms)

## Panel 2: Prospects and Applications on Nutrients Recovery



**Assessment of different nitrogen sources on plant development and cattle supplementation**

US Arid Land Agricultural Research Center, USDA-ARS

**Dr. Júlia Farias Stiles**

Dr. Júlia Farias Stiles research focus on links between physiology, mineral nutrition and stressors. She is broadly interested in topics spanning these and other biological fields such as microbiology, ecotoxicology, food security and molecular biology. Current projects address ways to characterize how plants and other organisms are impacted by multiple factors such as mineral nutritional, contamination by pharmaceuticals, micro plastics, PFAS and heavy metals. And how the soil/water availability of these varies depending on environment and crop, and how impacts may be constrained by different factors. Learn more about her work [Dr. Farias Stiles Google Scholar](#) [Dr. Farias Stiles researchgate](#)



**Potential of reclaimed and manufactured struvite to use as a phosphorus fertilizer in agriculture**

Kansas State University

**Dr. Ganga Hettiarachchi**

Dr. Ganga Hettiarachchi is one of the world's leading scientists in the fields of trace metal and nutrient chemistry in soils. Her research at K-State focuses on understanding the chemistry of both nutrient and contaminant elements in soils, with the goal of developing solutions to agricultural or environmental problems. Her research includes remediation of mildly contaminated soils, including brownfields, into soils suitable for productive use, such as community gardens, understanding reaction pathways of nutrients in soils to find ways to enhance their use efficiency, potential use of recovered nutrient products from waste and wastewater in agriculture, and soil carbon sequestration. Learn more about her work [Learn more about her work](#) [Dr. Hettiarachchi Google Scholar](#) [Dr. Hettiarachchi researchgate](#)



**Recycling of grey water nutrients with algal biomass for biofertilization in desert agroecosystems**

Lithuanian Research Centre for Agriculture and Forestry

**Prof. Ilya Gelfand**

Dr. Ilya Gelfand is an Associate Professor at Ben Gurion University of the Negev. He is broadly interested in terrestrial biogeochemistry and ecosystem ecology with an emphasis on soil emissions of nitrogen gases. His research covers agricultural sustainability, environmental effects of man-managed ecosystems, and desert soils biogeochemistry. His current research aims to understand nutrients vs. water limitation to deserts productivity, sustainability of desert agriculture, and drivers of soil nitrogen oxides emissions. Learn more about his work [Dr. Gelfand Google Scholar](#) [Dr. Gelfand researchgate](#)

## Panel 2: Prospects and Applications on Nutrients Recovery



**On-farm heat treatment of manure broadens the usage of manure beyond farm setting**

Häme University

**Dr. Ilpo Polonen**

Dr. Ilpo Polonen is a Research Scientist at Häme University of Applied Sciences (HAMK, Hämeenlinna, Finland), where he brings extensive experience from his previous roles at HAMK and a distinguished career in animal production research. He holds an M.Sc. (Agr. & For.) from the University of Helsinki, an M.Sc. (Anim. Sci.) from Oregon State University, and a Ph.D. (Anim. Nutr.) from the University of Helsinki. Dr. Polonen's current research focuses on integrating digital solutions into animal husbandry, and particular emphasis on enhancing nutrient recycling. His work aims to efficiently return nutrients and carbon to the soil at minimal cost. A significant challenge in this field is the low nutrient value of agricultural side streams, which makes their transportation economically impractical. Furthermore, manure use is limited due to health risks, restricting its application to permitted composting facilities. To address these issues, Dr. Polonen is exploring innovative solutions, including on-farm heat treatment of manure, which has the potential to broaden the range of clients and advance manure management practices. Learn more about his work [Dr. Poelonen researchgate](#)



**Lab- and commercial- scale greenhouse gas abatement techniques applicable to soil organic amendments: Extraction of ammonium bicarbonate from anaerobic digestate and heterolactic fermentation of dairy slurry**

University of Santiago de Compostela

**Dr. Alejandro Moure Abelenda**

Dr. Alejandro Moure Abelenda is a postdoctoral researcher at University of Santiago de Compostela (Spain) as part of the Juan de la Cierva Program of the Spanish National Research Agency. He is CEO of Labre Gando commercial business offering expertise to farmers for better management of their manure, particularly promoting the heterolactic fermentation of dairy slurry. On 2023, he was awarded with the EPSRC Doctoral Prize fellowship to continue with his research on waste management and valorization by means of chemical, thermo-chemical, physico-chemical, and biological technologies. He was awarded with a PhD in Chemical Engineering at Lancaster University (UK) in 2022. MTeach awarded in 2023 by International University of La Rioja (Spain). MSc by Research awarded in 2016 at Cranfield University (UK), spending a year as visiting researcher at the Indian Institute of Petroleum (India). MEng Chemical Engineering (accredited by the IChemE) received in 2013 at University of Santiago de Compostela (Spain), with 6 months visit to the Technical University of Denmark (Denmark) to write the dissertation. Learn more about his work [Dr. Abelenda researchgate](#) [Dr. Abelenda Google Scholar](#)





UNIVERSITY of NEBRASKA  
LINCOLN

**Wednesday Sep 11 2024**

## **Introduction to IANR and ongoing research**

### **Dinner hosted by Nebraska Water Center**



**Dr. Derek McLean**  
**Dean of Research, Institute of**  
**Agriculture and Natural Resources**

Dr. Derek McLean has served as dean of the University of Nebraska–Lincoln’s Agricultural Research Division since January 1, 2023.

McLean previously served as a senior science adviser in the Office of AIDS Research at the National Institutes of Health, where he worked to ensure that research funding aligns to the priority areas established by the National Institutes of Health. This effort required expertise in building relationships, establishing groups to develop funding plans and policy and working across the more than 20 institutes and centers at NIH.

Prior to NIH, McLean was the senior director of collaborative research for Phibro Animal Health Corporation. He also served for 10 years as a faculty member in the animal sciences department at Washington State University.

McLean holds a Bachelor of Science in mathematical sciences and a Master of Science in animal physiology from Clemson University and a doctorate in animal sciences from Oregon State University.

[Learn more about the Agricultural Research Division.](#)

Thursday Sep 12 2024

## Panel 3: Risk Assessment and Fertilizer Management



**Changes in agricultural nutrient balance of OECD countries: causes & impacts**

Gyeongsang National University

**Prof. Pil Joo Kim**

Prof. Pil Joo Kim is a professor at Gyeongsang National University, South Korea, Division of Applied Life Science. After a PhD in Soil Science from Chungnam National University (CNU), South Korea, Professor Kim served as a three-year soil scientist at the National Institute of Agricultural Science (NIAST), Korea. He was appointed an assistant professor at Gyeongsang National University (GNU), Korea in 2001 and later as a full professor. He has developed many programs for public education in soil science and published over 200 peer-reviewed journal articles, mainly focusing on improving soil quality and mitigating greenhouse gas emissions from arable soils.

Professor Kim was the vice-chairperson of Division 2, IUSS, from 2010-2014 and largely contributed to the success of the 20th WCSS as the Chair of the Editing & Academic Committee. In addition, he served as the president of the Korean Society of Soil Science and Fertilizer in 2022. As the committee chair, he hosted the 8th Soil Organic Matter (SOM) symposium in Seoul in June 2022. Learn more about his work [Dr. Kim Google Scholar](#) [Dr. Kim researchgate](#)



**Nitrogen-phosphorus ratios key aspect for waste derived fertilizers**

University of Arkansas

**Prof. Rebecca Muenich**

Prof. Rebecca Muenich grew up in the rapidly-urbanizing area where the local conflicts between urban growth, food production and environmental quality were at the forefront of local and national news. Influenced by these ongoing struggles she chose to direct her personal career path towards understanding how to address human-induced environmental problems. Muenich is a watershed modeler focused on surface hydrology and water quality, especially in agricultural ecosystems. She focuses on evaluating the impact of land management decisions within the food-energy-water nexus.

Learn more about her work [Dr. Muenich Google Scholar](#) [Dr. Muenich researchgate](#)



**The quality of various exogenous organic matters and their role in circular agriculture**

Lithuanian Research Centre for Agriculture and Forestry

**Dr. Karolina Barčauskaitė**

Dr. Karolina Barčauskaitė defended her PhD in 2018 at Lithuanian Research Centre for Agriculture and Forestry on the research topic “Amount of polychlorobiphenyls and polycyclic aromatic hydrocarbons in Lithuania produced composts and their effect on soil and plants“. Since 2021 she works as a senior researcher and head of the Agrobiolgy laboratory at the Institute of Agriculture LAMMC. She has a BSc in applied chemistry and MSc in applied biochemical analysis. Her main research interests are various external soil amendments (composts, digestates, bioash, biochar, wastewater, etc.) produced from by-products their quality, plant nutrient recovery, applications on soil and effect on soil chemical composition, microbial activity and plant productivity. Learn more about her work [Dr. Barčauskaitė researchgate](#)

Thursday Sep 12 2024

## Panel 3: Risk Assessment and Fertilizer Management



**Microbial risks and considerations for reusing waste streams: reclaimed wastewater and biosolids in agriculture**

Arizona State University

**Dr. Hunter Quon**

Dr. Hunter Quon research focuses on process-based modeling and quantitative approaches for improving water quality and understanding of implementing and using non-traditional water sources. Through such approaches he aims to improve public health around sustainable water use and guide policymakers and researchers towards better implementation strategies, intervention, and application of water source technologies. His main areas of interest are quantitative microbial risk assessment (QMRA), mechanistic and process-based environmental microbiology modeling, water source decision analysis, and data-driven case study assessments of water technology applications. Learn more about his work [Dr. Quon Google Scholar](#) [Dr. Quon researchgate](#)



**A Life cycle perspective of fertilizers from valorized resources**

Brunel University London

**Dr Ximena Schmidt Rivera**

Dr Ximena Schmidt Rivera is a Senior Lecturer in Chemical Engineering at Brunel University London and an independent sustainability research consultant. As a chemical engineer and a life cycle sustainability expert, she has vast experience working on multi-stakeholder and interdisciplinary projects assessing the sustainability aspects of food systems at national and international level. Ximena's current work expands from sustainable and healthy diets and cooking practices to food production, waste valorization and circular economy. Communicating science and understanding public knowledge are key aspects of her work, hence her leadership and collaborations in food citizen science research and public engagement projects such as "Take a Bite out of Climate Change". Ximena is also champion of the STFC Food Network + and co-chair of the Equitable Development and Resilience Research Group (EDR). Ximena achieved first-class honors at Universidad de Santiago de Chile in Chemical Engineering, worked as an engineering consultant before moving to Manchester to start her PhD at The University of Manchester in 2011. Learn more about her work [Dr. Schmidt Rivera Google Scholar](#) [Dr. Schmidt Rivera researchgate](#) [Dr. Schmidt Rivera linkedin](#)

Thursday Sep 12 2024

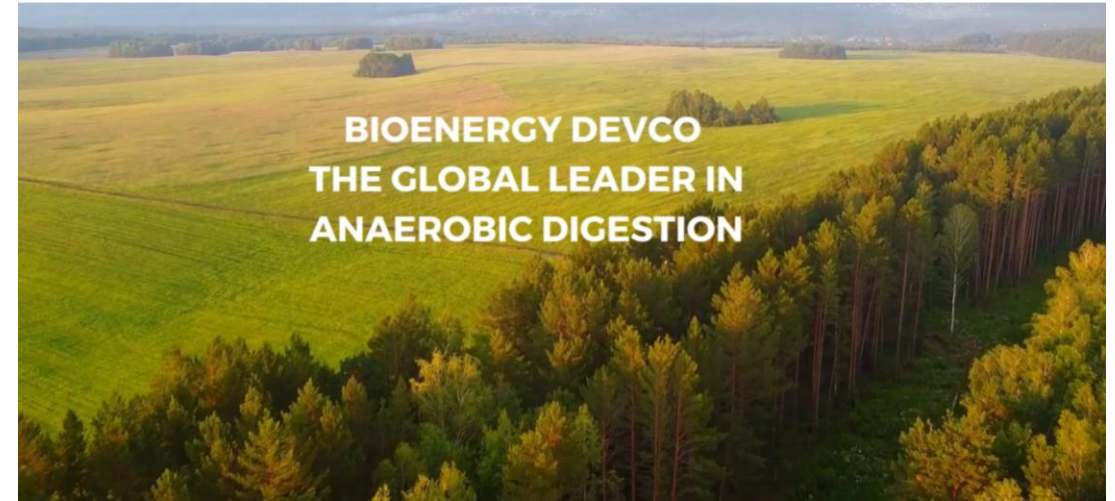
# From table back to farm, with a lot of science in between

## Special guest Carson Bone, **BIOENERGY DEVCO**

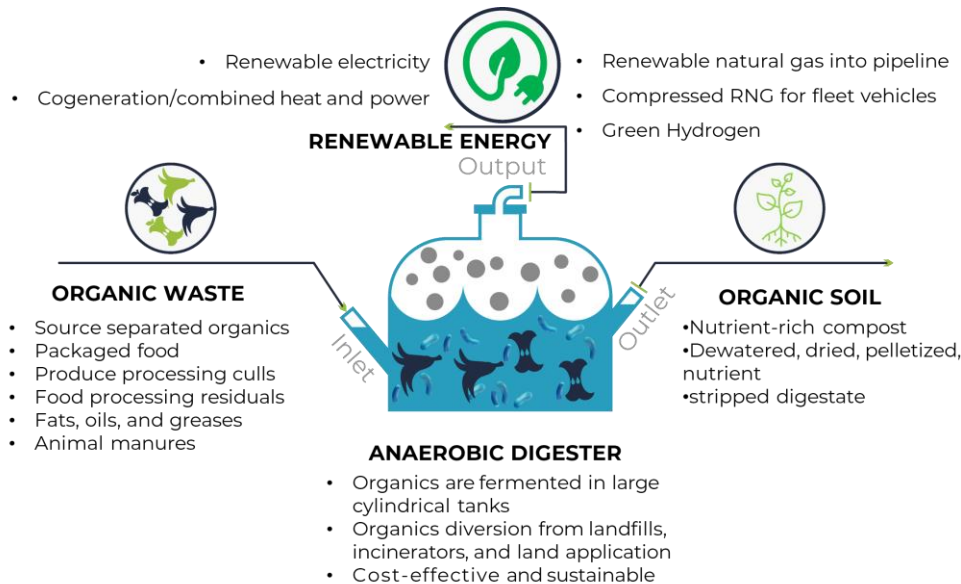


Carson Bone, PE  
Is the Commercial Director  
@ Bioenergy Devco.

Passionate about Renewable Energy, Sustainable Agriculture and Biomaterials, Carson is the bridge between the renewable energy outlets and sustainable farming.



## Empowering a sustainable future with next generation energy infrastructure



Bioenergy DevCo is a world leader in the finance, design, construction, engineering, and operation of anaerobic digestion facilities. Through its wholly owned subsidiary BTS Biogas, BDC can insure and guarantee facility performance of its more than 220 facilities worldwide. Anaerobic Digestion is a powerful technology that naturally breaks down organic wastes, which would otherwise typically be headed for incineration, crowded landfills, or worst of all, left to pollute local environments and instead turns the waste into renewable natural gas and an organic soil amendment. By seeing challenges as opportunities, BDC uses anaerobic digestion as an environmentally sound means of creating a true source of renewable energy while processing organic wastes and reducing air, water, and soil pollution in local communities. Based in Howard County, MD, BDC is currently developing four facilities in the United States. For more information visit

[www.bioenergydevco.com](http://www.bioenergydevco.com)

Thursday Sep 12 2024

## Panel 4: Mineral Nutrition, Soil Health, and Environmental Sustainability



**Phosphorus availability of dried swine sludge products**

North Carolina State University

**Dr. Stephanie Kulesza**

Dr. Stephanie Kulesza works with various manures and byproducts generated by animal ag industries to increase the efficiency and effectiveness of their use in the diverse cropping systems of North Carolina. Part of her extension role is to serve on two critical state of North Carolina committees: the Senate Bill 1217 Interagency Committee, which provides regulatory guidance for animal waste regulations, and the Interagency Nutrient Management Committee, which provides technical guidance. She is also responsible for teaching the annual Nutrient Management Training, which is a five-day course required to become a technical specialist certified in North Carolina to write nutrient management plans. Currently, Dr. Kulesza's research focuses on utilizing manure in various crops and crop rotations, identifying optimum application rates to maximize crop yield and quality while minimizing potential environmental impacts. Learn more about her work [Dr. Kulesza Google Scholar](#) [Dr. Kulesza researchgate](#)



**Improving the use efficiency of critical nutrients for agriculture and soil health in Mediterranean areas: inorganic and organic-based fertilizers.**

Universidad de Córdoba

**Prof. Antonio R Sánchez Rodríguez**

Prof. Antonio R Sánchez Rodríguez is an Agricultural Engineer and Doctor from University of Córdoba (UCO). His research focuses on problem-solving in agriculture by developing sustainable fertilisation strategies based on the knowledge of plant-soil and soil-plant-entomopathogenic fungus relationships. Topics: soil fertility, calcareous soils, critical nutrients in agriculture (N, P, Zn, Fe), biobased P and N fertilisers, greenhouse gas emissions, NOx gases, abiotic N fixation. Learn more about his work [Dr. Sánchez Rodríguez Google Scholar](#) [Dr. Sánchez Rodríguez researchgate](#)



**Soybean Money Maker - Efficient use of nutrients as a key factor for sustainability in Brazil**

Federal University of Santa Maria - Field Crops Team

**Dr. Mauricio Fornalski Soares**

Dr. Mauricio Fornalski Soares is a member of the Field Crops team, UFSM, Brazil. He holds a PhD in Water Resources from UFPEL, works in the areas of soil water dynamics, digital mapping and artificial intelligence. Dr. Soares also worked with research and development in state-owned companies in Israel - IL (Ramat Negev Agro Research Center); and Uruguay - UY (Instituto Nacional de Investigación Agropecuaria - INIA). Learn more about his work [Dr. Fornalski Soares researchgate](#)

Thursday Sep 12 2024

## Panel 4: Mineral Nutrition, Soil Health, and Environmental Sustainability



**Navigating the Ripple Effects of Wastewater Irrigation on Soil Quality, Crop Health, and Environmental**

Ben Gurion University of the Negev

**Prof. Osnat Gillor**

Dr. Osnat Gillor is a Professor at the Zuckerberg Institute for Water Research at Ben-Gurion University of the Negev. Her research centers on the microbial dynamics of soil in arid environments, with a particular focus on how perturbations such as rain, irrigation, pollution, or mining impact soil microbial community composition, structure, and function. Recently, her group has been exploring the effects of contaminants carried by municipal treated wastewater on trophic interactions within irrigated soil microbial communities. Learn more about her work [Dr. Gillor Google Scholar](#) [Dr. Gillor researchgate](#)



**Effect of co-application of Trichoderma spp. with organic composts on plant growth enhancement, soil enzymes, and fungal community in soil**

Oklahoma State University

**Dr. Waleed Asghar**

Dr. Waleed Asghar joined the Kelly Craven's lab in July 2023 as a postdoc working on a new project evaluating how microbial activity and functions may influence, expedite, and maintain agroecosystems in Stillwater, Oklahoma. Waleed holds a Ph.D. in soil microbiology and ecology from the University of Yamanashi, Japan, and an MS in environmental science from Beijing Normal University, China. Waleed is interested in many areas of sustainable crop production and agricultural management, including how to improve soil health, how nutrients move through the soil, and how soil-plant microbial communities help wheat crops grow under different stress conditions. Learn more about his work [Dr. Asghar Google Scholar](#) [Dr. Asghar researchgate](#)