Research Forum
Tuesday, May 3, 2022, Nebraska Innovation Campus Conference Center

1:00 p.m.       Registration Opens. Poster Set-up. Refreshments available.

1:30 p.m.       Opening Remarks: DWFI Director of Research, Christopher M.U. Neale, Ph.D., P.E., including overview of program impacts to date

1:35 – 2:15 p.m. Special Guests: Panel featuring:
- George Burba, Ph.D., Fellow, Science & Strategy, LI-COR Biosciences
- Naisargi Dave, Master’s, Environmental Scientist, EA Engineering, Science, and Technology, Inc.
- Brandi Flyr, Ph.D., Hydrologist, Central Platte Natural Resources District
- Nathan Rossman, Ph.D., Hydrogeologist, HDR, Inc.
Moderated by: DWFI Director of Policy, Nick Brozović, Ph.D.

2:15 – 2:45 p.m. PowerPoint Presentations

2:45 – 3:30 p.m. Break w/ Poster Presentations

3:30 – 4:25 p.m. PowerPoint Presentations

4:25 – 4:30 p.m. Closing Remarks: DWFI Director of Research, Christopher M.U. Neale, Ph.D., P.E.

4:30 – 6:00 p.m. Networking Reception at the Mill Coffee & Bistro:
Remarks from DWFI Executive Director, Peter G. McCormick, Ph.D., P.E., D.WRE

2:15 – 2:45 p.m. PRESENTATIONS

Influence of Fertigation Scheduling Methods with and without Cover Crops on nitrogen leaching in Nebraska  Jiaming Duan, Graduate Research Assistant, Biological Systems Engineering, UNL; Graduate Research Advisor: Daran Rudnick, Assistant Professor, and Derek Heeren, Associate Professor, UNL Biological Systems Engineering, (co-major advisors) for the project: Development of Research and Demonstration Sites in the BGMA for Groundwater Nitrate Reduction

Climate and agronomy, not genetics, underpin recent maize yield gains in favorable environments Gonzalo Rizzo, Graduate Research Assistant, Agronomy & Horticulture, UNL; Graduate Research Advisor: Patricio Grassini, Associate Professor, UNL Agronomy & Horticulture, for the project: Has irrigated corn in Nebraska reached a yield plateau?

Outreach, Education, and Efficiency on the Omaha Reservation Farmlands  Armando Zarco, Graduate Research Assistant, Biological Systems Engineering, Mechanized Systems Mgt., UNL; Graduate Research
Advisor: **Francisco Munoz-Arriola**, Associate Professor, UNL Biological Systems Engineering, for the project: *Precision Water Resources Management in Omaha Nation, Nebraska*

**2:45 – 3:30 p.m.**  
**BREAK WITH POSTER PRESENTATIONS**

**3:30 – 4:25 p.m.**  
**PRESENTATIONS**

*Platte Basin Timelapse: A Watershed in Motion*  
Dakota Altman, Teagan Gaul, Kara Kielty, Favian Mendez, and Yahya Shema, advised by **Ethan Freese**, Producer, UNL School of Natural Resources, for the project: Platte Basin Timelapse Project

*Ana Mendieta and the Universal Fluid Latorre LeBeaux* Graduate Research Assistant, Art, Art History & Design, UNL; Graduate Research Advisor: **Katie Anania**, Assistant Professor, UNL Art, Art History & Design, for the project: Visualizing Food and Water Supplies in the U.S. and Latin America through Artists’ Projects

*Investigating differences in drinking water quality among surface water sources, public taps, and household water storage containers in rural communities in Rwanda*  
Ben Ndayambaje, Graduate Research Assistant, Natural Resource Sciences, School of Natural Resources, UNL; Graduate Research Advisor: **Elizabeth Van Wormer**, Associate Professor, UNL School of Natural Resources, for the project: Linking child stunting, microbiome, livestock health and water quality: a One Health study in Rwanda

*High-Frequency Unmanned Aircraft Flights for Crop Canopy Imaging During Diurnal Moisture Stress*  
Sandeep Bhatti for Suresh Pradhyun Kashyap, Graduate Research Assistant, Biological Systems Engineering, Mechanized Systems Mgt., UNL; Graduate Research Advisor: **Derek Heeren**, Associate Professor, UNL Biological Systems Engineering, for the project: High-Frequency Unmanned Aircraft Flights for Crop Canopy Imaging During Moisture-Stress and Subsequent Irrigation

*Controlling Nitrate leaching in subsoil with Carbon Injection*  
Xiaochen Dong, Graduate Research Assistant, Natural Resource Sciences, School of Natural Resources, UNL; Graduate Research Advisor: **Daniel D. Snow**, Research Professor, Nebraska Water Center and Director of Services, Water Sciences Laboratory, for the same project.

*Develop scalable methods for identifying Water Use Gap of Farmlands in Midwestern States*  
Wenqi Ou, Graduate Research Assistant, School of Natural Resources, UNL; **Yi Qi**, Assistant Professor, UNL School of Natural Resources, for the same project

*Toward an Online Optimal Control Algorithm for the TAUS*  
Daniel Rico, Graduate Research Assistant, Computer Science and Engineering with a specialization in Computer Engineering, UNL; Graduate Research Advisor: **Carrick Detweiler**, Professor, UNL Computer Science and Engineering, and **Francisco Munoz-Arriola**, Associate Professor, UNL Biological Systems Engineering, for the project: Expansion of Long-term Persistent Monitoring Applications of Tethered UASs

*Public Health/Hubbard Fellowship: Flood Risk in Nebraska in Context to Public Health*  
Shivendra Srivastava, Graduate Research Assistant, Water Resources Engineering, UNL; Graduate Research
Advisor: Tirthankar Roy, Assistant Professor, UNL Civil and Environmental Engineering, for the project: A comprehensive framework to assess flood risk within the context of public health

POSTER TITLES:

*Calibration, multiple-parameter optimization, and performance evaluation of crop simulation model in simulating soil moisture and maize grain yield under variable seeding rate in a Farmer’s Fields.*

Anthony Amori Graduate Research Assistant, Agronomy & Horticulture, UNL; Graduate Research Advisor: Haishun Yang, Associate Professor, UNL Agronomy & Horticulture, for the project: *WaterSmart: A cyberinfrastructure-based integrated agro-geoinformatic decision-support web service system to facilitate informed irrigation decision-making*

*Economic and input-use efficiency impacts of nitrogen management techniques in non-irrigated maize production*  
Katie Bathke, Research Assistant, Plant Biology, UNL; Research Advisor: Joe Luck, Associate Professor, UNL Biological Systems Engineering, for the project: The Analysis of Nitrogen efficiency in non-irrigated corn systems with an in-season sensor-based approach

*An integrated framework to account for temporal, spatial, and climate variability in the Corn-Water-Ethanol-Beef nexus system*  
Heydi Calderon, Graduate Research Assistant, Biological Systems Engineering, UNL; Graduate Research Advisor: Deepak Keshwani, Associate Professor, UNL Biological Systems Engineering, for the project: An integrated framework to account for temporal, spatial, and climate variability in the Corn-Water-Ethanol-Beef (CWEB) nexus system

*Evaluation of geospatial data for livestock operation location and estimation of manure nutrient utilization capacity in five Nebraska counties*  
Maria Oviedo Ventura, Graduate Research Assistant, Biological Systems Engineering, UNL; Graduate Research Advisor: Amy Schmidt, Associate Professor, UNL Biological Systems Engineering, for the project: Integrated Crop Nutrient Management (ICNM) to Support Crop-Human-Environment Well-Being

*Aerial imagery of cash crops following cover crops: implications for use as an in-season diagnostic tool*  
Fernanda Krupek, Graduate Research Assistant, Agronomy & Horticulture, UNL; Graduate Research Advisor: Andrea Basche, Assistant Professor, UNL Agronomy & Horticulture, for the project: Assessing site-specific impacts of cover crops on water cycling using high-resolution imagery and ground based data

*Effects of Nitrogen Management on Grain Yield and Nitrile Leaching in Furrow-Irrigated Corn Field*  
Deepak Ghimire, Graduate Research Assistant, Agronomy & Horticulture, UNL; Graduate Research Advisor: Bijesh Maharjan, Assistant Professor & Extension Specialist, UNL Agronomy & Horticulture, for the project: Optimizing Nitrogen Management in Furrow-Irrigated Corn Field to Increase Grain Yield and Ensure Groundwater Quality

*Pesticide Occurrence and Loading in Rivers with Varying Land Uses and Precipitation Regimes*  
Josephus Borsuah Graduate Research Assistant, Natural Resource Sciences, School of Natural Resources, UNL; Graduate Research Advisor: Tiffany Messer, Adjunct Assistant Professor, UNL School of Natural Resources, and Daniel Snow, Research Professor, Nebraska Water Center and Director of
Services, Water Sciences Laboratory, for the project: *Treating Non-Point Source Cocktails: Pesticide Removal Utilizing In-stream Best Management Practices*

**Public Health/Hubbard Fellowship:** *Emerging contaminants within urban and rural landscapes in the Midwest*  
Justin Caniglia, Graduate Research Assistant, Natural Resource Sciences, School of Natural Resources, UNL; Graduate Research Advisor: Steven Thomas, Associate Professor, UNL School of Natural Resources, for the project: *Comparing human and veterinary antibiotics in Nebraska streams*

*Do environmental drivers of lake nutrients and stoichiometry in the Great Plains vary by spatial-scale, ecoregion and lake hydrologic connectivity?*  
Daniel Gschwentner, Graduate Research Assistant, Natural Resource Sciences with specialization in Applied Ecology, School of Natural Resources, UNL; Graduate Research Advisor: Jessica Corman, Assistant Professor, UNL Agronomy & Horticulture, for the project: *Looking to the past to understand the future of freshwater in the Sandhills*

*3-D Probabilistic Modeling of Glacial Aquifer Framework using Multiple-point Statistics and Deep Neural Network*  
Nafyad Kawo, Graduate Research Assistant, Natural Resource Sciences, Specialization: Hydrological Sciences, School of Natural Resources, UNL; Graduate Research Advisor: Jesse Korus, Assistant Professor, UNL School of Natural Resources, for the project: *Integrating Hydrologic Modeling and Geophysical Characterization to Improve Water Management Tools*

*Evaluating agricultural runoff from land-applied biosolids and manure as an under-reported transport route for terrestrial microplastics*  
Nasrin Naderi Beni, Graduate Research Assistant, Civil Engineering, specialization in Environmental Engineering, UNL; Graduate Research Advisor: Shannon Bartelt-Hunt, Professor and Dept. Chair, UNL Civil and Environmental Engineering, for the project: *The fate of microplastics in terrestrial systems: understudied sources and citizen science*

*Age-adjusted pediatric cancer incidence related to nitrate concentration measured through citizen science in Nebraska watersheds*  
Balkissa Ouattara, Graduate Research Assistant, Public Health, UNMC; Graduate Research Advisor: Eleanor Rogan, Professor, UNMC College of Public Health Department of Environmental, Agricultural & Occupational Health, for the project: *Possible Effects of Nitrate Contaminants in Nebraska Waterways on Human Health*

*Environmental sustainability assessment of small Nebraska water resource recovery facilities: water reuse opportunities*  
Matt Thompson, Graduate Research Assistant, Civil Engineering (Year 2) with specialization in Environmental Engineering, UNL; Graduate Research Advisor: Bruce Dvorak, Professor, UNL Civil Engineering & Biological Systems Engineering, for the project: *Environmental sustainability assessment of small Nebraska water resource recovery facilities: water reuse opportunities*

*Converting the Organics in Cattle Manure Wastewater into the Precursors for Sustainable Aviation Fuels*  
Qu Wen, Graduate Research Assistant, Civil and Environmental Engineering, UNL; Xu Li, Professor, UNL Civil and Environmental Engineering, Associate Chair for Graduate Programs

*Modeling Groundwater Flow and Transit Time Distributions in the Nebraska Sand Hills*  
Caner Zeyrek, Graduate Research Assistant, Natural Resource Sciences, School of Natural Resources, UNL; Graduate
Research Advisor: Troy Gilmore, Assistant Professor of Groundwater Hydrology, UNL School of Natural Resources, for the project: *Influence of recharge patterns on the sustenance of groundwater-fed streams*

*Early detection of harmful algal blooms in Nebraskan lakes*  Mercy Kipenda, Graduate Research Assistant, Natural Resource Sciences, School of Natural Resources, UNL; Graduate Research Advisor: Dan Uden, Assistant Professor, UNL School of Natural Resources and Agronomy & Horticulture, for the project: *Remotely sensed early warning of toxic algal blooms in Nebraska lakes*

*An investigation of the attitudes and behavioral outcomes of Nebraskan hunters toward tick-borne disease*  Dominic Cristiano, Graduate Research Assistant, Natural Resource Sciences, School of Natural Resources, UNL; Graduate Research Advisor: Larkin Powell, Professor, UNL School of Natural Resources for the project: *Assessing risk and risk perception of tick-borne disease along a climate-induced transition zone in Nebraska*

*Know Your Well: Students and Groundwater Stewardship*  Sara Brock, Graduate Research Assistant, Natural Resource Sciences, School of Natural Resources, UNL; Graduate Research Advisor: Daniel D. Snow, Research Professor, Nebraska Water Center and Director of Services, Water Sciences Laboratory, for the same project.

*Nebraska Needs State-wide Private Well Testing*  Adam Carlson, Kjersten Hyberger, Grace Kollars, Environmental Studies Program, School of Natural Resources, UNL; Rachael Herpel, Assistant Director, Daugherty Water for Food Global Institute, Nebraska Water Center, for ENVR 319: *Environmental Engagement in the Community*