

## 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.	<p>Special Guests: <i>Panel featuring:</i></p> <ul style="list-style-type: none"> <li>- George Burba, Ph.D., Fellow, Science &amp; Strategy, LI-COR Biosciences</li> <li>- Naisargi Dave, Master’s, Environmental Scientist, EA Engineering, Science, and Technology, Inc.</li> <li>- Brandi Flyr, Ph.D., Hydrologist, Central Platte Natural Resources District</li> <li>- Nathan Rossman, Ph.D., Hydrogeologist, HDR, Inc.</li> </ul> <p>Moderated by: DWFI Director of Policy, Nick Brozović, Ph.D.</p>
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. McCornick, 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 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 UAS*

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 Nitrate 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*