

# GIORGI CHIGHLADZE

Department of Human Development and Family Studies  
Iowa State University  
Ames, IA 50010  
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## EDUCATION

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IOWA STATE UNIVERSITY – Ames, IA <i>Ph.D., Agricultural Engineering and Environmental Science</i>	2006 – 2011
GEORGIAN RESEARCH INSTITUTE OF POWER ENGINEERING AND POWER STRUCTURES – Tbilisi, Rep. of Georgia <i>Candidate of Technical Sciences, Hydraulics and Hydrologic Engineering</i>	2002 – 2005
GEORGIAN TECHNICAL UNIVERSITY – Tbilisi, Rep. of Georgia <i>M.S., Engineering Management</i>	2000 – 2002
GEORGIAN TECHNICAL UNIVERSITY – Tbilisi, Rep. of Georgia <i>B.S., Hydro-Technical Engineering</i>	1995 – 1999

## PROFESSIONAL EXPERIENCE

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<i>Data Scientist</i> <i>I2D2: Iowa's Integrated Data System for Decision Making</i> <i>Department of Human Development and Family Studies</i> IOWA STATE UNIVERSITY – Ames, IA	2021 – present
<i>Data Manager and Analyst</i> <i>Department of Agricultural and Biosystems Engineering</i> IOWA STATE UNIVERSITY – Ames, IA	2015 – 2021
<i>Head of the Training Center</i> <i>HR &amp; Organizational Development Department</i> GEORGIAN STATE ELECTROSYSTEM – Tbilisi, Rep. of Georgia	2013 – 2015
<i>Head of Water Engineering Research and Examination Laboratory</i> <i>College of Civil Engineering</i> GEORGIAN TECHNICAL UNIVERSITY – Tbilisi, Rep. of Georgia	2013
<i>Post-Doctoral Research Associate</i> <i>Department of Agricultural and Biosystems Engineering</i> IOWA STATE UNIVERSITY – Ames, IA	2012

<b><i>Post-Graduate Teaching Assistant</i></b>	2011
<i>Department of Agricultural and Biosystems Engineering</i> IOWA STATE UNIVERSITY – Ames, IA	
<b><i>Graduate Research Assistant</i></b>	2006 – 2011
<i>Department of Agricultural and Biosystems Engineering</i> IOWA STATE UNIVERSITY – Ames, IA	
<b><i>Director</i></b>	2003 – 2006
<i>Teaching and Learning Center</i> GEORGIAN TECHNICAL UNIVERSITY – Tbilisi, Rep. of Georgia	
<b><i>Assistant Professor</i></b>	2006
<i>Department of Hydro-Technical Engineering</i> GEORGIAN TECHNICAL UNIVERSITY – Tbilisi, Rep. of Georgia	
<b><i>Senior Lecturer</i></b>	2000 – 2006
<i>Department of Hydro-Technical Engineering</i> GEORGIAN TECHNICAL UNIVERSITY – Tbilisi, Rep. of Georgia	

## **PROFESSIONAL ACTIVITIES**

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<b><i>Data Manager and Analyst</i></b>	2021
Innovating through barriers for bioreactors and saturated buffers. NRCS CIG (Conservation Innovation Grants) funded project of 6 collaborative institutions: University of Illinois (Urbana-Champaign), Iowa State University, Iowa State University, University of Minnesota, Minnesota Department of Agriculture, and USDA-ARS St. Paul, Minnesota.	
<b><i>Data Manager and Analyst</i></b>	2020 – 2021
Valorizing Archived Soils. Capitalizing 150 years of soil samples. University of Illinois (Urbana-Champaign), and Iowa State University.	
<b><i>Data Manager and Analyst</i></b>	2020 – 2021
SEPAAC. A long-term (35 year) drainage research data at the Southeast Purdue Agricultural Center. Purdue University, and Iowa State University.	
<b><i>Data Manager and Analyst</i></b>	2019 – 2021
ISBI. INRC (Iowa Nutrient Research Center) funded project “Integrating Social and Biophysical Indicators”. Iowa State University.	

- Data Manager and Analyst** 2019 – 2021  
 NutriNet Knowledgebase. USDA-NIFA funded project “NutriNet Knowledgebase for Synthesis of North American Tile Drainage Research”. Joint project of 7 institutions: Purdue University, Iowa State University, University of Illinois, University of Minnesota, University of Missouri, National Laboratory for Agriculture and the Environment (USDA-ARS), and Agriculture and Agri-Food Canada.
- Data Manager and Analyst** 2018 – 2021  
 NutriNet. FFAR (Foundation for Food and Agriculture) and 4R (the North American fertilizer industry’s 4R Research Fund) funded project “Coordinated Site Network for Studying the Impacts of 4R Nutrient Management on Crop Production and Nutrient Loss”. Joint project of 8 institutions: Iowa State University, University of Illinois, Purdue University, University of Minnesota, University of Missouri, National Laboratory for Agriculture and the Environment (USDA-ARS), Agriculture and Agri-Food Canada, and the Environmental Defense Fund.
- Data Manager and Analyst** 2015 – 2021  
 Transforming Drainage. USDA-NIFA funded project “Managing Water for Increased Resiliency of Drained Agricultural Landscapes”. Joint project of 9 institutions: Purdue University, Iowa State University, North Carolina State University, North Dakota State University, The Ohio State University, South Dakota State University, University of Minnesota, University of Missouri, and USDA-ARS Ames, IA.
- Data Manager and Analyst** 2015 – 2016  
 Sustainable Corn CAP. USDA-NIFA funded project “Cropping Systems Coordinated Agricultural Project: Climate Change, Mitigation, and Adaptation in Corn-based Cropping Systems”. Joint project of 11 institutions: Iowa State University, Lincoln University, Michigan State University, The Ohio State University, Purdue University, South Dakota State University, University of Illinois, University of Minnesota, University of Missouri, University of Wisconsin, and USDA-ARS Columbus, Ohio.
- Project Manager** 2015  
 Georgian Energy Development Support Fund. Georgian State Electrosystem, Tbilisi, Rep. of Georgia
- Secretary** 2013 – 2015  
 Young Engineer Development Committee. Georgian State Electrosystem, Tbilisi, Rep. of Georgia
- Consultant** 2011  
 Van Wall Group (AquaCheck soil moisture sensor feasibility study). Iowa State University, Ames, IA, USA

<b>Administrator</b>	2006
SPAMGO. Tempus TACIS Joint European Project (JEP-25103-2004) “Strengthening Public Administration and Media in Georgia”. Georgian Technical University. Tbilisi, Rep. of Georgia	
<b>Participant</b>	2006
USAID funded project “Establishing the First Community Collages in Georgia”. Joint project between Georgian Technical University and Community Colleges for International Development (CCID).	
<b>Participant</b>	2006
Canadian College Partnership Program (CCPP) project “Education – Economic Catalyst”. Joint project of Georgian Technical University (Georgia), Selkirk Collage (Canada) and Thompson University (Canada).	
<b>Consultant</b>	2007 – 2011
Center for Professional Development, Science, Education and Culture, Georgian Technical University, Tbilisi, Rep. of Georgia	
<b>Technical Consultant</b>	2001 – 2005
Ortachala Energy, Ltd. Tbilisi, Rep. of Georgia	

## GRANTSMANSHIP

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Project Title: Innovating through barriers for bioreactors and saturated buffers

Name of Grantor: Conservation Innovation Grants

Cooperating Faculty: Laura Christianson, Reid Christianson, Richard Cooke, Thomas Isenhardt,  
Michelle Soupir, Matthew Helmers, Christopher Hay, Lori Abendroth, **Giorgi Chighladze**,  
Lindsay Pease, Gary Feyereisen, and Jeppe Kjaersgaard

Grant Amount: \$1,112,730 (non-Federal contribution \$1,133,961)

Effective Dates: December, 2020 – December, 2023

Role: Co-PI

Project Title: Dielectric Measurement of Soil Nitrate Concentration

Name of Grantor: Iowa Water Center

Cooperating Faculty: Amy Kaleita, and **Giorgi Chighladze**

Grant Amount: \$13,783 (42,718 with matching funds)

Effective Dates: March, 2012 – November, 2012

Role: Co-PI

## PUBLICATIONS

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### [Datasets]

**Chighladze, Giorgi**; Abendroth, Lori J.; Herzmann, Daryl; Helmers, Matthew J.; Ahiablame, Laurent; Allred, Barry; Bowling, Laura; Brown, Larry C.; Fausey, Norman; Frankenberger, Jane; Jaynes, Dan; Jia, Xinhua; King, Kevin; Kjaersgaard, Jeppe; Kladviko, Eileen; Nelson, Kelly; Pease, Lindsay; Reinhart, Benjamin; Strock, Jeffrey; Youssef, Mohamed. (2021). Transforming Drainage Research Data (USDA-NIFA Award No. 2015-68007-23193). Ag Data Commons. <https://doi.org/10.15482/USDA.ADC/1521092>.

Abendroth, Lori J.; Herzmann, Daryl E.; **Chighladze, Giorgi**; Kladviko, Eileen J.; Helmers, Matthew J.; Bowling, Laura; Castellano, Michael; Cruse, Richard M.; Dick, Warren A.; Fausey, Norman R.; Frankenberger, Jane; Gassmann, Aaron J.; Kravchenko, Alexandra; Lal, Rattan; Lauer, Joseph G.; Mueller, Daren S.; Nafziger, Emerson D.; Nkongolo, Nsalambi; O'Neal, Matthew; Sawyer, John E.; Scharf, Peter; Strock, Jeffrey S.; Villamil, Maria B. (2017). Sustainable Corn CAP Research Data (USDA-NIFA Award No. 2011-68002-30190). National Agricultural Library - ARS - USDA. <http://dx.doi.org/10.15482/USDA.ADC/1411953>.

### [Dissertation and Thesis]

**Chighladze, G.** 2011. Estimation of change in soil water nitrate-nitrogen concentration using impedance spectra. Ph.D. Thesis. Ames, IA.: Iowa State University, Department of Agricultural and Biosystems Engineering.

**Chighladze, G.** 2005. Hydraulic problems in flows of different density. Candidate of Technical Sciences Thesis. Tbilisi, Rep. of Georgia: G. Chogovadze Georgian Research Institute of Power Engineering and Power Structures. (in Georgian Language)

**Chighladze, G.** 2002. Key aspects on investment analysis. MS Thesis. Tbilisi, Rep. of Georgia: Georgian Technical University, Department of Engineering Management. (in Georgian Language)

### [Journal Articles]

Willison, R. S., Nelson, K. A., Abendroth, L. J., **Chighladze, G.**, Hay, C. H., Jia, X., Kjaersgaard, J., Reinhart, B. D., Strock, J. S., & Wikle, C. K. 2021. Corn yield response to subsurface drainage water recycling in the Midwestern United States. *Agronomy Journal*. 2021; 1-17. <https://doi.org/10.1002/agj2.20579>

**Chighladze, G.**, S. Birrell, A. Kaleita, and S. Logsdon. 2012. Estimating soil solution nitrate concentration from dielectric spectra using PLS analysis. *Soil Science Society of America Journal* 76:1536-1547, <https://doi.org/10.2136/sssaj2011.0391>

- Chighladze, G.** 2011. Comparison of hydraulic and chemical transport properties of sand and silty clay loam soils. *Hydroengineering* 11-12(1-2):6-11
- Chighladze, G.,** A. Kaleita, and S. Birrell. 2010. Sensitivity of capacitance soil moisture sensors to nitrate ions in soil solution. *Soil Science Society of America Journal* 74: 1987-1995.  
<https://doi.org/10.2136/sssaj2010.007>
- Kadaria, J., and **G. Chighladze.** 2004. Periodical waves of motion of the high concentration suspended clusters penetrating into the channels through the intake. *Moambe of Georgian Academy of Science* 170(3): 563-565
- Ghogheliani, L., J. Kadaria, and **G. Chighladze.** 2004. Propagation of waves of high turbidity into the channel through the water intake. *Works by Georgian Technical University* 4(454) (in Russian Language)
- Chighladze, G.** 2004. Stability of the interface of density-stratified flow in river estuaries. *Journal Energy* 2(30): 57-59 (in Russian Language)
- Ghogheliani, L., and **G. Chighladze.** 2003. The extension of the equations for composite friable-visco-plastic medium dynamics to the case of seismic forces. *Journal Energy* 4(28): 106-109 (in Georgian Language)
- Gagoshidze, S., J. Kadaria, and **G. Chighladze.** 2002. Deformation analysis of the channel slope in view of along-bank flow of the wave. *Journal Energy* 4(24): 115-118 (in Georgian Language)
- [Conference Proceedings]
- Chighladze, G.,** A. Kaleita, and S. Birrell. June 21-24, 2009. Response of capacitance probes to soil solution nitrate concentration. *ASABE Annual International Meeting*, Paper No 097211, Reno, NV.
- Ghogheliani, L., and **G. Chighladze.** November 6-10, 2006. Influence of the Stokes translational motion on the rising wastewater jet discharged from the sea outfall. 4th International Conference on Marine Waste Water Disposal and Marine Environment, Antalya, Turkey.
- Ghogheliani, L., S. Gagoshidze, J. Kadaria, and **G. Chighladze.** November 22-26, 2004. A static halocline in river estuaries with steep bed slopes. 4th International Conference on Hydro- and Thermodynamics of Rivers, Reservoirs and Littoral Zones of Seas, Moscow, Russia. pp: 514-516 (in Russian Language)
- Ghogheliani, L., J. Kadaria, and **G. Chighladze.** September 27-October 2, 2004. The hydraulic calculation of the raising jet from the sea depth outfall. International Conference on Marine Waste Water Disposal and Marine Environment, Catania, Italy.

[Books and Book Chapters]

Ghogheliani, L., S. Gagoshidze, and **G. Chighladze**. 2006. Halocline. Georgian Technical University Press (in Georgian Language)

[Reports]

Abendroth, L., D. Herzmann, S. Lokhande, **G. Chighladze**, K. Schwaegler and L.W. Morton. 2017. Project and Research Management: Integrating Systems, Data, and People in Multidisciplinary Work. Technical Report Series: Observations and Recommendations of the USDA-NIFA funded Climate and Corn-based Cropping Systems Coordinated Agricultural Project. Iowa State University, Ames, IA. Vol 5 of 5. Pub. No. CSCAP-0198-2017.  
<https://store.extension.iastate.edu/Topic/Crops/Climate-and-Agriculture>.

**Chighladze, G.** 2011. Field calibration of the AquaCheck soil moisture probe. Report for the Van Wall Group.

Kumar, R., A. Kamal, S. Birrell, A. Kaleita, H. Sahota, J. Huang, and **G. Chighladze**. 2011. Development of soil sensors and their underground wireless network for fertilization management to minimize environmental impact. Project report prepared for the NSF.

Kumar, R., A. Kamal, S. Birrell, A. Kaleita, H. Sahota, J. Huang, C. Batts, and **G. Chighladze**. 2010. Development of soil sensors and their underground wireless network for fertilization management to minimize environmental impact. Project report prepared for the NSF.

## CONFERENCE PRESENTATIONS

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Willison, R., K. Nelson, L. Abendroth, B. Allred, L. Brown, **G. Chighladze**, C. Hay, X. Jia, J. Kjaersgaard, B. Reinhart, J. Strock, and C. Wikle. 2020. Corn Yield Response to Subsurface Drainage Water Recycling in the Midwestern United States. *ASA-CSSA-SSSA Annual Meeting*, November 9-13, 2020.

**Chighladze, G.**, L. Abendroth, M. Helmers, B. Reinhart, L. Bowling, and J. Frankenberger. 2020. Missing value estimation method for subsurface drain flow. *ASABE Annual International Meeting*, July 12-15, 2020. (virtual)

Abendroth, L., **G. Chighladze**, M. Helmers, J. Frankenberger, B. Reinhart, D. Herzmann, L. Ahiablame, B. Allred, L. Bowling, L. Brown, N. Fausey, D. Jaynes, X. Jia, E. Kladviko, K. King, J. Kjaersgaard, K. Nelson, J. Strock and M. Youssef. 2020. Transforming Drainage Project: Temporally- and spatially-rich data available for three drainage practices. *ASABE Annual International Meeting*, July 12-15, 2020. (virtual)

- Chighladze, G.**, M.J. Helmers, L.J. Abendroth, L. Ahiablame, B. Allred, L.C. Bowling, N. Fausey, J. Frankenberger, D.B. Jaynes, E.J. Kladivko, K.A. Nelson, L. Pease, B. Reinhart, J.S. Strock and M.A. Youssef. 2019. Seasonal variability of nitrate-N loads from controlled drainage systems across the Midwest region. *ASA-CSSA-SSSA Annual Meeting*, November 10-13, 2019, San Antonio, TX.
- Strock, J., E. Ghane, M. Youssef, L. Negm, S. Tian, L. Abendroth, **G. Chighladze**, N. Fausey, J. Frankenberger, C. Hay, M. Helmers, D. Jaynes, E. Kladivko, J. McMaine, L. Pease and K. Nelson. 2019. Regional analysis of corn yield under different drainage water management systems. *ASA-CSSA-SSSA Annual Meeting*, November 10-13, 2019, San Antonio, TX.
- Helmerts, M., **G. Chighladze**, L. Abendroth, L. Ahiablame, B. Allred, L. Bowling, L. Brown, N. Fausey, J. Frankenberger, D. Jaynes, E. Kladivko, K. Nelson, L. Pease, B. Reinhart, K. Schwaegler, J. Strock, and M. Youssef. 2018. Variability in Seasonal Tile Flow and Nitrate-N Loads from Controlled Drainage Systems across 16 Sites. *ASABE Annual International Meeting*, July 30-August 1, 2018, Detroit, MI.
- Schwaegler, K., L. Abendroth, **G. Chighladze**, M. Helmers, and D. Herzmann. 2018. Spatial and seasonal variability in nitrate loading in the Corn Belt. *NCERA 217 Annual Meeting*, April 12, 2018, Raleigh, NC.
- Chighladze, G.**, L. Abendroth, and D. Herzmann. 2017. Transforming Drainage Research Data: spatio-temporal variability. *NCERA-ADMS Task Force Annual Meeting*, March 29-30, 2017, Champaign, IL.
- Schwaegler, K., L. Abendroth, **G. Chighladze**, M. Helmers, and D. Herzmann. 2017. Spatial variability in nitrate load in the Corn Belt. *NCERA-ADMS Task Force Annual Meeting*, March 29-30, 2017, Champaign, IL.
- Chighladze, G.**, L. Abendroth, and D. Herzmann. 2016. Transforming Drainage Database: data management for synthesis of diverse field research network. *10th International Drainage Symposium*, September 6-9, 2016, Minneapolis, MN.
- Chighladze, G.**, L. Abendroth, and D. Herzmann. 2016. Transforming Drainage Research Network: site characteristics. *NCERA-ADMS Task Force Annual Meeting*, March 29-30, 2016, Purdue University, West Lafayette, IN.
- Abendroth, L., **G. Chighladze**, and D. Herzmann. 2016. Transforming Drainage Research Data: management and tools. *NCERA-ADMS Task Force Annual Meeting*, March 29-30, 2016, Purdue University, West Lafayette, IN.
- Chighladze, G.**, A. Kaleita, and S. Birrell. 2011. Estimation of nitrate-nitrogen concentration in soil solutions using spectral response. *ASA, CSSA, and SSSA International Annual Meeting*, October 16-19, San Antonio, TX.



**Chighladze, G.,** A. Kaleita, and S. Birrell. 2010. Temperature-dependent dielectric response of aqueous solutions to presence of nitrate ions. *ASA, CSSA, and SSSA International Annual Meeting*, October 31-November 3, Long Beach, CA.

**Chighladze, G.,** A. Kaleita, and S. Birrell. 2009. Dielectric measurement of ions in soil solutions. *ASABE Annual International Meeting*, June 21-24, Reno, NV.

**Chighladze, G.,** A. Kaleita, and S. Birrell. 2008. Measuring Soil Nitrate Concentration Using Dielectric Soil Sensors Operating at Different Frequencies. *ASABE Annual International Meeting*, June 29-July 2, Providence, RI.