

# VITA OF ROBERT HORTON

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# VITA

## I. NAME AND ADDRESS

Robert Horton  
Agronomy Department  
Iowa State University  
Ames, Iowa 50011  
515-294-7843  
rhorton@iastate.edu

## II. TITLE

C. F. Curtiss Distinguished Professor of Agriculture and Life Sciences

## III. DEGREES HELD

<u>Degree</u>	<u>Institution</u>	<u>Date</u>
B.S. Agronomy	Texas A&M University	1975
M.S. Soil Science	Texas A&M University	1977
Ph.D. Soil Physics	New Mexico State University	1981

## IV. PROFESSIONAL EXPERIENCE

Graduate Teaching Assistant, Texas A&M	-	1976
Graduate Research Assistant, Texas A&M	-	1976 - 1977
Graduate Research Assistant, NMSU	-	1977 - 1981
Assistant Professor, ISU	-	1981 - 1985
Associate Professor, ISU	-	1985 - 1990
Professor, ISU	-	1990 - 2006
Chair of Water Resources Graduate Program, ISU	-	1994 - 2002
Distinguished Professor, ISU	-	2006 -
Senior Visiting Professor, Chinese Acad. of Sciences	-	2010
Pioneer Hi-Bred Professor of Agronomy	-	2010 - 2013

## V. PROFESSIONAL ASSOCIATIONS

Gamma Sigma Delta  
Phi Kappa Phi  
Sigma Xi  
American Geophysical Union  
American Society of Agronomy  
International Union of Soil Science  
Soil Science Society of America

## VI. AWARDS, HONORS, AND RECOGNITIONS

- Graduated Magna cum laude, Texas A&M University (1975).
- Outstanding technical reviewer for the Soil and Water Division of the American Society of Agricultural Engineers. (1989)
- Raymond and Mary Baker Agronomic Excellence Award. (1989)

- Iowa State University Foundation Award for Mid-Career Achievement in Research. (1990)
- Elected Chairman of Soil Physics Division of the Soil Science Society of America (1993)
- Fellow of the American Society of Agronomy (1993)
- Fellow of the Soil Science Society of America (1994)
- Appointed Chairman of the Soil Science Faculty Committee at ISU (1995-2002)
- Appointed to Agronomy Department Head's Advisory Council (1995-2002)
- Superior Paper Award of the American Society of Agricultural Engineers (1997)
- Soil Science Research Award of the Soil Science Society of America (2001)
- Don and Betty Kirkham Soil Physics Award of the Soil Science Society of America (2002)
- Campbell Lecturer, Washington State University (2004)
- Frontiers of Hydrologic Sciences Lecturer, American Geophysical Union (2005)
- Selected as Distinguished Professor, Iowa State University (2006)
- Honorary Professor at China Agricultural University (2007)
- Rossmann Manatt Faculty Development Award, ISU (2009)
- Senior Visiting Professor, Chinese Academy of Sciences (2010)
- Pioneer Hi-Bred Professor of Agronomy, ISU (2010-2013)
- Kingenta Agricultural Science Award from the American Society of Agronomy (2012)

## **VII. PROFESSIONAL RESPONSIBILITIES**

### **A. Teaching and Advising**

Dr. Horton has taught soil physics courses at Iowa State University since 1982. He has taught soil physics to over 800 graduate students. He served as Chair of the Water Resources Graduate Major at ISU for 8 years. As Chair of Water Resources, he instituted and taught graduate seminar courses twice a year. He also recruited and instructed graduate students within the program. The graduate water resources program averaged 35 graduate students each semester during the 8 year time period.

Dr. Horton led an undergraduate foreign travel course to Asia (Japan, China, S. Korea, Taiwan) in 1991. He served as faculty member on the College of Agriculture Honors Program for 3 years. He taught short courses on coupled heat and mass transfer in soil at the University of Hannover in Germany and at the Institute of Soil and Water Conservation in China. He served as a member of the Academic Advisory Committee for the Chinese Academy of Sciences National Laboratory of Soil Erosion and Dryland Farming. He has made annual visits to China since 1996. In 2010 he spent 5 months in China as a Chinese Academy of Sciences Visiting Professor. He has instructed a large number of Chinese graduate students. He has served several students through advising of thesis research projects. In collaboration with Chinese students and scientists, he has co-authored over 60 journal papers. In addition to the students he advised, he also served a large number of other students by providing English language editing as a courtesy. Dr. Horton also jointly advised two soil science PhD students at the University of Hannover in Germany.

Dr. Horton has given training sessions to extension personnel, agricultural consultants, industrial agronomists, and state agency personnel. He has made numerous presentations on soil water flow to gifted high school students as part of Iowa State University's recruitment effort. Dr. Horton has served as a faculty advisor for four different Iowa State University student organizations. He taught short-courses at ISU, Germany, and China.

Dr. Horton has taught the following courses:

1. **Soil Physics**, Agronomy 477/577, 3 credits, taught every spring semester (averages 18 students).
2. **Laboratory Methods in Soil Physics**, Agronomy 578, 1 credit, taught every spring semester (averages 8 students).
3. **Advanced Soil Physics**, Agronomy 677, 2 credits, taught alternate fall semesters (averages 6 students).
4. **Soils Seminar**, Agronomy 600B, 1 credit, taught once every 5 years (averages 10 students).
5. **Water Resources Seminar**, WR 690, 1 credit, taught every fall and spring semester from 1996-2002 (averages 35 students).
6. **Agronomic Scientific Presentations**, Agronomy 601, 2 credits, taught every spring semester from 2011 – 2017 (averages 20 students).

Dr. Horton's mean instructor and course ratings (2008-2015) are as follows:

Agronomy 477: Instructor rating is (3.9/5.0); Course rating is (3.6/5.0)  
Agronomy 577: Instructor rating is (4.4/5.0); Course rating is (4.3/5.0)  
Agronomy 578: Instructor rating is (4.4/5.0); Course rating is (3.9/5.0)  
Agronomy 601: Instructor rating is (4.4/5.0); Course rating is (4.0/5.0)  
Agronomy 677: Instructor rating is (4.8/5.0); Course rating is (4.7/5.0)

Dr. Horton has served as research project advisor to three undergraduate research students and several graduate students. He has served as major professor for 20 Ph.D. students and as major professor for 12 M.S.-students who have completed their programs of study. He has directed the research efforts of 18 Postdoctoral researchers. Four of his graduate students have received university awards for thesis research, another was awarded "best paper presented" at a regional conference, and another student received the superior paper award from the American Society of Agricultural Engineers. Several of Dr. Horton's former Ph.D. students and Post Docs are now faculty members teaching students at other (national and international) universities.

### **Theses and Dissertations Completed**

**John F. McBride** (1985) – Measured and predicted anion movement. (M.S. in soil physics and water resources).

*He continued for a PhD at the University of North Carolina, and he works as an environmental consultant in the Chicago area.*

**William M. Klittich** (1985) – Spatial analysis of soil temperature observations. (M.S. in soil physics).

*He completed a PhD in soil physics at Kansas State University, and he works in Ohio.*

**James M. Hamlett** (1987) – Nitrate movement under a ridge configuration: A field and model Investigation. (PhD in soil physics and agricultural engineering).

*He is an Associate Professor at Penn State University - Retired. He received the Outstanding Teaching Award from the Penn State Engineering Society.*

**Ibrahim N. Nassar** (1988) – Soil thermal diffusivity and water transport in unsaturated, nonisothermal, salty soil. (PhD in soil physics)

*He is a Professor at the University of Alexandria in Egypt - Retired. He received the Outstanding Research Award from the University of Alexandria.*

**Gerard J. Kluitenberg** (1989) – Preferential solute transport in soil laboratory and field studies. (PhD in soil physics).

*He is a Professor at Kansas State University. He is a Fellow of the Soil Science Society of America (SSSA). He has served as Chair of the soil physics division of SSSA. He has served as Graduate Student Coordinator for the Agronomy Dept at KSU.*

**Masaaki Kiuchi** (1991) – Using subsurface flow barriers to reduce nitrate leaching. (PhD in soil physics).

*He is a Hydrologist for the South Carolina Department of Natural Resources.*

**M. Zaki Mousli** (1993) - Interrelationships among water, air, and chemical transport properties in soil. (PhD in soil physics).

*He is a Crop Specialist for the Santa Clara Valley Water District.*

**Jamie D. Green** (1993) – Crop residue effects on the leaching of surface-applied chemicals. (M.S. in water resources).

*He is a Project Officer for the U.S. Environmental Protection Agency.*

**Daniel E. Ressler** (1993) – Evaluation of horizontal wells for ground water and solute recovery. (M.S. in water resources).

*He completed his PhD at Iowa State University, and he is an Associate Professor and Head of Department at Susquehanna University in Pennsylvania.*

**James R. Bilskie** (1994) – Dual probe methods for determining soil thermal properties: Numerical and laboratory studies. (PhD in soil physics).

*He is a research Soil Physicist for Campbell Scientific, Inc., Retired.*

**Mingan Shao** (1996) - Heat, water, and chemical transport in soils. (PhD in soil physics).

*He is Director and Professor of the Chinese Academy of Sciences National Laboratory of Soil Erosion and Dryland Farming on the Loess Plateau in Yangling, China. He has been awarded numerous national research awards in China. He is the Chair of the soil physics division of the Chinese Soil Science Society.*

**Francis X. Casey** (1996) – Determining solute transport parameters in field soil. (M.S. in soil physics)

*He completed a PhD at Iowa State University and works as a Professor and Department Head at North Dakota State University. He received the Outstanding Young Soil Physics Award from the Soil Science Society of America. He received an Excellence in Research Award from North Dakota State University.*

**Ibrahim Al-Salamah** (1998) – Effect of surface mulch on evaporation and salinity management. (M.S. in water resources).

*He completed his PhD at Iowa State University and works as Professor of Civil Engineering in Saudi Arabia.*

**Daniel E. Ressler** (1998) - Localized soil compaction and soil doming of the fertilizer injection zone to control nitrate leaching. (PhD in soil physics).

*He is an Associate Professor and Head of Department at Susquehanna University in Pennsylvania.*

**Fulin Shen** (1999) – Estimation of soil water content and resident and effluent solute concentrations using time domain reflectometry. (PhD in soil science).

*He continued his studies in Management Information Systems and works as a Software Scientist in Washington.*

**Jaehoon Lee** (1999) – Characterization of preferential solute transport in soil. (PhD in water resources).

*He is an Associate Professor at the University of Tennessee.*

**Tyson Ochsner** (2000) – Thermo-TDR measurements of thermal properties and volume fractions of water, solids, and air in soil. (M.S. in soil physics and water resources).

*He completed a PhD at Iowa State University and worked as a Research Soil Scientist for USDA-Agricultural Research Service. He is currently an Associate Professor at Oklahoma State University.*

**Francis X. Casey** (2000) - Field and laboratory investigations of solute transport through soil. (PhD in soil physics and water resources).

*He is a Professor and Department Head at North Dakota State University. He received the Outstanding Young Soil Physics Award from the Soil Science Society of America. He received an Excellence in Research Award from North Dakota State University.*

**Salem Al-Jabri** (2001) – Field estimation of soil hydraulic and chemical transport properties. (PhD in water resources).

*He is an Assistant Dean and Professor at Sultan Qaboos University in Oman.*

**Tyson Ochsner** (2003) – Heat pulse measurement techniques for soil water flux, soil water content and soil volumetric heat capacity. (PhD in soil physics).

*He is an Associate Professor at Oklahoma State University.*

**Anju Gaur** (2004) – Using surface solute transport properties measured by time domain reflectometry to predict subsurface leaching. (PhD in water resources and agricultural engineering).

*She was a Research Scientist with the International Water Management Institute (IWMI) in India. She currently works for the World Bank.*

**Joshua Heitman** (2007) – Measurement of coupled soil heat and water movement. (PhD in soil physics).

*He is an Associate Professor at North Carolina State University.*

**Heath Gieselmann** (2007) – Effect of a subsurface hydrophobic layer on water flow to a freezing front. (MS in Geology and Environmental Science).

*He is an assistant scientist at Iowa State University.*

**Dedrick Davis** (2012) -- Coupled heat, water, and solute transfer dynamics in wettable and non-wettable soils. (PhD in Soil Physics and Environmental Science).

*He is an Assistant Professor at Alabama A&M University.*

**Jacob Prater** (2012) -- The impacts of colloidal material on the fate and transport of 17  $\beta$ -estradiol in three Iowa soils. (PhD in Soil Physics and Environmental Science, Mike Thompson was his co-major professor).

*He is an Assistant Professor at the University of Wisconsin – Stevens Point.*

**Xinhua Xiao** (2012) -- Heat transfer, evaporation and carbon dioxide transfer in soil. (PhD in Soil Physics).

*She is a Post-doc at North Carolina State University.*

**Aaron Daigh** (2013) – Soil physical properties, soil carbon dioxide fluxes, and soil drainage dynamics of select bioenergy cropping systems. (PhD in Soil Physics).

*He is an Assistant Professor at North Dakota State University.*

**Sitha Ketpratoom** (2014) – Soil hydraulic conductivity in a non-wheel traffic corn row, a wheel traffic corn row, and a reconstructed prairie (MS in Soil Physics).

*He is an employee of the government of Thailand.*

**Chenyi Luo** (2015) -- Canopy chamber measurements of evapotranspiration in corn, soybean and reconstructed prairie (MS in Soil Physics).

*She is on OPT training at Iowa State University.*

**Zhuangji Wang** (2015) -- Time domain reflectometry waveform analysis with second order bounded mean oscillation (MS in Soil Physics).

*He is continuing studies for a PhD at Iowa State University.*

**Yuki Kojima** (2015) -- Sensible heat balance method to determine rates of soil freezing and thawing (PhD in Soil Physics).



*He is an Assistant Professor at Gifu University in Japan.*

**Zhuangji Wang (2017)** -- Numerical methods in soil hydrology: TDR waveform analysis and water vapor diode simulation (PhD in Soil Physics)

*He is a Post-doc at the University of Maryland*

**Ohene Akuoko (2018)** – Surface energy balance partitioning in tilled and non-tilled bare soils (MS in Environmental Science)

*He is an Agronomist with USDA-ARS in Florence, South Carolina.*

### **Current Graduate Students**

Chenyi Luo, PhD – student  
Erica Neideigh, MS -- student

### **Former Postdoctoral Researchers**

**Sang-Ok Chung (1986)** -- Studied partial mulch effects on soil heat and water transfer.

*He is a Professor at Kyungpook National University in South Korea.*

**Mushtaque Ahmed (1989)** -- Studied unsaturated hydraulic conductivity as measured with a tension infiltrometer.

*He is an Associate Professor at Sultan Qaboos University in Oman.*

**Ibrahim Nassar (1991)** – Studied simultaneous heat, water, and chemical transport in soil.

*He is a Professor at the University of Alexandria in Egypt.*

**Joe Benjamin (1991)** -- Studied preferential flow of water and chemicals.

*He is a Research Soil Scientist for USDA-ARS in Colorado.*

**Binayak Mohanty (1993)** – Studied spatial variability of soil physical properties.

*He is a Professor at Texas A & M University.*

**Robert Ewing (1995)** – Studied soil cracking and modeling of fracture flow.

*He is an Assistant Scientist at Iowa State University.*

**Tusheng Ren (1997)** – Studied soil heat transfer with a thermo-TDR probe.

*He is a Professor at China Agricultural University.*

**Kosuke Noborio** (1997) -- Studied soil heat, water, and chemical transfer.

*He is a Professor at Meiji University in Japan.*

**Victor Ella** (1999) – Studied swine manure transport in soil.

*He is a Professor and Department Chair at the University of Philippines.*

**Hadi Tabbara** (2000) -- Studied phosphorus transport in structured soil.

*He works in California.*

**Quanjiu Wang** (2001) -- Studied soil water flow.

*He is a Professor and Associate Dean at Xian Technological University in China.*

**Jaehoon Lee** (2001) – Studied organic pollutant transport in soil.

*He is an Associate Professor at the University of Tennessee.*

**Anju Gaur** (2004) – Studied tillage effects on surface solute transport properties.

*She is a Research Scientist with the International Water Management Institute (IWMI) in India.*

**Tusheng Ren** (2004) -- Studied coupled heat and water flow in soil.

*He is a Professor at China Agricultural University.*

**Jian Zhou** (2005) -- Studied soil heat transfer.

*He works in Canada.*

**Dedrick Davis** (2012-2013) – Studied soil heat transfer.

*He is an Assistant Professor at Alabama A&M University.*

**Dilia Kool** (2016-2018) – Studied soil hydraulic properties.

*She is a Post-doc in Israel.*

## **B. Research**

Dr. Horton performs fundamental research on coupled heat and mass transfer in soil. His fundamental research has applications to the following: climatology; water quality; agricultural production; ecosystem products and services; environmental investigations; waste disposal; and building heating/cooling systems.

Dr. Horton has not only made advances in the science of coupled heat and mass transfer, he has led development of instruments used to measure this coupled phenomena. Dr. Horton and colleagues have developed and patented an instrument for determining hydraulic and chemical transport properties of field soil. The tension infiltrometer is the only practical device available for determination of surface soil hydraulic and chemical transport properties. Dr. Horton has advanced techniques for determining soil thermal properties *in situ*. The heat pulse methods provide a means for monitoring temperature, thermal properties, and water content of near surface soil. The thermo-TDR probe sends both electrical and heat pulses into soil. The device allows measurement of thermal properties, water content, and bulk electrical conductivity on the same volume of soil. This instrument is useful for measuring heat and mass transfer under highly dynamic near surface soil conditions.

Dr. Horton and colleagues have developed and tested a nitrogen fertilizer applicator that manages the soil around the fertilizer band in such a way as to minimize nitrate leaching from the band. The fertilizer applicator causes localized soil doming and compaction in order to redirect infiltrating water around the fertilizer band rather than through the fertilizer band. The soil management leads to water management which reduces leaching of nitrogen fertilizer. The applicator method and device are both patented.

Current Multi-State (Regional) Project

W-3188 Characterizing mass and energy transport at different vadose zone scales

## **C. International activities**

- Visited Guelph University (Canada) to present lecture and share research ideas (1984)
- Visited University of Brussels (Belgium) to present lecture (1988)
- Visited Agricultural University, Wageningen (The Netherlands) to present lecture
- Visited Hohenheim University near Stuttgart (Germany) to exchange research ideas
- Visited BSF Research Group in Munich (Germany) to exchange research ideas (1989)
- Visited Ascona (Switzerland) to present research at a workshop (1989)
- Visited Benidorm (Spain) to present a lecture at a symposium (1989)
- Visited Leningrad (U.S.S.R.) to exchange research ideas (1990)
- Visited Japan, China, Hong Kong, and S. Korea as part of the Agricultural Travel Course (1991)
- Hosted Alex Globus from Leningrad for joint research (1991)
- Hosted Dimitri Kurtener from Leningrad for joint research (1991)
- Hosted Keith Bristow from Australia for joint research (1991)
- Visited St. Petersburg (Russia) to continue research projects (1992)

- Visited University of Hannover (Germany) to present a lecture (1992)
- Visited University of Berlin (Germany) to present a lecture (1993)
- Visited University of Hannover (Germany) to continue research projects (1993)
- Visited several universities and institutions in Lithuania to exchange ideas, (1993)
- Visited CSIRO lab in Townsville, Australia to conduct research (1993)
- Hosted Rienk van der Ploeg for joint research (1993)
- Hosted Keith Bristow for joint research (1993)
- Hosted Alex Globus for joint research (1993)
- Visited University of Hannover (Germany) for research (1994)
- Visited University of Alexandria (Egypt) to present seminars (1994)
- Visited University of Assiut (Egypt) to present seminars (1994)
- Visited University of Philippines in Los Banos to present seminars (1995)
- Visited Benguet State University (Philippines) to present seminars (1995)
- Visited Xavier University (Philippines) to present seminars (1995)
- Visited St. Petersburg (Russia) to continue research projects (1995)
- Visited Presov University (Slovakia) to present seminar (1995)
- Visited CSIRO lab in Townsville, Australia to present seminar (1996)
- Presentation at W. Pacific Geophys. Conf. in Brisbane, Australia (1996)
- Hosted Ibrahim Nassar for joint research (1996)
- Hosted Alex Globus for joint research (1997)
- Hosted Jan Ilsemann for joint research (1997)
- Hosted Jurg Bachmann for joint research (1997)
- Visited University of Hannover (Germany) to continue research projects (1997)
- Visited University of Warsaw (Poland) to present seminar (1997)
- Visited Hungarian Academy of Sciences (Budapest) to present seminar (1997)
- Visited Henan Inst. of Science and Tech. (China) to present seminar (1997)
- Visited Yangling Inst. of Soil Science (China) to teach short course (1997)
- Presentation at Intl. Symp. on Soil Erosion & Dryland Farming (China) (1997)
- Visited Xian Institute of Soil Science (China) to give seminar (1997)
- Visited ETH-Zurich (Switzerland) to give seminar (1997)
- Visited University of Vienna (Austria) to give seminar (1997)
- Visited Presov University (Slovakia) to give seminar (1997)
- Visited Slovakia Inst. of Hydrology (Bratislava) to give seminar (1997)
- Visited University of Hannover (Germany) to give a seminar and to continue research
- Visited China Institute of Environmental Science (Beijing) to present seminar (1998)
- Visited Zhengzhou University (China) to present seminar (1998)
- Visited Zhengzhou Agricultural University (China) to present seminar (1998)
- Visited Henan Inst. of Science and Tech. (China) to present a seminar (1998)
- Visited Yangling Inst. of Soil Science (China) to present seminar and continue research (1998)
- Visited University of Hannover (Germany) to teach a short course on mass and heat
- Visited Hungarian Academy of Sciences (Budapest) to present seminar (1999)
- Visited Yangling Inst. of Soil Science (China) to present seminar series and continue research (1999)
- Visited Beijing Agricultural University to present a seminar (1999)

- Visited University of Hannover (Germany) to present a seminar and continue research (1999)
- Hosted Dirk Hermsmeyer from Germany (1999)
- Hosted Tusheng Ren from China (1999)
- Visited University of Philippines in Los Banos to present seminar (2000)
- Visited Benguet State University (Philippines) to present seminar (2000)
- Visited IRRI (Philippines) to present a seminar (2000)
- Visited Yangling Inst. of Soil Science (China) to present seminar series and continue research (2000)
- Visited University of Hannover (Germany) to present a seminar and continue research (2000)
- Visited Hungarian Academy of Sciences (Budapest) to present seminar (2000)
- Hosted Nandor Fodor from Hungary (2000)
- Hosted Aleksandr Globus from Russia (2000)
- Hosted Q. Wang from China (2000-2001)
- Hosted Mingan Shao from China (2000)
- Hosted Jan Ilseman from Germany (2000)
- Visited Yangling Inst. of Soil Science (China) to continue research (2001)
- Visited China Agricultural University (Beijing) to present seminar (2001)
- Spent 6 month Sabbatical in Yangling, China (2002 - 2003)
- Visited University of Hannover to continue research (2004)
- Visited Iwate University in Japan to continue research (2004)
- Hosted Tusheng Ren from China (2004)
- Hosted Mingan Shao from China (2004)
- Visited Sultan Qaboos University in Oman to present a seminar and to review the Dept. of Soil, Water and Agricultural Engineering (2005)
- Visited University of Hannover to continue research (2005)
- Visited China Agricultural University (Beijing) to continue research (2005)
- Visited Yangling Inst. of Soil Science (China) to present a seminar and to continue research (2005)
- Visited China Agricultural University (Beijing) to continue research (2006)
- Visited Sultan Qaboos University in Oman to present a seminar and to review the Dept. of Soil, Water and Agricultural Engineering (2006)
- Visited Yangling Inst. of Soil Science (China) to continue research (2006)
- Keynote Speaker at the International Symposium on Soil Erosion and Dryland Farming held in Yangling, China (2006)
- Presented seminars at China Agricultural University, Institute of Atmospheric Physics, and the Institute of Soil and Water Conservation, in China (2007)
- Visited Israel to serve on the Technical Advisory Committee of BARD (2008)
- Presented a seminar at Technion Institute in Haifa, Israel (2008)
- Presented a seminar at the Institute of Soil and Water Conservation, in China (2008)
- Visited China Agricultural University (Beijing) to continue research (2008)
- Presented a seminar at the Institute of Soil and Water Conservation, in China (2009)
- Presented a seminar at China Agricultural University (Beijing) (2009)
- Chinese Academy of Sciences Visiting Professorship for Senior Scientists (2010)

- Seminars at the Institute of Soil and water conservation in Yangling, China (2010)
- Seminar at the University of the Philippines in Los Banos (2010)
- Seminar at China Agricultural University, Beijing, China (2010)
- Taught a Short Course at the Institute of Soil and Water Conservation, Yangling, China (2010)
- Seminar at Xian University of Science and Technology, Xian, China (2010)
- Seminar at Chinese Academy of Sciences Conference for Foreign Visiting Scientists, Beijing, China (2010)
- Seminar at Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China (2010)
- Seminar at NW China Agricultural and Forestry University, Yangling, China (2010)
- Hosted Xiao Zhang (2011)
- Hosted Jing-hui Xu (2011-2012)
- Seminar at Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China (2012)
- Seminar at Xian University of Science and Technology, Xian, China (2013)
- Seminar at the Institute of Soil and Water Conservation, Yangling, China (2013)
- Keynote address at the Hydropedology Conference in Beijing, China (2013)
- Continued soil physics research projects at China Agricultural University (2014)
- Continued soil physics research projects at China Agricultural University (2015)
- Hosted Yili Lu (2016)
- Continued soil physics research projects at China Agricultural University (2016)
- Keynote address at the Kirkham Conference in Israel (2016)
- Seminar at Nanjing Soil Science Institute, China (2016)
- Seminar at Nanjing University of Information and Science, China (2016)
- Seminar at China Agricultural University, Beijing, China (2016)
- Hosted Minmin Wen (2017)
- Hosted Bing Tong (2017)
- Hosted Junko Nishiwaki (2017)
- Seminar at China Agricultural University, Beijing, China (2017)
- Keynote address in Shenyang, China (2016)
- Invited talk at JpGU Conference in Tokyo, Japan (2017)
- Seminar at Meiji University, Japan (2017)
- Seminar at Tokyo University, Japan (2017)
- Seminar at Nagoya University, Japan (2017)
- Seminar at Mie University, Japan (2017)
- Seminar at Gifu University, Japan (2017)
- Seminars (2) at China NW A&F University (2018)

#### **D. Service**

##### Departmental committees

- Basic soil properties research panel (1981-)
- Equipment and machinery (1982)
- Soil Science uniform preliminary exam (1982-)

- Computer (1983-1995) (co-chair 1988-1990)
- Greenhouse and growth chamber (1985-1995)
- Quaker Oats Peace Corps. Scholarship (1985-1987)
- Pierre lecture committee (1984-)
- Undergraduate Curriculum Revision Committee (1993-1994)
- Strategic Planning (1995)
- Chair of soil panel (1995-2002)
- Agronomy Department Head Advisory Council (1995-2002)
- Search committee for Extension Soil Scientist (1997)
- Chair, search committee for Soil Chemist (1997)
- Search committee for Agronomy Department Head (1998)
- Chair of Pierre Lecture Committee (2004-2006)
- Chair of Faculty Awards Committee (2005-2010)
- Member of Promotion & Tenure Committee (2004-2007)
- Chair of a grievance committee (2005)
- Chair of a post-tenure evaluation committee (2005, 2006, 2007)
- Chair of Promotion & Tenure Committee (2007)
- Faculty Search Committee (2010)
- Chair of Soil Panel (2011-)
- Promotion & Tenure Committee (2014)
- Faculty Search Committee (2015)
- Chair, Faculty Search Committee (2015)
- Promotion & Tenure Committee (2017-8)

#### College committees

- Agricultural Honors (1992-1995)
- Awards (2011, Distinguished Professors)
- P&T Committee (2010-2013)
- Awards (2014, 2015, 2017 Distinguished Professors)

#### University committees

- Research planning activity-management and use of natural resources, section B. water (1983)
- Planning committee for the U.S.A.-Arab Chamber of Commerce and ISU conference
- Steering committee for International Center of Theoretical Physics (1992)
- Chair of steering committee for Water Resources Program (1996-2002)

#### Regional Research Project W-155

- Secretary (1986)
- Chairman (1987)

#### National committees

- University delegate to the Universities Council on Water Resources (1988-)

#### International committees

- Advisory committee for China National Key Laboratory of Soil Erosion and Dryland Farming of the Loess Plateau (1996-2013)
- Technical Advisory Committee for BARD (US-Israel Bi-national Agricultural Research and Development Fund) (2007-2010)
- Curriculum review committee for the Dept. of Soil, Water and Agricultural Engineering, Sultan Qaboos University, Oman (2005 -2006)

#### Federal Agencies

- Panel evaluating research proposals for USDA-National Research Initiative (1995)
- Panel on US-Environmental Protection Agency guidelines for pesticide use (1998)
- Panel evaluating the soils program of USDA-Agricultural Research Service (2005)

#### Professional society committees and activities

##### *Soil Science Society of America*

- Presiding chair of S1 session at annual meetings (1983)
- Presiding chair of S1 session at annual meetings (1985)
- Presiding chair of S1 session at annual meetings (1986)
- Presiding chair for Symposium-Transport of water and solutes in macropores-III (1988)
- Planning committee for workshop on Perspectives on the Contamination of Groundwater from Agriculture (1986)
- Book Series Committee (1987-1989)
- Soil Science Education Award Committee (1987)
- Elected Program Chair of Soil Physics, S-1, (1994)
- Presidential Nomination Committee of Soil Science Society of America (1995)
- Chair, Feasibility study for revision of Agronomy 9, Part 1 (1995)
- Editorial Committee for revision of Methods of Soil Analysis (1998)
- Don and Betty Kirkham Conference Committee (1998)
- Book Series Committee (1999-2002)
- Associate Editor for Soil Science Society of America Journal (2001-2002)
- Don and Betty Kirkham Soil Physics Award Committee (2005-2006 and 2008-)
- Represented the Soil Science Society of America by meeting with Congressman Tom Latham to ask him to Co-Chair a Congressional Soils Caucus. Rep. Latham agreed to do it (2005).
- Chair, Don and Betty Kirkham Soil Physics Award Committee (2006)
- Bouyoucos Committee (2008-)
- Rapid response team (2007-2010)

##### *American Society of Agronomy*

- Secretary-Treasurer for Iowa Chapter (1983)
- Vice-President for Iowa Chapter (1986)
- President for Iowa Chapter (1989)
- Planning Committee for regional meeting (1987)
- Membership Committee (1983-1992)



-Associate Editor for Agronomy Journal (1989-1995)

*American Geophysical Union*

-Session organizer (2005)

-Frontiers of Hydrologic Sciences Lecturer (2005)

**VIII. PUBLICATIONS (Google scholar web info can be viewed at:**

**[http://scholar.google.com/citations?view\\_op=list\\_works&hl=en&user=Hrofz70AAAAJ](http://scholar.google.com/citations?view_op=list_works&hl=en&user=Hrofz70AAAAJ)**

**A. Journal Articles (bold indicates student or post-doc colleague)**

1. Horton, R., F. Beese, and P. J. Wierenga. 1982. Physiological response of chile pepper to trickle irrigation. *Agron. J.* 74:551-555.
2. Beese, F., R. Horton, and P. J. Wierenga. 1982. Growth and yield response of chile pepper to trickle irrigation. *Agron. J.* 74:556-561.
3. Horton, R., P. J. Wierenga, and D. R. Nielsen. 1982. A rapid technique for obtaining uniform water content distributions in unsaturated soil columns. *Soil Sci.* 133:397-399.
4. Horton, R., P. J. Wierenga, and D. R. Nielsen. 1983. Evaluation of methods for determining the apparent thermal diffusivity of soil near the surface. *Soil Sci. Soc. Am. J.* 47:25-32.
5. Horton, R., and P. J. Wierenga. 1983. Estimating the soil heat flux from observations of soil temperature near the surface. *Soil Sci. Soc. Am. J.* 47:14-20.
6. Horton, R., and P. J. Wierenga. 1983. Determination of the mean soil temperature for evaluation of heat flux in soil. *Agric. Meteorol.* 28:309-320.
7. Horton R., and P. J. Wierenga. 1984. The effect of column wetting on soil thermal conductivity. *Soil Sci.* 138:102-108.
8. Horton, R., O. Aguirre-Luna, and P. J. Wierenga. 1984. Observed and predicted two-dimensional soil temperature distributions under a row crop. *Soil Sci. Soc. Am. J.* 48:1147-1152.
9. Horton, R., O. Aguirre-Luna, and P. J. Wierenga. 1984. Soil temperature in a row crop with incomplete surface cover. *Soil Sci. Soc. Am. J.* 48:1225-1232.
10. **Modaihsh, A. S., R. Horton, and D. Kirkham.** 1985. Soil evaporation suppression by sand mulches. *Soil Sci.* 139:357-361.

11. **Hill**, R. L., R. Horton, and R. M. Cruse. 1985. Tillage effects on soil water retention and pore size distribution of two mollisols. *Soil Sci. Soc. Am. J.* 49:1264-1270.
12. **Potter**, K. N., R. M. Cruse, and R. Horton. 1985. Tillage effects on soil thermal properties. *Soil Sci. Soc. Am. J.* 49:968-973.
13. **McBride**, J. F., and R. Horton. 1985. An empirical function to describe measured water distributions from horizontal infiltration experiments. *Water Resour. Res.* 21:1539-1544.
14. **Mukhtar**, S., J. L. Baker, R. Horton, and D. C. Erbach. 1985. Soil water infiltration as affected by use of the Paraplow. *Transactions ASAE*, 28:1811-1816.
15. Thompson, M. L., J. F. **McBride**, and R. Horton. 1985. Effects of drying treatments on porosity of soil materials. *Soil Sci. Soc. Am. J.* 49:1360-1364.
16. **Hamlett**, J. M., R. Horton, and N. A. C. Cressie. 1986. Resistant and exploratory techniques for use in semivariogram analysis. *Soil Sci. Soc. Am. J.* 50:868-875.
17. Cressie, N. A. C., and R. Horton. 1987. A robust-resistant spatial analysis of soil water infiltration. *Water Resour. Res.* 23:911-917.
18. Horton, R., M. L. Thompson, and J. F. **McBride**. 1987. Method of estimating the travel time of noninteracting solutes through compacted soil material. *Soil Sci. Soc. Am. J.* 51:48-53.
19. **Potter**, K. N., R. Horton, and R. M. Cruse. 1987. Soil surface roughness effects on radiation reflectance and soil heat flux. *Soil Sci. Soc. Am. J.* 51:855-860.
20. **Chung**, S. O., and R. Horton. 1987. Soil heat and water flow with a partial surface mulch. *Water Resour. Res.* 23:2175-2186.
21. **McBride**, J. F., R. Horton, and M. L. Thompson. 1987. Evaluation of three Iowa soil materials as liners for hazardous-waste landfills. *Proc. Iowa Acad. Sci.* 94:73-77.
22. **Sanchez**, C. A., A. M. Blackmer, R. Horton, and D. R. Timmons. 1987. Assessment of errors associated with plot size and lateral movement of nitrogen-15 when studying fertilizer recovery under field conditions. *Soil Sci.* 144:344-351.
23. **Ankeny**, M. D., T. C. Kaspar, and R. Horton. 1988. Design for an automated tension infiltrometer. *Soil Sci. Soc. Am. J.* 52:893-896.
24. **van Es**, H. M., M. L. Thompson, S. J. Henning, and R. Horton. 1988. Tillage studies

on reclaimed surface-mined land: Use of geostatistics and the effect of landscape position. *Soil Sci.* 145:173-179.

25. **Kluitenberg**, G. J., R. Horton, M. L. Thompson, and J. F. **McBride**. 1988. Recompact Iowa soil materials before using as liners for waste containment. *J. Iowa Acad. Sci.* 95:114-116.
26. **Nassar**, I. N. and R. Horton. 1989. Determination of the apparent thermal diffusivity of a nonuniform soil. *Soil Sci.* 147:238-244.
27. **Kluitenberg**, G. J., and R. Horton. 1989. Pressurized layer reduces transport through compacted clay liners. *J. Environ. Qual.* 18:228-232.
28. Horton, R. 1989. Canopy shading effects on soil heat and water flow. *Soil Sci. Soc. Am. J.* 53:669-679.
29. **Nassar**, I. N., and R. Horton. 1989. Composition of soil apparent thermal diffusivity from multiharmonic temperature analysis for nonuniform soils. *Soil Sci.* 149:125-130.
30. **Nassar**, I. N., and R. Horton. 1989. Water transport in unsaturated nonisothermal, salty soil: 1. Experimental results. *Soil Sci. Soc. Am. J.* 53:1323-1329.
31. **Nassar**, I. N., and R. Horton. 1989. Water transport in unsaturated nonisothermal, salty soil: 2. Theoretical development. *Soil Sci. Soc. Am. J.* 53:1330-1337.
32. **Kluitenberg**, G. J., and R. Horton. 1990. Effect of solute application method on preferential transport of solutes in soil. *Geoderma* 46:283-297.
33. Kanwar, R. S., H. A. **Rizvi**, M. **Ahmed**, R. Horton, and S. J. Marley. 1989. Measurement of field-saturated hydraulic conductivity by using Guelph and Velocity Permeameters *Trans. ASAE* 32:1885-1890.
34. **Hamlett**, J. M., S. W. Melvin, and R. Horton. 1990. Traffic and soil amendment effects on infiltration and compaction. *Trans. ASAE* 33:821-826.
35. **Ankeny**, M. D., T. C. Kaspar, and R. Horton. 1990. Characterization of tillage effects on unconfined infiltration measurements. *Soil Sci. Soc. Am. J.* 54:837-840.
36. **Kluitenberg**, G. J., and R. Horton. 1990. Analytical solution for two-dimensional heat conduction beneath a partial surface mulch. *Soil Sci. Soc. Am. J.* 54:1197-1206.
37. **Hamlett**, J. M., J. L. Baker, and R. Horton. 1990. Water and anion movement under ridge tillage: A field study. *Trans ASAE* 33:1859-1866
38. **Ankeny**, M. D., M. **Ahmed**, T. C. Kaspar, and R. Horton. 1991. A simple field

method for determining unsaturated hydraulic conductivity. *Soil Sci. Soc. Am. J.* 55:467-470.

39. **Kluitenberg**, G. J., J. R. **Bilskie** and R. Horton. 1991. Rubberized asphalt sealing for cores of shrinking soil. *Soil Sci. Soc. Am. J.* 55:1504-1507.
40. **Mohanty**, B. P., R. S. Kanwar, and R. Horton. 1991. A robust-resistant approach to interpret spatial behavior of saturated hydraulic conductivity of a glacial till soil under no-tillage system. *Water Resour. Res.* 27:2979-2992.
41. Kirkham, D. and R. Horton. 1992. The stream function of potential theory for a dual pipe subirrigation-drainage system. *Water Resour. Res.* 28:373-387.
42. **Czapar**, G. F., R. Horton, and R. S. Fawcett. 1992. Herbicide and tracer movement in soil columns containing an artificial macropore. *J. Environ. Qual.* 21:110-115.
43. **Nassar**, I. N., A. M. Globus, and R. Horton. 1992 Simultaneous soil heat and water transfer. *Soil Sci.* 154:465-472.
44. **Nassar**, I. N., and R. Horton. 1992 Simultaneous transfer of heat, water, and solute in porous media: I. Theoretical development. *Soil Sci. Soc. Am. J.* 56:1350-1356
45. **Nassar**, I. N., R. Horton, and A. M. Globus. 1992 Simultaneous transfer of heat, water, and solute in porous media: II. Experiment and analysis. *Soil Sci. Soc. Am. J.* 56:1357-1365.
46. Kirkham, D., and R. Horton. 1993. Modeling water flow from subirrigation with drainage. *Soil Sci. Soc. Am. J.* 57:1451-1457.
47. **Kiuchi**, M., R. Horton, and T. C. Kaspar. 1994. Leaching characteristics of repacked soil columns as influenced by subsurface flow barriers. *Soil Sci. Soc. Am. J.* 58:1212-1218.
48. **Nassar**, I. N., H. M. Shafey, and R. Horton. 1994. Heat, water, and solute transfer in compacted soil beneath plastic cover. *Bull. Fac. Engr. Part 2, Assiut University, Egypt*, 22:61-75.
49. **Mohanty**, B. P., M. D. **Ankeny**, R. Horton, and R. S. Kanwar. 1994. Spatial analysis of hydraulic conductivity measured using disc infiltrometers. *Water Resour. Res.* 30:2489-2498.
50. Prunty, L., and R. Horton. 1994. Steady state temperature distribution in nonisothermal, unsaturated, closed soil cells. *Soil Sci. Soc. Am. J.* 58:1358-1363.
51. Bristow, K. L., G. J. Kluitenberg, and R. Horton. 1994. Measurement of soil thermal

- properties with a dual-probe heat-pulse technique. *Soil Sci. Soc. Am. J.* 58:1288-1294.
52. **Mohanty**, B. D., W. M. **Klittich**, R. Horton, and M.Th. van Genuchten. 1995. Spatio-temporal variability of soil temperature within three land areas exposed to different tillage. *Soil Sci.Soc. Am. J.* 59:752-759.
53. Bristow, K. L., J. R. **Bilskie**, G. J. Kluitenberg, and R. Horton. 1995. Comparison of techniques for extracting soil thermal properties from dual-probe heat-pulse data. *Soil Sci.* 160:1-7.
54. **Green**, J. D., R. Horton, and J. L. Baker. 1995. Crop residue effects on the leaching of surface applied chemicals. *J. Environ. Qual.* 24:343-351.
55. Jaynes, D. B., S. D. Logsdon, and R. Horton. 1995. Field method for measuring mobile/immobile water content and solute transfer rate coefficient. *Soil Sci. Soc. Am. J.* 59:352-356.
56. **Green**, C. J., A. M. Blackmer, and R. Horton. 1995. Nitrogen effects on conservation of carbon during corn residue decomposition in soil. *Soil Sci. Soc. Am. J.* 59:1411-1415.
57. Horton, R., K. L. Bristow, G. J. Kluitenberg, and T. S. Sauer. 1996. Crop residue effects on surface radiation and energy balance. *Theor. and Appl. Climat.* 54:27-37.
58. Bristow, K. L., and R. Horton. 1996. Modeling the impact of partial surface mulch on soil heat and water flow. *Theor. and Appl. Climatol.* 54:85-98.
59. **Mohanty**, B. P., R. Horton, and M. D. **Ankeny**. 1996. Infiltration and macroporosity under a row crop agricultural field in a glacial till field. *Soil Sci.* 161:205-213.
60. **Nassar**, I. N., J. G. **Benjamin**, and R. Horton. 1996. Thermally induced water movement in uniform clay soil. *Soil Sci.* 161:471-479.
61. **Kiuchi**, M., T. C. Kaspar, and R. Horton. 1996. Managing soil water and chemical transport with subsurface flow barriers. *Soil Sci. Soc. Am. J.* 60:880-887.
62. **Shao**, M., and R. Horton. 1996. Soil water diffusivity determination by general similarity theory. *Soil Sci.* 161:727-734.
63. **Casey**, F. X., S. D. Logsdon, R. Horton, and D. B. Jaynes. 1997. Immobile water content and mass exchange coefficient of a field soil. *Soil Sci. Soc. Am. J.* 61:1030-1036.
64. Kirkham, D., R. R. van der Ploeg, and R. Horton. 1997. Potential theory for dual-depth subsurface drainage of ponded land. *Water Resour. Res.* 33:1643-1654.

65. **Nassar**, I. N., and R. Horton. 1997. Heat and water transfer in compacted and layered soils. *J. Environ. Qual.* 26:81-88.
66. **Nassar**, I. N., and R. Horton. 1997. Heat, water, and solute transfer in unsaturated porous media: I. Theory development and transport coefficient evaluation. *Transp. Porous Media* 27:-17-38.
67. **Nassar**, I. N., R. Horton, and A. M. Globus. 1997. Thermally induced water transfer in salinized, unsaturated soil. *Soil Sci. Soc. Am. J.* 61:1293-1299.
68. **Nassar**, I. N., H. M. Shafey, and R. Horton. 1997. Heat, water, and solute transfer in unsaturated porous media: II. Compacted soil beneath plastic cover. *Transp. Porous Media* 27:39-55.
69. **Ressler**, D. E., R. Horton, J. L. Baker, and T. C. Kaspar. 1997. Testing a nitrogen fertilizer applicator designed to reduce leaching losses. *Applied Engineering in Agric.* 13:345-350.
70. **Shao**, M., and R. Horton. 1997. Reply to Comments on "Soil water diffusivity determination by general similarity theory". *Soil Sci.* 162:769-770.
71. **Shao**, M., and R. Horton. 1998. Integral method for estimating soil hydraulic properties. *Soil Sci. Soc. Am. J.* 62:585-592.
72. **Shao**, M., R. Horton, and D. B. Jaynes. 1998. Analytical solution for one-dimensional heat conduction-convection equation. *Soil Sci. Soc. Am. J.* 62:123-128.
73. **Shao**, M., R. Horton, and R. Miller. 1998. An approximate solution to the convection-dispersion equation of solute transport in soil. *Soil Sci.* 163:339-345.
74. **Bilskie**, J. R., R. Horton, and K. L. Bristow. 1998. Test of a dual-probe heat-pulse method for determining thermal properties of porous materials. *Soil Sci.* 163:346-355.
75. **Ressler**, D. E., R. Horton, J. L. Baker, and T. C. Kaspar. 1998. Evaluation of localized compaction and doming to reduce anion leaching losses using lysimeters. *J. Environ. Qual.* 27:910-916.
76. **Casey**, F. X., S. L. Logsdon, R. Horton, and D. B. Jaynes. 1998. Measurement of field soil hydraulic and solute transport parameters as a function of water pressure head. *Soil Sci. Soc. Am. J.* 62:1172-1178.
77. **Ressler**, D. E., R. Horton, and G. J. Kluitenberg. 1998. Laboratory study of zonal management effects on preferential movement in soil. *Soil Sci.* 163:601-610.

78. **Azevedo**, A. S., R. S. Kanwar, and R. Horton. 1998. Effect of cultivation on hydraulic properties of an Iowa soil using tension infiltrometers. *Soil Sci.* 163:22-29.
79. **Shao**, M. and R. Horton. 1999. Reply to comments on integral method for estimating soil hydraulic properties. *Soil Sci. Soc. Am. J.* 63:253.
80. **Casey**, F. X. M., D. B. Jaynes, R. Horton, and S. D. Logsdon. 1999. Comparing field methods that estimate mobile-immobile model parameters. *Soil Sci. Soc. Am. J.* 63:800-806.
81. **Ewing**, R. P., and R. Horton. 1999. Discriminating dyes in soil with color image analysis. *Soil Sci. Soc. Am. J.* 63:18-24.
82. **Ewing**, R. P., and R. Horton. 1999. Quantitative color image analysis of agronomic images. *Agron. J.* 91:148-153.
83. **Nassar**, I. N., and R. Horton. 1999. Transport and fate of volatile organic chemicals in unsaturated, nonisothermal salty porous media:I. Theoretical development. *J. Hazard. Mater.* 69:151-167.
84. **Nassar**, I. N., L. Ukrainczyk, and R. Horton. 1999. Transport and fate of volatile organic chemicals in unsaturated, nonisothermal salty porous media:II. Experimental and numerical studies for benzene. *J. Hazardous Materials* 69:169-185.
85. **Nassar**, I. N., and R. Horton. 1999. Salinity and compaction effects on soil water evaporation and water and solute distributions. *Soil Sci. Soc. Am. J.* 63:752-758.
86. **Ren**, T., K. Noborio, and R. Horton. 1999. Measuring soil water content, electrical conductivity, and thermal properties with a thermo-TDR probe. *Soil Sci. Soc. Am. J.* 63:450-457.
87. **Ressler**, D. E., R. Horton, T. C. Kaspar, and J. L. Baker. 1999. Crop response to localized compaction and doming. *Agron. J.* 90:747-752.
88. **Wang**, Q., M. **Shao**, and R. Horton. 1999. Modified Green and Ampt models for layered soil infiltration and muddy water infiltration. *Soil Sci.* 164:445-453.
89. **Noborio**, K., R. Horton, and C. S. Tan. 1999. Time domain reflectometry probe for simultaneous measurement of soil matric potential and water content. *Soil Sci. Soc. Am. J.* 63:1500-05.
90. **Bachmann**, J., R. Horton, R. R. van der Ploeg, and S. **Woche**. 2000. Modified sessile drop method for assessing initial soil-water contact angle of sandy soil. *Soil Sci. Soc.*

Am. J. 64:564-7.

91. **Casey**, F. X. M., R. P. **Ewing**, and R. Horton. 2000. Automated system for miscible displacement through soil of multiple volatile organic compounds. *Soil Sci.* 165:841-847.
92. **Casey**, F. X. M., S. K. Ong, and R. Horton. 2000. Degradation and transformation of trichloroethylene in miscible-displacement experiments through zero-valent metals. *Env. Sci. Tech.* 34:5023-5029.
93. **Lee**, J., D. B. Jaynes, and R. Horton. 2000. Evaluation of a simple method for estimating solute transport parameters: Laboratory studies. *Soil Sci. Soc. Am. J.* 64:492-498.
94. **Lee**, J., R. Horton, and D. B. Jaynes. 2000. A time domain reflectometry method to measure immobile water content and mass exchange coefficient. *Soil Sci. Soc. Am. J.* 64:1911-17.
95. **Nassar**, I. N., R. Horton, and G. N. Flerchinger. 2000. Simultaneous heat and mass transfer in soil columns exposed to freezing/thawing conditions. *Soil Sci.* 165:208-216.
96. **Ren**, T., G. J. Kluitenburg, and R. Horton. 2000. Determining soil water flux and pore water velocity by a heat pulse technique. *Soil Sci. Soc. Am. J.* 64:552-560.
97. **Shao**, M., and R. Horton. 2000. Exact solution for horizontal water redistribution by general similarity. *Soil Sci. Soc. Am. J.* 64:561-564.
98. **Shao**, M., Q. Wang, and R. Horton. 2000. A simple infiltration method for estimating soil hydraulic properties of unsaturated soils: I. Theory. *Acta Pedologica Sinica* 37: 1-8.
99. **Shao**, M., Q. Wang, and R. Horton. 2000. A simple infiltration method for estimating soil hydraulic properties of unsaturated soils: II. Experimental results. *Acta Pedologica Sinica* 37: 217-224.
100. **Bachmann**, J., R. Horton, T. **Ren**, and R.R. van der Ploeg. 2001. Comparison of the thermal properties of four wettable and four water-repellent soils. *Soil Sci. Soc. Am. J.* 65:1575-1679.
101. **Lee**, J., R. Horton, K. **Noborio**, and D. B. Jaynes. 2001. Characterization of preferential flow in undisturbed, structured soil columns using a vertical TDR probe. *J. Contaminant Hydrol.* 51:131-144.



102. **Ochsner**, T.E., R. Horton, and T. **Ren**. 2001. Simultaneous water content, air-filled porosity, and bulk density measurements with thermal-time domain reflectometry reflectometry. *Soil Sci. Soc. Am. J.* 65:1618-1622.
103. **Ochsner**, T.E., R. Horton, and T. **Ren**. 2001. A new perspective on soil thermal properties. *Soil Sci. Soc. Am. J.* 65:1641-1647.
104. **Bachmann**, J., R. Horton, and R. R. van der Ploeg. 2001. Isothermal and nonisothermal evaporation from four sandy soils of different water repellency. *Soil Sci. Soc. Am. J.* 65: 1599-1607.
105. **Shao**, M. and R. Horton. 2001. Response to comments on exact solution for horizontal redistribution by general similarity. *Soil Sci. Soc. Am. J.* 65:958-959.
106. **Shao**, M. and R. Horton. 2001. Response to comments on exact solution for horizontal redistribution by general similarity. *Soil Sci. Soc. Am. J.* 65:960-961.
107. **Al-Jabri**, S.A., R. Horton, and D.B. Jaynes. 2002. A point-source method for rapid simultaneous estimation of soil hydraulic and chemical transport properties. *Soil Sci. Soc. Am. J.* 66:12-18.
108. **Bachmann**, J., R. Horton, S.A. Grant, and R.R. van der Ploeg. 2002. Temperature dependence of water retention curves for wettable and water repellent soils. *Soil Sci. Soc. Am. J.* 66:44-52.
109. **Lee**, J., R. Horton, and D. B. Jaynes. 2002. The feasibility of shallow time domain reflectometry probes to describe solute transport through undisturbed soil cores. *Soil Sci. Soc. Am. J.* 66:53-57.
110. **Al-Jabri**, S. A., R. Horton, D. B. Jaynes, and A. **Gaur**. 2002. Field determination of soil hydraulic and chemical transport properties. *Soil Sci.* 167:353-368.
111. **Ella**, V. B., S. W. Melvin, R. S. Kanwar, L. C. Jones, R. Horton. 2002. Inverse three-dimensional groundwater modeling using the finite-difference method for recharge estimation in a glacial till aquitard. *Transactions of the ASAE*. Vol. 45(3): 703–715.
112. **Hermsmeyer**, D., J. **Isemann**, J. **Bachmann**, R.R. van der Ploeg, and R. Horton. 2002. Model calculations of water dynamics in lysimeters filled with granular wastes. *J. Plant Nutr. Soil Sci.* 165:339-346.
113. **Hermsmeyer**, R.R. van der Ploeg, R. Horton, and J. **Bachmann**. 2002. Lysimeter study of water and salt dynamics in a saline metallurgical waste. *J. Plant Nutr. Soil Sci.* 165:211-219.

114. **Ilsemann, J., R. R. van der Ploeg, R. Horton, and J. Bachmann.** 2002. Laboratory method for determining immobile water content and mass exchange coefficient. *J. Plant Nutr. Soil Sci.* 165:332-338.
115. **Wang, Q., R. Horton, and M. Shao.** 2002. Effective raindrop kinetic energy influence on soil potassium transport into runoff. *Soil Sci.* 167:369-376.
116. **Wang, Q., T.E. Ochsner, and R. Horton.** 2002. Mathematical analysis of heat pulse signals for soil water flux determination. *Water Resour. Res.* 38:10.1029/2001WR1089.
117. **Lee, J., L. S. Hundal, R. Horton, and M. L. Thompson.** 2002. Sorption and transport behavior of Naphthalene in an aggregated soil. *J. Environ. Qual.* 31:1716-1721.
118. **Shangguan, Z., M. Shao, R. Horton, T. Lei, L. Qin, and J. Ma.** 2002. A model for regional optimal allocation of irrigation water resources under deficit irrigation and its applications. *Agric. Water Manage.* 52:139-154.
119. **Wang, Q., R. Horton, and M. Shao.** 2002. Horizontal Infiltration Method for Determining Brooks-Corey Model Parameters. *Soil Sci. Soc. Am. J.* 66:1733-1740.
120. **Wang, Q., R. Horton, and J. Lee.** 2002. A simple model relating soil water characteristic curve and soil solute breakthrough curve. *Soil Sci.* 167:436-443.
121. **Ewing, R. P. and R. Horton,** Diffusion in sparsely connected porespace: Temporal and spatial scaling. *Water Resour. Res.* 38:10.1029/2002WR001412, 2002.
122. **Hermesmeier, D., R. Diekmann, R. R. van der Ploeg, and R. Horton.** 2002. Physical properties of a soil substitute derived from an aluminum recycling by-product. *J. Hazard. Mater.* 95:107- 124.
123. **Ren, T., T.E. Ochsner, R. Horton, and Z. Ju.** 2003. Heat-pulse method for soil water content measurement: influence of the specific heat of the soil solids. *Soil Sci. Soc. of Am. J.* 67:1631-1634.
124. **Ren, T., T.E. Ochsner, and R. Horton.** 2003. Development of thermo-time domain reflectometry for vadose zone measurements. *Vadose Zone J.* 2:544-551.
125. **Wang, Q., R. Horton, and M. Shao.** 2003. Algebraic model for one-dimensional infiltration and soil water distribution. *Soil Sci.* 168:671-676.
126. **Li, Y., M. Shao, Q. Wang, R. Horton.** 2003. Open hole effects of perforated plastic mulches on evaporation. *Soil Sci.* 168:751-758.

127. **Gaur**, A., R. Horton, D. B. Jaynes, J. **Lee**, and S. A. **Al-Jabri**. 2003. Using surface time domain reflectometry measurements to estimate subsurface chemical movement. *Vadose Zone J* 2:539-543.
128. Sauer, T. J., D. W. Meek, T.E. **Ochsner**, A. R. **Harris**, and R. Horton. 2003. Errors in heat flux measurement by flux plates of contrasting design and thermal conductivity. *Vadose Zone J.* 2:580-588.
129. **Ochsner**, T.E., R. Horton, and T. **Ren**. 2003. Use of the dual-probe heat-pulse technique to monitor soil water content. *Vadose Zone J.* 2:572-579.
130. **Brevik**, E. C., J. **Lee**, T. E. Fenton, and R. Horton. 2003. Evaluation of the influence of soil moisture, calcite content, and temperature on bulk electrical conductivity. *J. Iowa Acad. of Sci.* 110:56-60.
131. **Bachmann**, J., S. K. **Woche**, M.-O. **Goebel**, M. B. Kirkham, and R. Horton. 2003. Extended methodology for determining wetting properties of porous media. *Water Resour. Res.* 39:10.1029/2003WR002143.
132. **Brevik**, E. C., T. E. Fenton, and R. Horton. 2004. Effect of daily soil temperature fluctuations on soil electrical conductivity as measured with the Geonics® EM-38. *Precision Agric.* 5:143-150.
133. **Göbel**, M.-O., J. **Bachmann**, S. K. **Woche**, W. R. Fischer, and R. Horton. 2004. Soil water potential and aggregate size effects on the wettability of soil. *Soil Sci. Soc. Am. J.* 68: 383-393.
134. **Duppong**, L. M., K. Delate, M. Liebman, R. Horton, F. Romero, G. Kraus, J. Petrich, and P. K. Chowdbury. 2004. The effect of natural mulches on crop performance, weed suppression, and biochemical constituents of catnip and St. John's wort. *Crop Sci.* 44: 861-869.
135. **Helmke**, M.F., W.W. Simpkins, and R. Horton. 2004. Experimental determination of effective diffusion parameters in the matrix of fractured till. *Vadose Zone J.* 3: 1050-1056.
136. **Lu**, D., M. **Shao**, R. Horton, and C. Liu. 2004. Effect of changing bulk density during water desorption measurement on soil hydraulic properties. *Soil Sci.* 169: 319-329.
137. **Rogis**, C., L. R. Gibson, A. D. Knapp, and R. Horton. 2004. Enhancing germination of eastern gamagrass seed with moist-prechilling and gibberellic acid. *Crop Sci.* 44: 549-552.

138. **Rogis, C., L. R. Gibson, A. D. Knapp, and R. Horton.** 2004. Can solid matrix priming with GA3 break seed dormancy in eastern gamagrass? *J. Range Manage.* 57: 656-660.
139. **Wang, Q., M. Shao, and R. Horton.** 2004. A simple method for estimating water diffusivity of unsaturated soils. *Soil Sci. Soc. Am. J.* 68:713-718.
140. **Ren, T., M. Shao, Z. Ju, and R., Horton.** 2004. Measurement of soil physical properties with thermo-time domain reflectometry: Theory. *Acta Pedologica Sinica* 41: 225-228.
141. **Ren, T., M. Shao, Z. Ju, and R., Horton.** 2004. Measurement of soil physical properties with thermo-time domain reflectometry: Applications. *Acta Pedologica Sinica* 41: 523-529.
142. **Woche, S. K., M.-O. Goebel, M. B. Kirkham, R. Horton, R. R. van der Ploeg, and J. Bachmann.** 2005. Contact angle of soils as affected by depth, texture, and land management. *European J. Soil Sci.* 56: 239-251.
143. **Ochsner, T. E., R. Horton, G. J. Kluitenberg, and Q. Wang.** 2005. Evaluation of the heat pulse ratio technique for measuring soil water flux. *Soil Sci. Soc. Am. J.* 69: 757-765.
144. **Helmke, M.F., W.W. Simpkins, and R. Horton.** 2005. Fracture-controlled transport of nitrate and atrazine in four Iowa till units. *J. Environ. Qual.* 34: 227-236.
145. **Ren, T., Z. Ju, Y. Gong, and R. Horton.** 2005. Comparing heat-pulse and TDR soil water contents from thermo-TDR probes. *Vadose Zone Journal* 4: 1080-1086.
146. **Gaur, A., R. Horton, and D. B. Jaynes.** 2006. Measured and predicted solute transport in a tile drained field. *Soil Sci. Soc. Am. J.* 70: 872-881.
147. **Ochsner, T. E., T. J. Sauer, and R. Horton.** 2006. Field tests of the soil heat flux plate method and some alternatives. *Agron. J.* 98:1005-1014.
148. **Al-Jabri, S.A., J. Lee, A. Gaur, R. Horton and D.B. Jaynes.** 2006. A dripper-TDR method for in situ determination of hydraulic conductivity and chemical transport properties of surface soils. *Adv. Water Resour.* 29: 239-249.
149. **Zhou, J., J. L. Heitman, R. Horton, T. Ren, T. E. Ochsner, L. Prunty, R. P. Ewing and T. J. Sauer.** 2006. Method for maintaining one-dimensional temperature gradients in unsaturated, closed soil cells. *Soil Sci. Soc. Am. J.* 70:1303-1309.
150. **Bachmann, J., G. Arye, M. Deuer, S. K. Woche, R. Horton, K. H. Hartge, and Y.**

- Chen. 2006. Universality of a surface tension – contact angle relation for hydrophobic soils of different texture. *J. Plant Nutr. Soil Sci.* 169: 745-753.
151. **Ilsemann, J.**, R.R. van der Ploeg, R. Horton, and D. Hermsmeyer. 2006. A semi-analytical model for solute transport in layered dual-porosity media. *J. Plant Nutr. Soil Sci.* 169: 754-761.
152. Ochsner, T. E., T. J. Sauer, and R. Horton. 2007. Soil heat storage measurements in energy balance studies. *Agron. J.* 99:311-319.
153. Sauer, T. J., T. E. Ochsner, and R. Horton. 2007. Soil heat flux plates: heat flow distortion and thermal contact resistance. *Agron. J.* 99:304-310.
154. **Lu, S.**, T. Ren, Y. Gong, and R. Horton. 2007. An improved model for predicting room temperature soil thermal conductivity versus water content. *Soil Sci. Soc. Am. J.* 71:8-14.
155. Kluitenberg, G. J., T. E. Ochsner, and R. Horton. 2007. Improved analysis of heat pulse signals for soil water flux determination. *Soil Sci. Soc. Am. J.* 71:53-55.
156. **Heitman, J.L.**, A. Gaur, R. Horton, D.B. Jaynes, and T.C. Kaspar. 2007. Field measurement of soil surface chemical transport properties for comparison of management zones. *Soil Sci. Soc. Am. J.* 71:529-536.
157. **Gaur, A.**, D. B. Jaynes, R. Horton, and T. E. Ochsner. 2007. Surface and subsurface solute transport properties at row and inter-row positions. *Soil Sci.* 172:419-431.
158. **Heitman, J.L.**, R. Horton, T. Ren, and T.E. Ochsner. 2007. An improved approach for measurement of coupled heat and water transfer in soil cells. *Soil Sci. Soc. Am. J.* 71:872-880.
159. Wang, Q. and R. Horton. 2007. Boundary layer theory description of solute transport in soil. *Soil Sci.* 172:835–841.
160. Ewing, R.P. and R. Horton. 2007. Thermal conductivity of a cubic lattice of spheres with capillary bridges. *J. of Physics D: Applied Physic* 40: 4959–4965.
161. Liu, G., B. Li, T. Ren, and R. Horton. 2007. Analytical solution of heat pulse method in a parallelepiped sample space. *Soil Sci. Soc. Am. J.* 71: 1607-1619.
162. **Heitman, J.L.**, R. Horton, T. Ren, I.N. Nassar, and D. **Davis**. 2008. A test of coupled soil heat and water transfer prediction under transient boundary conditions. *Soil Sci. Soc. Am. J.* 72: 1197–1207.
163. **Gieselman, H.**, J.L. **Heitman**, and R. Horton. 2008. Effect of a hydrophobic layer on

- the upward movement of water under freezing conditions. *Soil Sci.* 173:297-305.
164. Liu, X., T. Ren, and R. Horton. 2008. Determination of soil bulk density with thermo-TDR sensors. *Soil Sci. Soc. Am. J.* 72: 1000-1005.
165. **Heitman**, J.L., R. Horton, T.J. Sauer, and T.M. DeSutter. 2008. Sensible heat observations reveal soil-water evaporation dynamics. *J. Hydromet.* 9:165-171.
166. Liu, G., B. Li, T. Ren, R. Horton, and B. C. Si. 2008. Analytical solution of heat pulse method in a parallelepiped sample space with inclined needles. *Soil Sci Soc Am J.* 72: 1208–1216.
167. Gao, Z., R. Horton, **L. Wang**, H. Liu, and J. Wen. 2008. An improved force-restore method for soil temperature prediction. *European Journal of Soil Science* 59: 972–981.
168. Sauer, T.J., O.D. Akinyemi, P. Thery, J.L. **Heitman**, T.M. DeSutter, and R. Horton. 2008. Evaluation of a new, perforated heat flux plate design. *International Com. Heat Mass Transfer* 35:800–804.
169. **Lu**, S., T. Ren, and Y. Gong, and R. Horton. 2008. Evaluation of models for describing soil water retention curve from saturation to oven dryness. *Soil Sci. Soc. Am. J.* 72:1542–1546.
170. **Heitman**, J. L., X. **Xiao**, R. Horton, and T. J. Sauer. 2008. Sensible heat measurements indicating depth and magnitude of subsurface soil water evaporation. *Water Resour. Res.*, 44, W00D05, doi:10.1029/2008WR006961.
171. Gao, Z., D. H. Lenschow, R. Horton, M. Zhou, **L. Wang**, and J. Wen. 2008. Comparison of two soil temperature algorithms for a bare ground site on the Loess Plateau in China. *J. Geophys. Res.*, 113, D18105, doi:10.1029/2008JD010285.
172. **Ju**, Z., T. Ren, and R. Horton. 2008. Influences of dichlorodimethylsilane treatment on soil hydrophobicity, thermal conductivity, and electrical conductivity. *Soil Science* 173: 425–432.
173. **Huo**, Z., M.A. Shao, and R. Horton. 2008. Impact of gully on soil moisture of shrubland in wind-water erosion crisscross region of the Loess Plateau. *Pedosphere* 18: 674–680.
174. Gao, Z., L. Wang, and R. Horton. 2009. Comparison of six algorithms to determine the soil apparent thermal diffusivity at a site in the Loess Plateau of China. *Hydrol. Earth Sys. Sci. Discuss.* 6:2247-2274.
175. Gao, Z., R. Horton, H.P. Liu, J. Wen, and L. Wang. 2009. Influence of wave phase

difference between surface soil heat flux and soil surface temperature on land surface energy balance closure. *Hydrol. Earth Sys. Sci. Discuss.* 6:1089-1110.

176. Wei, X., M. Shao, R. Horton, and X. Han. 2009. Humic acid transport in water-saturated porous media. *Environ. Model. Assess.* DOI 10.1007/s10666-008-9186-y.
177. **Hu**, W., M. Shao, Q. Wang, J. Fan, and R. Horton. 2009. Temporal changes of soil hydraulic properties under different land uses. *Geoderma* 149:355-366.
178. **Lu**, S., Z. Ju, T. Ren, and R. Horton. 2009. A general approach to estimate soil water content from thermal inertia. *Agric. Forest Meteorol.*, doi:10.1016/j.agrformet.2009.05.011.
179. **Fu**, X., M. Shao, X. Wei, and R. Horton. 2009. Effects of two perennials, fallow and millet on distribution of phosphorous in soil and biomass on sloping loess land, China. *Catena* 77:200–206.
180. Wei, X., M. Shao, X. **Fu**, R. Horton, Y. Li, and X. Zhang. 2009. Distribution of soil organic C, N and P in three adjacent land use patterns in the northern Loess Plateau, China. *Biogeochemistry* DOI 10.1007/s10533-009-9350-8.
181. **Davis**, D.D., R. Horton, J.L. Heitman, and T. Ren. 2009. Wettability and hysteresis effects on water sorption in relatively dry soil. *Soil Sci. Soc. Am. J.* 73:1947–1951.
182. Wang, Q., R. Horton, and J. Fan. 2009. An analytical solution for one-dimensional water infiltration and redistribution in unsaturated soil. *Pedosphere* 19:104–110.
183. **Andersen**, D.S., R.T. Burns, L.B. Moody, M.J. Helmers, and R. Horton. 2010. Comparison of the Iowa State University – effluent limitation guidelines model with the soil-plant-air-water model for evaluating containment basin performance. *Trans. ASABE* 53: 207-217.
184. Heitman, J.L., R. Horton; T.J. Sauer; T. Ren; **X. Xiao**. 2010. Latent heat in soil heat flux measurements. *Agricultural and Forest Meteorology* 150:1147–1153.
185. **Fu**, X., M. Shao, X. Wei, and R. Horton. 2010. Soil organic carbon and total nitrogen as affected by vegetation types in Northern Loess Plateau of China. *Geoderma* 155: 31–35.
186. Wei, X., M. Shao, X. **Fu**, and R. Horton. 2010. Changes in soil organic carbon and total nitrogen after 28 years grassland afforestation: Effects of tree species, slope position and soil order. *Plant and Soil* 331:165–179.
187. **Wang**, L., R. Horton, and Z. Gao. 2010. Comparison of six algorithms to determine the soil apparent thermal diffusivity at a site in the Loess Plateau of China. *Soil*

Science 175:51-60.

188. **Han**, X., M. Shao, and R. Horton. 2010. Estimating van Genuchten model parameters of undisturbed soils using an integral method. *Pedosphere* 20:55-62.
189. Li, Y., R. Horton, T. Ren and C. Chen. 2010. Prediction of annual reference evapotranspiration using climatic data. *Agricultural Water Management* 97:300–308.
190. Li, Y., R. Horton, T. Ren and C. Chen. 2010. Investigating time scale effects on reference evapotranspiration from *Epan* data in north China. doi: 10.1175/2009JAMC2130.1. *J. Applied Meteorology and Climatology* 49:867-878.
191. **Andersen**, D.S., R.T. Burns, L.B. Moody, M.J. Helmers, R. Horton, C. Pederson. 2010. The use of the soil-plant-air-water model to predict the hydraulic performance of vegetative treatment areas for controlling open lot runoff. *Transactions ASAE* 53:537-543.
192. **Fu**, X., M. Shao, X. Wei, and R. Horton. 2010. Urea-derived nitrogen losses in a semiarid region of China Loess Plateau. *SAGB: Acta Agriculturae Scandinavica, Section B - Plant Soil Science* 60:560 – 568.
193. Laird, D.A, P. Fleming, D.L. Karlen, D.D. **Davis**, R. Horton, and B. Wang. 2010. Impact of biochar amendments on the quality of a typical midwestern agricultural soil. *Geoderma* 158:443-449.
194. Laird, D.A., P.D. Fleming, B. Wang, R. Horton, and D.L. Karlen. 2010. Biochar impact on nutrient leaching from a midwestern agricultural soil. *Geoderma* 158:436-442.
195. Lü, H., Z. Yu, R. Horton and Y. Zhu. 2010. The retrieval of the root zone soil moisture by the H-infinity filter assimilation procedure. *Hydro. Process.* 24: 3648–3660.
196. Zhou, B., M. Shao, M. Wen, Q. Wang, R. Horton. 2010. Effects of coal gangue content on water movement and solute transport in a China Loess Plateau soil. *Clean – Soil, Air, Water* 38:1031–1038.
197. Gao, Z., R. Horton, H.P. Liu. 2010. Influence of wave phase difference between surface soil heat flux and soil surface temperature on soil surface energy balance closure. *J. Geophys. Res.*, 115, D16112, doi:10.1029/2009JD013278.
198. Wei, X., M. Shao, J. Zhuang, and R. Horton. 2010. Soil iron fractionation and availability at selected landscape positions in a loessial gully region. *Soil Science and Plant Nutrition* 56: 617–626.



199. **Fu, W.**, M. Huang, M. Shao, and R. Horton. 2010. Soil CO<sub>2</sub> efflux of two shrubs in response to plant density in the northern Loess Plateau of China. *African J. Biotech.* 9:6916-6926.
200. Wei, X., M. D. Hao, X. H. Xue, P. Shi, R. Horton, A. Wang, Y. F. Zang. 2010. Nitrous oxide emission from highland winter wheat field after long-term fertilization. *Biogeosciences* 7: 3301–3310.
201. **Brockhoff, S.R.**, N.E. Christians, R.J. Killorn, R. Horton, and **D. Davis**. 2010. Physical and mineral-nutrition properties of sand-based turfgrass root-zones amended with biochar. *Agron. J.* 102:1627–1631.
202. Li, Y., M. Li, and R. Horton. 2011. Single and joint multifractal analysis of soil particle size distributions. *Pedosphere* 21: 75–83.
203. Lu, H., Z. Yu, R. Horton, Y. Zhu, J. Zhang, Y. Jia and C. Yang. 2011. The effect of a gravel-sand mulch on soil water and temperature in the semiarid loess region of Northwest China. *J. Hydrol. Engineer.*, 449:1943-1953.
204. **Lu, S.**, T. Ren, Z. Yu, and R. Horton. 2011. Method to estimate the water vapor enhancement factor in soil. *European J. of Soil Science* 62:498–504.
205. **Xiao, X.**, R. Horton, T.J. Sauer, J.L. Heitman, and T. Ren. 2011. Cumulative soil water evaporation as a function of depth and time. *Vadose Zone J.* 10:1016–1022.
206. **Zhu, Y.**, Y. Wang, M. Shao, and R. Horton. 2011. Estimating soil water content from surface digital image gray level measurements under visible spectrum. *Can. J. Soil Sci.* 91: 69-76.
207. **Jia, X.**, M. Shao, X. Wei, D. She, X. Li, and R. Horton. 2011. Estimating total net primary productivity of managed grasslands by a state-space modeling approach in a small catchment on the Loess Plateau, China. *Geoderma*, doi:10.1016/j.geoderma.2010.09.016.
208. **Zhao, P.**, M. Shao, and R. Horton. 2011. Performance of soil particle size distribution models for describing deposited soils adjacent to constructed dams in the China Loess Plateau. *Acta Geophysica* 59:124-138.
209. Wang, L., S. Wei, R. Horton, and M. Shao. 2011. Effects of vegetation and slope aspect on water budget in the hill and gully region of the Loess Plateau of China. *Catena* 87:90–100.
210. Jury, W. A., D. Or, Y. Pachepsky, H. M. Vereecken, J. W. Hopmans, L. R. Ahuja, B. E. Clothier, K. L. Bristow, G. J. Kluitenberg, P. Moldrup, J. Simunek, M. Th. van

- Genuchten, and R. Horton. 2011. Kirkham's legacy and contemporary challenges in soil physics research. *Soil Sci. Soc. Am. J. Soil Sci. Soc. Am. J.* 75:1589–1601.
211. Lü, H., Z. Yu, R. Horton, Y. Zhu, Z. Wang, Z. Hao, and L. Xiang. 2011. Multi-scale assimilation of root zone soil water predictions. *Hydro. Process.* 25: 3158–3172.
212. Li, Y., M. Shao, and R. Horton. 2011. Effect of polyacrylamide applications on soil hydraulic characteristics and sediment yield of sloping land. *Procedia Environ. Sci.* 11:763–773.
213. **Liu, H.**, T. Ren., J. Bachmann, and R. Horton. 2012. Moisture-dependent soil wettability and its influences on soil water retention curve. *Soil Sci. Soc. Am. J.* 76:342–349.
214. **Zhang, X.**, T. Ren, J.L. Heitman, and R. Horton. 2012. Measuring soil-water evaporation time and depth of dynamics with an improved heat-pulse sensor. *Soil Sci. Soc. Am. J.* 76:876–879.
215. **Wang, L.**, Z. Gao, R. Horton, D.H. Lenschow, K. Meng, and D.B. Jaynes. 2012. An analytical solution to one-dimensional heat conduction-convection equation in soil. doi:10.2136/sssaj2012.0023n. *Soil Sci. Soc. Am. J.* 76:1978–1986.
216. Liao, Y., Y. Li, R. Horton, and C. Cui. 2012. Multi-variable regression models of reference crop evapotranspiration and the spatial distributions in Xinjiang. *J. Drain. Irrig. Machin. Engineer.* 30:117-124.
217. Li, Y., X. Ren, and R. Horton. 2012. Influence of various soil textures and layer positions on infiltration characteristics of layered soils. *J. Drain. Irrig. Machin. Engineer.* 30:485-490.
218. **Xu, J.**, X. Ma, S.D. Logsdon, and R. Horton. 2012. Short, multi-needle FDR sensor suitable for measuring soil water content. doi:10.2136/sssaj2011.0361. *Soil Sci. Soc. Am. J.* 76:1929–1937.
219. **Deol, P.K.**, Heitman, J.L., A. Amoozegar, T. Ren, and R. Horton. 2012. Quantifying non-isothermal sub-surface soil water evaporation. *Water Resour. Res.* VOL. 48, W11503, 11 PP., 2012 doi:10.1029/2012WR012516.
220. **Basso, A.S.**, F.E. Miguez, D. Laird, R. Horton and M. Westgate. 2012. Assessing potential of biochar for increasing water holding capacity of sandy soils. *Global Change Biology & Bioenergy*, GCB doi: 10.1111/gcbb.12026.
221. **Liu, S.**, Y. Li, and R. Horton. 2013. Hydraulic parameters and horizontal infiltration characteristics of hydrophobic soil. *J. of Drain. and Irrigat. Machin. Engineer.*

31:1000-1006.

222. Wei, X., M. Huang, M. Shao, L. Li, X. Zhang, and R. Horton. 2013. Shrubs increase soil resources heterogeneity along semiarid grass slopes in the Loess Plateau. *J. Arid Environ.* 88:175-183.
223. **Kojima, Y.**, J.L. Heitman, G. Flerchinger, and R. Horton. 2013. Numerical evaluation of a sensible heat balance method to determine rates of soil freezing and thawing. *Vadose Zone J.* 12: vzj2012.0053.
224. Lu, H., Z. Yu, R. Horton, Y. Zhu, J. Zhang, Y. Jia and C. Yang. 2013. The streamflow estimation using the Xinanjiang rainfall runoff model and dual state-parameter estimation method. *J. Hydrol.* 480:102-114.
225. Zhao, Y., S. Peth, R. Horton, and R. Horn. 2013. Influence of grazing intensity on water and heat flows in partially frozen soil of Inner Mongolia. *Vadose Zone J.* 12: 1 - doi:10.2136/vzj2012.0059.
226. **Wang, Y.**, M. Shao, Z. Liu, and R. Horton. 2013. Regional-scale variation and distribution patterns of soil saturated hydraulic conductivities in surface and subsurface layers in the loessial soils of China. *J. Hydrol.* 487:13-23.
227. Liu, G., M. **Wen**, X. Chang, T. Ren and R. Horton. 2013. A self-calibrated dual probe heat pulse sensor for in situ calibrating the probe spacing. *Soil Sci. Soc. Amer. J.* 2013 77: 417-421.
228. Hunt, A.G., R.P. Ewing, and R. Horton. 2013. What's wrong with soil physics? *Soil Sci. Soc. Am. J.* 77:1877-1887.
229. Zhu, Y., L. Ren, R. Horton, H. Lu, X. Chen, Y. Jia, Z. Wang, and E.A. Sudicky. 2013. Estimating the contribution of groundwater to rootzone soil moisture. *Hydrol. Res.* 44:1102-1113.
230. **Liu, S.**, Y. Li, and R. Horton. 2013. Hydraulic parameters and horizontal infiltration characteristics of hydrophobic soil. *J. Drain. Irrig. Machin. Engineer.* 31:1000-1006.
231. Lu, H., Z. Yu, R. Horton, Y. Zhu, J. Zhang, Y. Jia and C. Yang. 2013. Effect of a gravel-sand mulch on soil water and temperature in the semiarid loess region of Northwest China. *J. Hydrol. Eng.* 18:1484-1494.
232. **Davis, D.D.**, R. Horton, J.L. Heitman, and T. Ren. 2014. Coupled heat and water transfer in wettable and non-wettable soils. *Soil Sci. Soc. Am. J.* 78:125-132.
233. **Liu, X.** S. Lu, R. Horton, and T. Ren. 2014. In situ monitoring of soil bulk density

- with a thermo-TDR sensor. *Soil Sci. Soc. Am. J.* 78:400-407.
234. **Xiao, X.**, R. Horton, T.J. Sauer, J.L. Heitman and T. Ren. 2014. Sensible heat balance measurements of soil water evaporation beneath a maize canopy. *Soil Sci. Soc. Am. J.* 78:361–368.
235. Li, X., H. Lü, R. Horton, T. An, and Z. Yu. 2014. Real-time flood forecast using the coupling support vector machine and data assimilation method. doi:10.2166/hydro.2013.075. *Journal of Hydroinformatics.* 16:973–988.
236. **Han, W.**, Y. Gong, T. Ren, and R. Horton. 2014. Accounting for time-variable soil porosity improves the accuracy of the gradient method for estimating soil carbon dioxide production. *Soil Sci. Soc. Am. J.* 78:1426–1433.
237. Wei, X., M. Shao, L. Du, and R. Horton. 2014. Humic acid transport in saturated porous media: Influence of flow velocity and influent concentration. *Journal of Environmental Sciences.* 26:2554-2561.
238. **Kojima, Y.**, J.L. Heitman, G.N. Flerchinger, T. Ren, R.P. Ewing, and R. Horton. 2014. Field test and sensitivity analysis of a sensible heat balance method to determine soil ice contents. *Vadose Zone Journal* 13 (9)
239. **Daigh, A.L.**, X. Zhou, M.J. Helmers, C.H. Pederson, R. Ewing, and R. Horton. 2014. Subsurface drainage flow and soil water dynamics of reconstructed prairies and corn rotations for biofuel production. *Vadose Zone Journal* 13 (4)
240. **Zhang, X.**, J. Heitman, R. Horton, and T. Ren. 2014. Measuring near-surface soil thermal properties with the heat-pulse method: correction of ambient temperature and soil–air interface effects. *Soil Science Society of America Journal* 78:1575-1583.
241. **Lu, Y.**, S. Lu, R. Horton, and T. Ren. 2014. An empirical model for estimating soil thermal conductivity from texture, water content, and bulk density. *Soil Science Society of America Journal* 78:1859-1868.
242. **Xu, J.**, S.D. Logsdon, X. Ma, R. Horton, W. Han, and Y. Zhao. 2014. Measurement of soil water content with dielectric dispersion frequency. *Soil Science Society of America Journal* 78:1500-1506.
243. **Daigh, A.L.**, T.J. Sauer, X. Xiao, and R. Horton. 2014. Spatial and temporal dynamics of soil-surface carbon dioxide emissions in bioenergy corn rotations and reconstructed prairies. *Soil Sci. Soc. Am. J.* 78:1338-1350.
244. **Deol, P.K.**, J.L. Heitman, A. Amoozegar, T. Ren, and R. Horton. 2014. Inception and magnitude of subsurface evaporation for a bare soil with natural surface boundary

- conditions. *Soil Science Society of America Journal* 78:1544-1551.
245. **Xu, J.**, Ma, X., Logsdon, S., and Horton, R. 2014. FDR probe structure influence on the soil dielectric spectrum measurement. *Trans. of the Chinese Soc. Agric. Machin.* 45:102-107.
246. **Wang, Z.**, Y. Kojima, S. Lu, Y. Chen, R. Horton, and R.C. Schwartz. 2014. Time domain reflectometry waveform analysis with second-order bounded mean oscillation. *Soil Sci. Soc. Am. J.*78:1146–1152.
247. **Xiao, X.**, X. Kuang, T.J. Sauer, J.L. Heitman, and R. Horton. 2015. Bare soil carbon dioxide fluxes with time and depth determined by high-resolution gradient-based measurements and surface chambers. *Soil Sci. Soc. Am. J.* 79:1073–1083.
248. **Peng, H.**, R. Horton, T. Lei, Z. Dai, and X. Wang. 2015. A modified method for estimating fine and coarse fractal dimensions of soil particle size distributions based on laser diffraction analysis. *Journal of Soils and Sediments*, DOI 10.1007/s11368-014-1044-8.
249. **Prater, J.R.**, R. Horton, and M.L. Thompson. 2015. Reduction of estrone to 17  $\beta$ -estradiol in the presence of swine manure colloids. *Chemosphere* 119:642-645.
250. **Wen, M.**, G. Liu, B. Li, B.C. Si, and R. Horton. 2015. Evaluation of a self-correcting dual probe heat pulse sensor. *Agricultural and Forest Meteorology* 200:203-208.
251. **Peng, X.**, T. Ren, J. Heitman, and R. Horton. 2015. Field evaluation and improvement of the plate method for measuring soil heat flux density. *Agric. For. Meteorol.* 155:341–349.
252. **Daigh, A.L.M.**, X. Zhou, M.J. Helmers, C.H. Pederson, R. Horton, M. Jarchow, and M. Liebman. 2015. Subsurface drainage nitrate and total reactive phosphorus losses in bioenergy-based prairies and corn systems. *J. Environ. Qual.* doi:10.2134/jeq2015.02.0080.
253. Qiu, L., X. Wei, T. Ma, Y. Wei, R. Horton, X. Zhang, and J. Cheng. 2015. Effects of land-use change on soil organic carbon and nitrogen in density fractions and soil  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  in semiarid grasslands. *Plant Soil* DOI 10.1007/s11104-015-2435-3.
254. Shao, M. and R. Horton. 2015. Response to “Comments on ‘Integral Method for Estimating Soil Hydraulic Properties’ by Hu (2015).” *Soil Sci. Soc. Am. J.* 79:970–971.
255. Xiao, X., X. Zhang, T. Ren, R. Horton, and J.L. Heitman. 2015. Thermal property measurement errors with heat-pulse sensors positioned near a soil–air interface. *Soil*

Sci. Soc. Am. J. 79:766–771.

256. **Daigh**, A.L., T.J. Sauer, X. Xiao, and R. Horton. 2015. Comparison of models for determining soil-surface carbon dioxide effluxes in different agricultural systems. *Agron. J.* 107:1077–1086.
257. **Tian**, Z., J.L. Heitman, R. Horton, and T. Ren. 2015. Determining soil ice contents during freezing and thawing with thermo-time domain reflectometry. *Vadose Zone J.* doi:10.2136/vzj2014.12.0179.
258. **Lu**, Y., X. Liu, J.L. Heitman, R. Horton, and T. Ren. 2016. Determining soil bulk density with thermo-time domain reflectometry: a thermal conductivity based approach. *Soil Sci. Soc. Am. J.* 80:48–54.
259. **Xiao**, X., T.J. Sauer, J.W. Singer, R. Horton, J.L. Heitman, and T. Ren. 2016. Partitioning evaporation and transpiration in a maize field using heat pulse sensors for evaporation measurement. *Transactions of the ASABE* 59:591-599.
260. **Dietzel**, R., M.Z. Liebman, R.P. Ewing, M.J. Helmers, R. Horton, M. Jarchow, and S. Archontoulis. 2016. How efficiently do corn- and soybean-based cropping systems use water? A systems modeling analysis. *Global Change Biology* 22:666–681, doi: 10.1111/gcb.131.
261. **Tong**, B., Z. Gao, R. Horton, Y. Li, and L. Wang. 2016. An empirical model for estimating soil thermal conductivity from soil water content and porosity. *J. Hydrometeor.* 17, 601–613.
262. **Wang**, Z., Y. Lu, Y. Kojima, S. Lu, M. Zhang, Y. Chen, and R. Horton. 2016. Tangent line/second-order bounded mean oscillation waveform analysis for short TDR probe. *Vadose Zone J.* 15:1-7.
263. **Prater**, J.R., R. Horton, and M.L. Thompson. 2016. Impacts of environmental colloids on the transport of 17  $\beta$ -estradiol in intact soil cores. *Soil and Sediment* 25:2, 164-180, DOI:10.1080/15320383.2016.1112360.
264. **Peng**, H., T. Lei, Z. Jiang, and R. Horton. 2016. A method for estimating maximum static rainfall retention in pebble mulches used for soil moisture conservation. *J. Hydrol.* 537: 346–355.
265. Zhu, Y., H. Lü, R. Horton, Z. Yu, and F. Ouyang. 2016. A modified soil moisture model for two-layer soil. *Groundwater* DOI: 10.1111/gwat.12387.
266. **Kojima**, Y., J.L. Heitman, G.N. Flerchinger, T. Ren, and R. Horton. 2016. Sensible

- heat balance estimates of transient soil ice contents. *Vadose Zone J.*  
doi:10.2136/vzj2015.10.0134.
267. Liu, G., **M. Wen**, R. Ren, B. Si, R. Horton, and K. Hu. 2016. A general in situ probe spacing correction method for dual probe heat pulse sensor. *Agric. and Forest Meteorol.* 226:50–56.
268. **Tian**, Z., Y. Lu, R. Horton, and T. Ren. 2016. A simplified de Vries-based model to estimate thermal conductivity of unfrozen and frozen soil. *Europ. J. Soil Sci.* 66:1-9.  
doi: 10.1111/ejss.12366.
269. Horton, R. 2016. Set loving relationships as your highest priority. *CSA News* 61 (7), 31-32.
270. Ren, R., G. Liu, M. Wen, R. Horton, B. Li, and B. Si. 2017. The effects of probe misalignment on sap flux density measurements and in situ probe spacing correction methods. *Agricultural and Forest Meteorology* 232, 176-185.
271. **Tong**, B., Z. Gao, R. Horton, and L. Wang. 2017. Soil apparent thermal diffusivity estimated by conduction and by conduction-convection heat transfer models. *J. Hydrometeor.* doi.org/10.1175/JHM-D-16-0086.1.
272. **Lawrinenko**, M., Z. Wang, R. Horton, D. Mendivelso-Perez, E.A. Smith, T.E. Webster, D.A. Laird, and J. van Leeuwen. 2017. Macroporous carbon supported zerovalent iron for remediation of trichloroethylene. DOI: 10.1021/acssuschemeng.6b02375. *ACS Sustainable Chem. Eng.* 5:1586–1593.
273. Lu, Y., X. Liu, M. Zhang, J. Heitman, R. Horton, and T. Ren. 2017. Thermo–time domain reflectometry method: advances in monitoring in situ soil bulk density. *Methods of Soil Analysis Vol. 2*, doi:10.2136/msa2015.0031.
274. Wang, Y., X. Zhang, X. Xiao, J. Heitman, R. Horton, and T. Ren. 2017. An empirical calibration for heat-balance sap-flow sensors in maize. *Agron. J.* 109:1–7,  
doi:10.2134/agronj2016.10.0611
275. Gao, Z., Tong, B., Horton, R., Mamtimin, A., Li, Y., & Wang, L. 2017. Determination of desert soil apparent thermal diffusivity using a conduction-convection algorithm. *J. Geophysical Research: Atmospheres*, 122. 9569–9578,  
doi.org/10.1002/2017JD027290.
276. Wang, Z., M. Ankeny, and R. Horton. 2017. The impact of water vapor diodes on soil water redistribution. *J. Hydrology* 552:600–608. doi.10.1016/j.jhydrol.2017.07.009.
277. Peng, X., Y. Wang, J. Heitman, T. Ochsner, R. Horton, and T. Ren. 2017.

- Measurement of soil-surface heat flux with a multi-needle heat-pulse probe. *European Journal of Soil Science* 68:336–344, doi: 10.1111/ejss.12421.
278. Peng, X., J. Heitman, R. Horton, and T. Ren. 2017. Determining near-surface soil heat flux density using the gradient method: a thermal conductivity model-based approach. *J. Hydrometeorology* 18:2285-2295, DOI: 10.1175/JHM-D-16-0290.1.
279. Dokoohaki, H., F.E. Miguez, D. Laird, R. Horton, and A.S. Basso. 2017. Assessing the biochar effects on selected physical properties of a sandy soil: an analytical approach, *Communications in Soil Science and Plant Analysis*, DOI: 10.1080/00103624.2017.1358742.
280. Wang, Z., R. Schwartz, Y. Kojima, Y. Chen, and R. Horton. 2017. A comparison of second-order derivative based models for time domain reflectometry waveform analysis. *Vadose Zone J.* 16. doi:10.2136/vzj2017.01.0014.
281. Liu, G., Y. Lu, M. Wen, T. Ren, and R. Horton. 2017. Advances in the heat-pulse technique: improvements in measuring soil thermal properties. *Methods of Soil Analysis Vol. 2*, doi:10.2136/msa2015.0028.
282. Zhang, X., T. Ren, J. Heitman, and R. Horton. 2017. Advances in heat-pulse methods: measuring near-surface soil water content. *Methods of Soil Analysis Vol. 2*, doi:10.2136/msa2015.0032.
283. Heitman, J.L., X. Zhang, X. Xiao, T. Ren, and R. Horton. 2017. Advances in heat-pulse methods: measuring soil water evaporation with sensible heat balance. *Methods of Soil Analysis Vol. 2*, doi:10.2136/msa2015.0029.
284. Aller, D., K. Moore, R. Hintz, D. Laird, and R. Horton. 2017. Biochar age and crop rotation impacts on soil quality. *Soil Sci. Soc. Am. J.* 81:1157–1167 doi:10.2136/sssaj2017.01.0010.
285. Tian, Z., T. Ren, Y. Kojima, Y. Lu, R. Horton, and J.L. Heitman. 2017. An improved thermo-time domain reflectometry method for determination of ice contents in partially frozen soils. *Journal of Hydrology* 555:786–796.
286. Wang, Y., T. Ochsner, J. Heitman, R. Horton, X. Xue, and T. Ren. 2017. Weighing lysimeter data confirm the accuracy and precision of the heat-pulse technique for measuring daily soil evaporation. *Soil Sci. Soc. Am. J.* 81:1074–1078, doi:10.2136/sssaj2017.02.0049n.
287. Ma, D., J. Zhang, R. Horton, Q. Wang, and J. Lai. 2017. Analytical method to determine soil hydraulic properties from vertical infiltration experiments. *Soil Sci. Soc. Am. J.*, doi:10.2136/sssaj2017.02.0061.



288. Luo, C., Z. Wang, T.J. Sauer, M.J. Helmers, and R. Horton. 2018. Portable canopy chamber measurements of evapotranspiration in corn, soybean, and reconstructed prairie. *Agricultural Water Management* 198:1–9, doi.org/10.1016/j.agwat.2017.11.024.
289. Zhang, Y., R. Horton, D. J. White and P. K. R. Vennapusa. 2018. Seasonal frost penetration in pavements with multiple layers. *J. Cold Reg. Eng.* 32:1-9. DOI: 10.1061/(ASCE)CR.1943-5495.0000159.
290. Zhu, Y., L. Ren, R. Horton, H. Lü, Z. Wang, and F. Yuan. 2018. Estimating the contribution of groundwater to the root zone of winter wheat using root density distribution functions. *Vadose Zone J.* doi:10.2136/vzj2017.04.0075.
291. Tian, Z., Y. Lu, T. Ren, R. Horton, J. L. Heitman. 2018. Improved thermo-time domain reflectometry method for continuous in-situ determination of soil bulk density. *Soil & Tillage Research* 178:118–129. doi.org/10.1016/j.still.2017.12.021.
292. Zhang, M., Y. Lu, J. Heitman, R. Horton and T. Ren. 2018. Temporal changes of soil water retention behavior as affected by wetting and drying following tillage. *Soil Sci. Soc. Am. J.* 81:1288–1295. doi:10.2136/sssaj2017.01.0038.
293. Xie, X., Y. Lu, T. Ren, and R. Horton. 2018. An empirical model for estimating soil thermal diffusivity from texture, bulk density, and degree of saturation. *Journal of Hydrometeorology* 19:445-457. DOI: 10.1175/JHM-D-17-0131.1.
294. Sadeghi, M., B. Ghanbarian, and R. Horton. 2018. Derivation of an explicit form of the percolation-based effective medium approximation for thermal conductivity of partially saturated soils. *Water Resour. Res.* 54.https://doi.org/10.1002/2017WR021714.
295. Akuoko, O., D. Kool, T.J. Sauer, and R. Horton. 2018. Surface energy balance partitioning in tilled bare soils. *Agric. Environ. Lett.* 3:180039 doi:10.2134/aer2018.07.0039
296. Daigh, A.L.M., U. Ghosh, J. DeJong-Hughes, and R. Horton. 2018. Spatial response of near-surface soil water contents to newly imposed soil management. *Agric. Environ. Lett.* 3:180032. doi:10.2134/aer2018.06.0032
297. Fu, W., X. Zhang, J. Zhao, S. Du, R. Horton, and M. Hou. 2018. Artificial warming-mediated soil freezing and thawing processes can regulate soybean production in Northeast China. *Agricultural and Forest Meteorology* 262:249-257. doi.org/10.1016/j.agrformet.2018.07.015

298. He, H., M.F. Dyck, R. Horton, M. Li, H. Jin, and B. Si. 2018. Distributed temperature sensing for soil physical measurements and its similarity to heat pulse method. *Advances in Agronomy*, Volume 148:173-230. Elsevier Inc., ISSN 0065-2113, doi.org/10.1016/bs.agron.2017.11.003
299. He, H., M.F. Dyck, R. Horton, T. Ren, K.L. Bristow, J. Lv, and B. Si. 2018. Development and application of the heat pulse method for soil physical measurements. *Reviews of Geophysics*. 56. doi.org/10.1029/2017RG000584
300. Kojima, Y., J.L. Heitman, K. Noborio, T. Ren, and R. Horton. 2018. Sensitivity analysis of temperature changes for determining thermal properties of partially frozen soil with a dual probe heat pulse sensor. *Cold Regions Science and Technology* 151:188–195, doi.org/10.1016/j.coldregions.2018.03.022.
301. Kojima, Y., J.L. Heitman, M. Sakai, C. Kato, and R. Horton. 2018. Bulk density effects on soil hydrologic and thermal characteristics: a numerical investigation. *Hydrological Processes*. 32:2203-2216. DOI: 10.1002/hyp.13152
302. Lu, Y., R. Horton, and T. Ren. 2018. Simultaneous determination of soil bulk density and water content: a heat pulse - based method. *European Journal of Soil Science* 69:947-952. doi: 10.1111/ejss.12690
303. Lu, Y., R. Horton, X. Zhang, and T. Ren. 2018. Accounting for soil porosity improves a thermal inertia model for estimating surface soil water content. *Remote Sensing of Environment* 212:79–89, doi.org/10.1016/j.rse.2018.04.045.
304. Lu, Y., X. Liu, M. Zhang, J. Heitman, R. Horton, and T. Ren. 2018. Summary of thermo–time domain reflectometry method: advances in monitoring in situ soil bulk density. *Soil Sci. Soc. Am. J.* 82:4:733-733. doi:10.2136/sssaj2018.01.0053
305. Tian, Z., W. Gao, D. Kool, T. Ren, R. Horton, and J.L. Heitman. 2018. Approaches for estimating soil water retention curves at various bulk densities with the extended van Genuchten model. *Water Resour. Res.* 10.1029/2018WR022871
306. Tian, Z., D. Kool, T. Ren, R. Horton, and J.L. Heitman. 2018. Determining in-situ unsaturated soil hydraulic conductivity at a fine depth scale with heat pulse and water potential sensors. *J. Hydrol.* 564:802-810. doi.org/10.1016/j.jhydrol.2018.07.052
307. Wen, M., G. Liu, and R. Horton. 2018. Simplified computational approach for determining in situ probe spacing of a dual probe heat pulse sensor. *Soil Sci. Soc. Am. J.* 82:1113-1116. doi:10.2136/sssaj2017.11.0402
308. Wen, M., G. Liu, R. Horton, Y. Lu, and T. Ren. 2018. Summary of advances in the heat-pulse technique: improvements in measuring soil thermal properties. *Soil*

Science Society of America Journal 82:5:1016-1016. doi:10.2136/sssaj2018.02.0067

309. Wen, M., G. Liu, R. Horton, and K. Noborio. 2018. An in situ probe - spacing - correction thermo - TDR sensor to measure soil water content accurately. *European Journal of Soil Science* 69:1030 - 1034. doi: 10.1111/ejss.12718
310. Zhang, X., T. Ren, J. Heitman, and R. Horton. 2018. Summary of advances in heat-pulse methods: measuring near-surface soil water content. *Soil Sci. Soc. Am. J.* 82:1015-1015. doi:10.2136/sssaj2018.04.0138
311. Wang, Z., C. Luo, T.J. Sauer, M.J. Helmers, L. Xu, and R. Horton. 2018. Canopy chamber measurements of carbon dioxide fluxes in corn and soybean fields. *Vadose Zone J.* 17:180130. doi:10.2136/vzj2018.07.0130.

**B. Non-refereed publications**

1. Cruse, R. M., and R. Horton. 1982. Tillage and the soil environment. Proceedings of the Farm Agricultural Resources Management Conference on Conservation Tillage. March 17-18, 1982, Ames, Iowa.
2. Horton, R. 1986. Nitrate movement in soil. Proceedings of Nitrogen and Groundwater Conference, sponsored by the Iowa Fertilizer and Chemical Association. 8 pages.
3. Horton, R. 1986. Does anion leaching occur in Iowa soils? Iowa 30th Annual Fertilizer and Ag Chemical Dealers Conference. Iowa Crop. Exten. Serv. Publ. CE-2158.
4. Horton, R. 1987. Demonstration of water and chemical movement through soils. Integrated Farm Management Demonstration Program, 1987 Summary Report. Iowa Coop Exten. Serv. Publ. Pm-1305. p. 47-48.
5. Kanwar, R. S., H. A. Rizvi, M. Ahmed, R. Horton, and S. J. Marley. 1987. A comparison of two methods for rapid measurement of saturated hydraulic conductivity of soils. In Proceedings Third International Workshop on Land Drainage, Ohio State University. p. G33-G53.
6. Melvin, S. W., R. S. Kanwar, and R. Horton. 1987. Demonstration of a water and nutrient management system to improve nitrogen efficiency and reduce environmental stress. Integrated Farm Management Demonstration Program, 1987 Summary Report. Iowa Coop Exten. Serv. Publ. Pm-1305. p. 49-52.
7. Melvin, S. W., R. S. Kanwar, and R. Horton. 1988. Demonstration of a water and

nutrient management system to improve nitrogen efficiency and reduce environmental stress. Integrated Farm Management Demonstration Program, 1988 Progress Report. Iowa Coop Exten. Serv. Publ. Pm-1345. p. 75-78.

8. Horton, R., M. L. Thompson, and J. F. McBride. 1988. Determination of effective porosity of soil materials. U.S.E.P.A. Project Report EPA/600/S2-88/045.
9. Melvin, S. W., R. S. Kanwar, and R. Horton. 1989. Demonstration of a water and nutrient management system to improve nitrogen efficiency and reduce environmental stress. Integrated Farm Management Demonstration Program, 1989 Progress Report. Iowa Crop Exten. Serv. Publ. Pm-1380 p. 97-101.
10. Kanwar, R. S., J. L. Baker, R. Horton, L. Jones, R. L. Handy, and A. L. Luttenegger. 1990. Annual progress report of the aquitard/till hydrology project. Depts. Agric. Engr., Agron., and Civil Engr, Iowa State Univ., Ames, Iowa.
11. Melvin, S. W., R. S. Kanwar, and R. Horton. 1990. Demonstration of a water management system to improve nitrogen efficiency and reduce environmental impacts. Integrated farm management demonstration program, 1990 Progress Report. Iowa Crop Exten. Serv. Publ. Pm-1417 p. 99-102.
12. Corak, S. J., T. C. Kaspar, and R. Horton. 1990. Fall-planted spring oats: A low risk cover crop to reduce erosion following soybean. Annual Report of Leopold Center. p. 35.
13. Melvin, S. W., R. S. Kanwar, and R. Horton. 1991. Demonstration of a water management system to improve nitrogen efficiency and reduce environmental impacts. Integrated farm management demonstration program, 1991, Progress Report. Iowa Crop Exten. Serv. Publ. pm-1467 p. 51-53.
14. Horton, R., T. C. Kaspar, J. L. Baker, and M. Kiuchi. 1992. Subsurface flow barriers to reduce nitrate leaching. Proceedings 1992 Crop Production and Protection Conf. Changes in Soybean Production Practices. ISU Extension Publ. p. 59-67.
15. Ressler, D. E., J. L. Baker, T. C. Kaspar, R. Horton, and J. D. Green. 1995. Localized subsurface compaction reduces nitrate fertilizer leaching. Proc. of Iowa MSEA Water Quality Colloquium, ISU Extension pp.125-129.

### C. **Books**

1. Dane, J.H., G.C. Topp, G.S. Campbell, R. Horton, W.A. Jury, D.R. Nielsen, H.M. van Es, and P.J. Wierenga (editorial committee). 2002. Methods of soil analysis. Part 4 Physical methods. No. 5, Soil Sci. Soc. Am. Madison, WI.

2. Jury, W.A. and R. Horton. 2004. Soil physics. 6th edition. John Wiley, Hoboken, N. J.
3. Hartge, K.H., Horn, R., Horton, R., Bachmann, J. and Peth, S., 2016. Essential Soil Physics: An introduction to soil processes, functions, structure and mechanics. Schweizerbart'sche Verlagsbuchhandlung, Germany.

**D. Book chapters**

1. Horton, R., P. J. Wierenga and F. Beese. 1979. Water use of chile peppers. Proceedings Inter-American Conference on Salinity and Water Management Technology. El Paso, Texas. Dec. 13 and 14, 1979. pp. 137-149.
2. Wierenga, P. J., D. R. Nielsen, R. Horton, and B. Kies. 1982. Effects of tillage on soil temperature and soil thermal conductivity. Am. Soc. of Agronomy Special Report of Symposium on the Effects of Tillage on Soil Physical Properties and Processes, pp. 69-90.
3. Horton, R., M. L. Thompson, and J. F. McBride. 1985. Estimating transit times of noninteracting pollutants through compacted soil materials. Proceedings of the Eleventh Annual Solid Waste Research Symposium: 275-282.
4. Kirkham, D., and R. Horton. 1986. Subirrigation with drainage for drought prone areas. In Proceedings International Conference on Water Resources Needs and Planning in Drought Prone Areas, p. 957-980, Khartoum, Sudan.
5. Kirkham, D., and R. Horton. 1989. Groundwater management by a dual-pipe subirrigation system. In Sahuquillo et al. (eds.) Groundwater Management: Quantity and Quality (Proceedings of the Benidorm Symposium, Oct. 1989). IAHS Publ. No. 188, pp. 101-114.
6. Horton, R., R. R. Allmaras, and R. M. Cruse. 1989. Tillage and compactive effects on soil hydraulic properties and water flow. In W. E. Larson et al. (eds.). Mechanics and Related Processes in Structured Agricultural Soils. p. 187-203. Kluwer Academic Publishers.
7. Ankeny, M. D., R. Horton, and T. C. Kaspar. 1990. Field estimates of hydraulic conductivity from unconfined infiltration measurements. Proceedings Monte Verita Workshop on Field-Scale Water and Solute Flux in Soils. pp. 95-100.
8. Horton, R., and S. O. Chung. 1991. Soil Heat Flow. In ASA Monograph "Modeling Plant and Soil Systems". 31:397-438.

9. Corak, S. J., T. C. Kaspar, and R. Horton. 1991. Fall-planted spring oats: A low risk cover crop to reduce erosion following soybeans. *In*: W. L. Hargrove (ed.) *Cover Crops for Clean Water* pp. 115-117 Soil. Water Conserv. Soc., Ankeny, Iowa.
10. Mousli, M. Z., R. Horton, M. D. Ankeny, and M. Kiuchi. 1992. Hydraulic properties of soil cores from untrafficked and trafficked areas. *In*: M. Th. Van Genuchten et al. (eds.) *Proc. of Workshop on Indirect Methods for Estimating the Hydraulic Properties of Unsaturated Soils* pp. 685-693. U. S. Salinity Lab, Riverside, CA.
11. Horton, R., M. D. Ankeny, and R. R. Allmaras. 1994. Effects of compaction on soil hydraulic properties. *In* B. D. Soane and C. van Ouwerkerk (eds.) *Soil Compaction in Crop Production*. p.141-165.
12. Horton, R., G. J. Kluitenberg, and K. L. Bristow. 1994. Surface crop residue effects on the soil surface energy balance. *In* P. W. Unger (ed.) *Managing Agricultural Residues*. p.143-162.
13. Ressler, D. E., J. L. Baker, T. C. Kaspar, R. Horton, and J. Green. 1995. Localized compaction and doming to increase N-use efficiency and reduce leaching. *Proc. Clean Water-Clean Environment-21st Century*, publ. by Amer. Soc. Agric. Engr., p.215-218.
14. Jaynes, D. B., and R. Horton. 1998. Field parameterization of the mobile/immobile domain model. Chapter 11, pp. 297-310. *In* Selim, H. M. and L. Ma (eds.). *Physical nonequilibrium in soils: Modeling and application*. Ann Arbor Press.
15. Van der Ploeg, R.R., R. Horton, and D. Kirkham. 1999. Steady flow to drains and wells. *In*: R. W. Skaggs and J. van Schilfgaarde eds. *Agricultural Drainage. Agronomy Monograph 38*:213-263.
16. Ressler, D. E., R. Horton, J. L. Baker, and T. C. Kaspar. 2000. Improved fertilizer applicator to reduce nitrate fertilizer leaching from crop lands. *In* J. M. Laflen, J. Tian, and C. H. Huang (eds.) *Soil Erosion and Dryland Farming*. p. 177-189.
17. Al-Jabri, S.A., R. Horton, and D.B. Jaynes. 2001. Measurement of soil hydraulic and chemical transport properties. p. 105-108. *In* 2nd International Symposium Preferential Flow. Honolulu, HI. Jan. 3-5, 2001. ASAE, St Joseph, MI.
18. Horton, R. 2002. Soil thermal diffusivity. Chapter 5-4. *In* J. Dane and C. Topp (eds.) *Methods of Soil Analysis. Part 4*. ASA and SSSA, Madison, WI.
19. Nassar, I. N. and R. Horton. 2002. Coupled heat and water transfer. Chapter 5-6. *In* J. Dane and C. Topp (eds.) *Methods of Soil Analysis. Part 4*. ASA and SSSA, Madison, WI.

20. Ewing, R. P. and R. Horton. 2003. Diffusion scaling in low connectivity porous media, CRC monograph *Bridging Scales in Soil Physics* (Ya. Pachepsky, ed.), pp 49-60.
21. Sauer, T.J. and R. Horton. 2005. Soil heat flux. In: J.L. Hatfield and J.M. Baker (Editors), *Micrometeorology in agricultural systems*. ASA Monograph. American Society of Agronomy, Madison, Wisconsin.
22. Horton, R. and A. Globus. 2005. Heat and moisture transport. In: D. Hillel et al. (eds) *Encyclopedia of Soil and the Environment*, p. 169-175, Elsevier Ltd.
23. Horton, R. 2005. Soil physics. In: R.G. Lerner and G.L. Trigg (eds.) *Encyclopedia of Physics*. Wiley-VCH.
24. Heitman, J.L., and R. Horton. 2011. Coupled Heat and Water Transfer in Soil. p. 155-162. In Glinski et al. (ed.) *Encyclopedia of Agrophysics*. Springer. Dordrecht, the Netherlands.
25. Horton, R., and T.E. Ochsner. 2011. Soil thermal regime, In P. M. Huang, et al., eds. *Handbook of Soil Sciences: Properties and processes*, second edition. CRC Press, Boca Raton, Florida.
26. Heitman, J.L., and R. Horton. 2014. Coupled Heat and Water Transfer in Soil. p. 155-162. In Glinski et al. (ed.) *Encyclopedia of Agrophysics*. Springer. Dordrecht, the Netherlands.

**E. Book Reviews (published)**

1. Horton, R. 1992. Review of the book entitled "Soil Physics" by W. A. Jury, W. R. Gardner, and W. H. Gardner. *J. Environ. Qual.* 21:740.
2. Shao, M. and R. Horton. 2004. Book Review of – *Handbook of processes and modeling in the soil-plant system*. *Soil Sci.* 169: 675-676.

**F. Abstracts (published) (bold indicates student or post-doc colleagues)**

1. Horton, R., F. Beese, and P. J. Wierenga. 1979. Chile pepper growth as affected by high frequency deficit irrigation. *Agron. Abstr.* 71:204.
2. Horton, R., D. R. Nielsen, and P. J. Wierenga. 1981. Estimating the apparent thermal diffusivity of soil near its surface. *Agron. Abstr.* 73:141.
3. Horton, R., O. Aguirre-Luna, and P. J. Wierenga. 1983. Two-dimensional soil temperature distribution in a row crop. *Agron. Abstr.* 75:13.

4. **van Es**, H. M., R. Horton, and M. L. Thompson. 1983. Use of kriging for spatial analysis of corn yield on a reclaimed mine soil. *Agron. Abstr.* 75:144.
5. **van Es**, H. M., S. J. Henning, M. L. Thompson, and R. Horton. 1984. Geo-statistical analysis of corn yield on a reclaimed mine soil. *Proc. Iowa Academy of Science* 91:11.
6. **Hamlett**, J. M., R. Horton, and N. A. C. Cressie. 1984. Spatial variability of soil-water tension in plowed and no-till field plots. *Proc. Iowa Academy of Science* 91:12.
7. **Potter**, K. N., R. M. Cruse, and R. Horton. 1984. Tillage effects on soil thermal properties. *Agron. Abstr.* 76:165.
8. **Hill**, R. L., R. Horton, and R. M. Cruse. 1984. Tillage effects on soil water retention and pore size distribution of two mollisols. *Agron. Abstr.* 76:168.
9. **Klittich**, W. M., and R. Horton. 1984. Variability of soil temperature observations. *Agron. Abstr.* 76:169.
10. Thompson, M. L., J. F. **McBride**, R. Horton, and H. M. **van Es**. 1984. Preservation of natural porosity during drying of high smectite soils. *Agron. Abstr.* 76:173.
11. **Unlu**, K., T. E. Fenton, and R. Horton. 1984. Computer-simulated hydraulic behaviors of two Clarion loam profiles and their relationship to corn yield. *Agron. Abstr.* 76:173.
12. **McBride**, J. F., and R. Horton. 1984. Measured and predicted solute leaching in an Iowa soil. *Proc. Iowa Acad. Sci.* 92:1.
13. **Barmettler**, J., R. Horton, and M. L. Thompson. 1985. A method of modeling soil porosity using Markov statistics. *Agron. Abstr.* 77:138.
14. **Chung**, S. O., and R. Horton. 1985. Simulation of two-dimensional soil heat and water flow. *Agron. Abstr.* 77:139.
15. **Potter**, K. N., R. M. Cruse, and R. Horton. 1985. Surface roughness effects on solar radiation reflectance and soil heat flux. *Agron. Abstr.* 77:142.
16. **McBride**, J. F., and R. Horton. 1985. Measured and predicted anion leaching in a field plot. *Agron. Abstr.* 77:141.
17. Horton, R., and M. L. Thompson. 1986. Determination of effective porosity of soil materials. E.P.A., CERl-86-06-53.



18. **Klittich**, W. M., R. Horton, and J. B. Sisson. 1986. Spatial analysis of apparent thermal diffusivity in two management systems. *Agron. Abstr.* 78:159.
19. Kirkham, D., and R. Horton. 1986. Water table control with sub-irrigation systems. *Agron. Abstr.* 78:159.
20. **Kluitenberg**, G. J., and R. Horton. 1987. Use of a pressurized layer to limit convective solute transport across compacted clay liners. *Proc. Iowa Acad. Sci.* 94:122.
21. Horton, R. 1987. Soil heat flow. *Agron. Abstr.* 79:13.
22. **Ankeny**, M. D., T. C. Kaspar, and R. Horton. 1987. A design for an automated tension infiltrometer. *Agron. Abstr.* 79:156.
23. **Hamlett**, J. M., R. Horton, and J. L. Baker. 1987. Surface configuration effects on water and solute movement. *Agron. Abstr.* 79:158.
24. Kirkham, D., and R. Horton. 1987. Water flow analysis for a dual pipe subirrigation-drainage system. *Agron. Abstr.* 79:160.
25. **Abdel-Hady**, I. N., and R. Horton. 1987. Apparent thermal diffusivity of nonuniform soil. *Agron. Abstr.* 79:156.
26. Kirkham, D., and R. Horton. 1988. Water flow analysis for a dual pipe subirrigation-drainage system. *J. Iowa Acad. Sci.* 95:12.
27. **Kluitenberg**, G. J., R. Horton, and M. L. Thompson. 1988. Recompact Iowa soil materials before using as liners for waste containment. *J. Iowa Acad. Sci.* 95:146.
28. **Ankeny**, M. D., T. C. Kaspar, and R. Horton. 1988. Field measurements of unconfined infiltration using a tension infiltrometer. *Agron. Abstr.* 80:178.
29. **Kluitenberg**, G. J., and R. Horton. 1988. Preferential solute transport in undisturbed soil columns. *Agron. Abstr.* 80:185.
30. **Nassar**, I. N., and R. Horton. 1988. Water transport in unsaturated, nonisothermal, salty soil. *Agron. Abstr.* 80:188.
31. **Kiuchi**, M., R. Horton, and T. C. Kaspar. 1989. Effect of local soil management on the leaching of banded fertilizer. *J. Iowa Acad. Sci.* 96:A1.
32. Kluitenberg, G. J., and R. Horton. 1989. Analytical solution to 2-dimensional soil heat transfer under a partial surface mulch. *J. Iowa Acad. Sci.* 96:A2.

33. **Mousli**, M. Z., and R. Horton. 1989. Predicting the hydraulic conductivities of unsaturated soils. *J. Iowa Acad. Sci.* 96:A2.
34. **Ankeny**, M. D., M. **Ahmed**, T. C. Kaspar, and R. Horton. 1989. A simple field method for determining unsaturated hydraulic conductivity. *Agron. Abstr.* 81:182.
35. Kirkham D., R. Horton. 1989. Subirrigation and drainage by ditches. *Agron. Abstr.* 81:188.
36. **Kluitenberg**, G. J., and R. Horton. 1989. Analytical solution for two-dimensional heat conduction beneath a partial surface mulch. *Agron. Abstr.* 81:188.
37. **Mousli**, M. Z., R. Horton, and M. D. **Ankeny**. 1989. Predicting unsaturated hydraulic conductivity from air permeability. *Agron. Abstr.* 81:190.
38. **Nassar**, I. N., and R. Horton. 1989. Simultaneous transfer of heat, moisture, and solute in porous media. *Agron. Abstr.* 81:190.
39. Kirkham, D. and R. Horton. 1990. Managing soil-water and chemical transport with subsurface flow barriers. II. Theoretical. *Agron Abstr.* 82:213.
40. **Kiuchi**, M., R. Horton, and T. C. Kaspar. 1990. Managing soil-water and chemical transport with subsurface flow barriers. I. Experimental. *Agron. Abstr.* 82:214.
41. **Kluitenberg**, G. J., and R. Horton. 1990. Effect of macropores on the spatial variability of field-measured solute transport properties. *Agron. Abstr.* 82:214.
42. Horton, R. and M. D. **Ankeny**. 1991. A one-step outflow cell for determining soil hydraulic properties. *Agron. Abstr.* 83:221.
43. **Kiuchi**, M., R. Horton, and T. C. Kaspar. 1991. Using subsurface flow barriers to reduce nitrate leaching. *Agron. Abstr.* 83:223.
44. **Mousli**, M. Z. and R. Horton. 1991. Use of Shelby tube samples in determining hydraulic conductivity and dispersivity. *Agron. Abstr.* 83:226.
45. **Nassar**, I. N., A. M. Globus, and R. Horton. 1991. Analysis of heat, water and solute transfer in porous media. *Agron. Abstr.* 83:226.
46. **Corak**, S. J., T. C. Kaspar, and R. Horton. 1992. Fall-planted spring oats: A low risk cover crop to reduce erosion following soybean. *Proceedings of 1992 Leopold Center Conference.* p. 74.

47. **Kiuchi**, M., R. Horton, T. C. Kaspar. 1992. Using subsurface flow barriers to reduce nitrate leaching. Proceedings of 1992 Leopold Center Conference. p. 82-83.
48. Horton, R., J. G. **Benjamin**, and I. N. **Nassar**. 1992. Thermally induced water movement beneath plastic cover. Agron. Abstr. 84:43.
49. **Bilskie**, J., K. Bristow, G. Kluitenberg, and R. Horton. 1992. Evaluation and application of the line heat source probe for measuring soil thermal properties. Agron. Abstr. 84:211.
50. Bristow, K. L., G. J. Kluitenberg, G. S. Campbell, and R. Horton. 1992. Using heat probe methodology to measure soil thermal conductivity, heat capacity and water content. Agron. Abstr. 84:212.
51. **Mousli**, M. Z. and R. Horton. 1992. Relationship between air and water conductivity and solute breakthrough curves. Agron. Abstr. 84:223-224.
52. **Nassar**, I. N. and R. Horton. 1992. Salinity and compaction effects on soil water evaporation and solute transport. Agron. Abstr. 84:224.
53. **Wetteraur**, D., R. Killorn, and R. Horton. 1992. Predicting soil NO<sup>3</sup>-N available for leaching with LEACHN, NLEAP, and IBSNAT CERES/Maize. Agron. Abstr. 84:295.
54. **Corak**, S. J., T. C. Kaspar, and R. Horton. 1992. Changes in residue cover following an oat cover crop interseeded in soybean. Agron. Abstr. 84:321.
55. **Green** J. D. and R. Horton. 1992. Effects of crop residue on the leaching of atrazine through soil columns. Agron. Abstr. 84:325.
56. Horton, R. 1993. Surface crop residue effects on radiation and energy balances. Agron. Abstr. 85:13.
57. **Bilskie**, J., and R. Horton. 1993. Soil thermal properties from the line heat source method: physical and numerical study. Agron. Abstr. 85:200.
58. Globus, A. M., R. Horton, Z. M. Petrona, and N. S. Ostapenko. 1993. Study of the mechanisms of soil swelling. Agron. Anstr. 85:246.
59. **Green**, J. D. and R. Horton. 1993. Crop Residue effects on the leaching of surface-applied chemicals. Agron. Abstr. 85:206.
60. Horton, R. and M. Z. **Mousli**. 1993. Predicting unsaturated hydraulic conductivity from air permeability. Agron. Abstr. 85:208.

61. **Nassar**, I. N., A. M. Globus, and R. Horton. 1993. Analysis of heat, water, and solute transfer in porous media. *Agron. Abstr.* 85:214.
62. **Ressler**, D. E. and R. Horton. 1993. Recovery of groundwater and solutes using a horizontal well. *Agron. Abstr.* 85:215.
63. **Mousli**, Z. M. and R. Horton. 1993. Tillage and traffic effects on soil water retention and soil water, chemical, and air transport. *Agron. Abstr.* 85:323.
64. **Ressler**, D. E., J. Baker, T. Kaspar and R. Horton. 1994. Localized subsurface compaction reduces fertilizer leaching. *Agron. Abstr.* 86.
65. **Shao**, M. and R. Horton. 1994. Determination of soil water diffusivity by general similarity analysis. *Agron. Abstr.* 86.
66. Jaynes, D., J. **Bilskie**, J. **Green**, S. Logsdon, and R. Horton. 1994. A sequential tracer technique for estimating two domain solute transport parameters. *Agron. Abstr.* 86.
67. Van Genuchten, M., B. **Mohanty**, Z. **Mousli**, P. Shouse, and R. Horton. 1995. Unsaturated hydraulic properties of a glacial till soil: similar media scaling. *Agron. Abstr.* 87.
68. **Shao**, M. R. Horton, and D. Jaynes. 1995. Analytical solution for 1-d heat conduction-convection equation. *Agron. Abstr.* 87.
69. **Casey**, F., S. Logsdon, R. Horton, and D. Jaynes. 1995. Field measurement of the mobile/immobile solute exchange coefficient and the immobile water content. *Agron. Abstr.* 87.
70. **Ressler**, D. E., R. Horton, T. Kaspar, and J. Baker. 1995. Localized compaction and doming to reduce nitrate-N leaching: experimental and numerical. *Agron. Abstr.* 87.
71. **Ewing**, R. and R. Horton. 1995. A method for automatically discriminating dyes in soils. *Agron. Abstr.* 87.
72. **Ressler**, D. E., R. Horton, J. Baker, and T. Kaspar. 1996. Improved fertilizer banding technique to reduce nitrate-N leaching: lysimeter evaluation. *Agron. Abstr.* 88.
73. **Casey**, F., S. Logsdon, R. Horton, and D. Jaynes. 1996. Field measurement of hydraulic and preferential flow properties. *Agron. Abstr.* 88.
74. **Lee**, J., D. Jaynes, and R. Horton. 1996. Using resident concentrations to estimate two-domain solute transport parameters: laboratory study. *Agron. Abstr.* 88.

75. **Shao**, M. and R. Horton. 1996. Integral method for estimation of soil hydraulic properties. Agron. Abstr. 88.
76. **Nassar**, I., J. Ukrainczyk, and R. Horton. 1996. Transport and fate of volatile organic chemicals (VOC) in unsaturated, nonisothermal, salty porous media. Agron. Abstr. 88.
77. Horton, R. and I. **Nassar**. 1996. Analysis of heat, water, and solute transfer in porous media. Agron. Abstr. 88.
78. Van der Ploeg, R., D. Scotter, and R. Horton. 1996. The Poisson Equation as a solute transport model. Agron. Abstr. 88.
79. **Ewing**, R. and R. Horton. 1996. Dye quantification in soils using color image analysis. Agron. Abstr. 88.
80. **Shen**, F., J. Swan, R. Horton, and D. Jaynes. 1996. TDR measurement of transient solute transport. Agron. Abstr. 88.
81. **Ressler**, D. E., R. Horton, T. Kaspar, and J. Baker. 1997. Corn yield response to fertilizer from an applicator designed to reduce nitrate leaching. Agron. Abstr. 89.
82. **Casey**, F., S. Logsdon, R. Horton, and D. Jaynes. 1997. Comparing two methods for estimating field solute transport properties. Agron. Abstr. 89.
83. **Lee**, J., D. Jaynes, and R. Horton. 1997. Laboratory experiments to determine solute transport properties for saturated soil columns. Agron. Abstr. 89.
84. **Ilsemann**, J. R. Horton, and R. van der Ploeg. 1997. A method to estimate immobile fraction and mass exchange coefficient from undisturbed soil samples. Agron. Abstr. 89.
85. **Nassar**, I, R. Horton, and G. Flerchinger. 1997. Simultaneous heat and mass transfer in freezing soil. Agron. Abstr. 89.
86. **Shen**, F., J. Swan, D. Jaynes, and R. Horton. 1997. Variable water content and solute transport measured by TDR. Agron. Abstr. 89.
87. **Ren**, T., K. **Noborio**, and R. Horton. 1997. Measurement of water content and thermal properties with a single probe. Agron. Abstr. 89.
88. **Ilsemann**, J., R. van der Ploeg, J. Hutchings, and R. Horton. 1997. Polynomial mixing cell models to describe solute movement in heterogeneous field soils. Agron. Abstr. 89.

89. **Ewing**, R., **F. Casey**, and R. Horton. 1998. A flow through apparatus for investigating fate of sorbing, volatile organics. Agron. Abstr. 90.
90. **Ren**, T., R. Horton, and G. Kluitenberg. 1998. Determining soil water velocity by a heat pulse technique. Agron. Abstr. 90.
91. **Hermsmeyer**, D., R. van der Ploeg, and R. Horton. 1998. Solar radiation regime of elevated irregular land surfaces, as of potash mine tailings. Agron. Abstr. 90.
92. **Shen**, F., J. Swan, D. Jaynes, and R. Horton. 1998. Effects of soil bulk electrical conductivity on measuring soil water content using TDR. Agron. Abstr. 90.
93. **Lee**, J., **K. Noborio**, R. Horton, and D. Jaynes. 1998. Measurement of solute transport parameters using resident concentration and TDR. Agron. Abstr. 90.
94. **Noborio**, K., R. Horton, and C. Tan. 1998. Simultaneous measurements of water content and matric potential of soil using a single TDR probe. Agron. Abstr. 90.
95. **Ewing**, R. and R. Horton. 1999. Hindered diffusion inside soil primary particles. Agron. Abstr. 91.
96. **Casey**, F., S. Ong, and R. Horton. 1999. Reduction of TCE in miscible displacement experiments through zero valent metals. Agron. Abstr. 91.
97. **Ochsner**, T. and R. Horton. 1999. Simultaneous bulk density and water content measurement: a new approach to an old problem. Agron. Abstr. 91.
98. **Hermsmeyer**, D., **J. Ilsemann**, R. van der Ploeg, and R. Horton. 1999. Water balance studies for a soil cover system over mine waste. Agron. Abstr. 91.
99. **Lee**, J., R. Horton, **K. Noborio**, and D. Jaynes. 1999. Laboratory evaluation of a TDR method for determining water flow and solute transport parameters. Agron. Abstr. 91.
100. **Al-Jabri**, S., R. Horton, and D. Jaynes. 1999. Rapid field measurements of field hydraulic and solute transport properties. Agron. Abstr. 91.
101. **Ren**, T., G. Kluitenberg, and R. Horton. 1999. Measurement of soil water flux with a heat pulse method. Agron. Abstr. 91.
102. **Ewing**, R. and R. Horton. 2000. Anomalous diffusion and its effect on contaminant fate. Agron. Abstr. 92.
103. **Tabbara**, H., **J. Lee**, **V. Ella**, and R. Horton. 2000. Swine manure transport in soils

- using TDR. Agron. Abstr. 92.
104. **Lee, J., L. Hundal, R. Horton, and M. Thompson.** 2000. Fate and transport of polycyclic aromatic hydrocarbons in soil. Agron. Abstr. 92.
  105. **Hermesmeier, D., J. Ilsemann, R. van der Ploeg, and R. Horton.** 2000. Water and solute flux in a porous metallurgical waste: field lysimeter studies. Agron. Abstr. 92.
  106. **Al-Jabri, S., J. Lee, R. Horton, and D. Jaynes.** 2000. Shallow TDR probes for field determination of solute transport properties. Agron. Abstr. 92.
  107. **Shao, M., C. Liu, and R. Horton.** 2000. Boundary layer theory for solute transport in soil. Agron. Abstr. 92.
  108. **Ochsner, T., R. Horton, and T. Ren.** 2000. A new perspective on soil thermal properties. Agron. Abstr. 92.
  109. **Wang, Q., R. Horton, and M. Shao.** 2000. New method to determine soil hydraulic properties. Agron. Abstr. 92.
  110. **Ewing, R. and R. Horton.** 2001. Nearest neighbor analysis: the soil effect as signal. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
  111. **Lee, J., E. Brevik, T. Fenton, and R. Horton.** 2001. Influence of soil moisture, calcite content, and temperature on bulk electrical conductivity. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
  112. **Brevik, E., T. Fenton, and R. Horton.** 2001. Evaluating the influence of daily temperature fluctuations on EM-38 readings. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
  113. **Ewing, R. and R. Horton.** 2001. Intra-granular diffusion: scaling relationships in space and time. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
  114. **Lee, J., S. Al-Jabri, R. Horton, and D. Jaynes.** 2001. Field determination of soil hydraulic and solute transport properties. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
  115. **Ochsner, T., R. Horton, and J. Lee.** 2001. Spatial variability of soil surface thermal properties. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
  116. **Horton, R.** 2001. Temperature effects on soil water movement. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.

117. **Ochsner**, T., R. Horton, and G. Kluitenberg. 2002. Evaluating the heat pulse method for measuring soil water flux. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
118. **Duppong**, L., K. Delate, M. Liebman, and R. Horton. 2002. Using natural fiber mulches for weed suppression in organic production of two herbs, *Nepeta cataria* L. and *Hypericum perforatum*. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
119. **Ren**, T., T. **Ochsner**, and R. Horton. 2002. Improvement of the heat pulse technique for soil water content measurement. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
120. **Gaur**, A., R. Horton, and D. Jaynes. 2002. Use of near surface TDR measurements to predict subsurface solute transport. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
121. **Kaiser**, K., M. Westgate, G. Tylka, R. Horton, T. Ochsner, and W. Batchelor. 2002. Root vs. shoot contributions to SCN resistance. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
122. **Ochsner**, T., T. Sauer, and R. Horton. 2003. Evaluating and improving techniques for measuring soil heat flux in the field. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
123. **Gaur**, A., R. Horton, and D. Jaynes. 2003. Surface solute transport properties and subsurface chemical leaching in a tile drained field. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
124. Ewing, R. and R. Horton. 2003. Pore scale structural influence of solute diffusion. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
125. Van Genuchten, M., J. Hendrickx, and R. Horton. 2004. Thirty five years of soil physics research – A tribute to Peter J. Wierenga. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
126. **Ren**, T., Z. **Ju**, Y. Gong, and R. Horton. 2004. Comparison of heat pulse and TDR methods for water content measurement. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
127. Ewing, R. and R. Horton. 2004. Structure as a correlation between geometrical and topological parameters. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.



128. Sauer, T., T. **Ochsner**, and R. Horton. 2004. Soil heat flux plates: errors and alternatives. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
129. **Ochsner**, T., T. Sauer, and R. Horton. 2004. Measurement of near surface soil heat storage in energy balance studies. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
130. **Gaur**, A., J. **Heitman**, R. Horton, and D. Jaynes. 2004. Soil surface hydraulic and chemical transport properties. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
131. **Ochsner**, T., R. Horton, and G. Kluitenberg. 2004. The heat pulse ratio method for measuring soil water flow: reconciling measurements and predictions. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
132. Horton, R., M.L. Thompson, and B. Hornbuckle. 2005. Opportunities Exist for Soil Science to Become a Major Player in the Education and Training of Future Environmental and Ecological Scientists. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
133. **Heitman**, J., T. **Ren**, J. **Zhou**, R. Horton, T. Ochsner, T. J. Sauer, and R. Ewing. 2005. Laboratory application of thermo-TDR for observation of coupled heat and water movement in soil. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
134. **Lu**, S., T. Ren, Y. Gong, and R. Horton. 2005. A New Thermal Conductivity Model for Partially Saturated Soils. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
135. Ochsner, T., G. Kluitenberg, and R. Horton. 2005. Measuring Soil Water Flux by the Heat Pulse Ratio Method. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
136. Horton, R. 2005. Frontier Lecture in Hydrological Science: Advancing Hydrological Investigations by Addressing Some Challenges Posed by Dynamic Surface Soil Properties. American Geophysical Union Meetings.
137. **Gieselmann**, H. and R. Horton. 2006. Effect of a subsurface hydrophobic layer on the upward movement of water in response to surface freezing conditions. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
138. **Heitman**, J., T. Sauer, R. Horton, and T. DeSutter. 2006. Estimation of bare-soil evaporation using a calorimetric approach with heat flux measured at multiple depths. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.

139. **Davis, D.**, R. Horton, and J. Heitman. 2006. Soil water retention curves of two wettable soils and their matched hydrophobized counterparts. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
140. Ewing, R., A. Hunt, and R. Horton. 2006. Thermal conductivity of an array of unsaturated solid spheres. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
141. Sauer, T. J., P. Thery, J. L. **Heitman**, T. M. DeSutter, and R. Horton. 2006. Evaluation of a new, perforated soil heat flux plate design. International Congress of Soil Science. Philadelphia, PA.
142. **Heitman, J.L.**, R. Horton, T.J. Sauer, and T.M. DeSutter. 2007. Measuring soil-water evaporation in situ. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
143. Ewing, R. and R. Horton. 2007. Thermal properties of assemblages of solid spheres. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
144. **Davis, D.**, R. Horton, and J.L. Heitman. 2007. Soil water retention curves of two wettable soils and their matched hydrophobized counterparts. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
145. **Lu, S.**, T. Ren, Y. Gong, and R. Horton. 2007. Evaluation of models for describing the soil water retention curve from saturation to oven dryness. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
146. **Heitman, J.L.**, R. Horton, T.J. Sauer, and T.M. DeSutter. 2007. Soil-water evaporation dynamics determined with measurement of soil sensible heat transfer. Am. Geophys. Union Meeting; San Francisco, CA.
147. Casey, F., T. Ochsner, D. Jaynes, and R. Horton. 2008. In situ assessment of heat-pulse and thermal profile methods for measuring streambed recharge/discharge. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
148. **Xiao, X.**, R. Horton, J. L. Heitman, and T. Sauer. 2008. Subsurface evaporation estimated from sensible heat balance. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
149. **Davis, D.**, J. L. Heitman and R. Horton. 2008. Coupled heat and water movement in wettable and hydrophobic soils. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
150. Laird, D., P. Fleming, B. Wang, R. Horton, and D. Karlen. 2008. Impact of soil

- biochar applications on nutrient leaching. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
151. **Heitman, J. L.**, R. Horton, T. Ren, R. P. Ewing, T. Ochsner, T. Sauer, D. **Davis** and X. **Xiao**. 2008. Coupled heat and water transfer in soil. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
  152. Li, Y. and R. Horton. 2008. Comparing potential evapotranspiration and pan evaporation at several research stations in western China. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
  153. **Prater, J. R.**, M. Thompson, R. Horton and J. Fang. 2008. Sorption of estrogens to soil and manure colloids with implications for transport. ASA-CSSA-SSSA International Annual Meetings. Abstracts CD.
  154. **Zhang, X.**, S. Lu, J. Heitman, R. Horton and T. Ren. 2009. A New Heat Pulse Sensor for Measuring Soil Profile Evaporation. Soil Sci. Soc. Am. Meeting; Pittsburgh, PA.
  155. **Xiao, X.**, R. Horton, J. L. Heitman, T. Sauer, T. Ren, and R. Ewing. 2009. Measuring the Dynamic Soil Water Evaporation. Soil Sci. Soc. Am. Meeting; Pittsburgh, PA.
  156. **Davis, D.**, R. Horton, J. L. Heitman, and T. Ren. 2009. Coupled Heat, Water, and Solute Transfer in a Wettable and Non-Wetttable Soil. Soil Sci. Soc. Am. Meeting; Pittsburgh, PA.
  157. Laird, D., P. Fleming, **D. Davis**, B. Wang, R. Horton, and D. Karlen. 2009. Impact of Biochar Amendments On the Quality of a Typical Midwestern Agricultural Soil. Soil Sci. Soc. Am. Meeting; Pittsburgh, PA.
  158. Ewing, R. P. and R. Horton. 2009. Teaching Advanced Soil Physics as a Dialogue Between Discrete and Continuum Perspectives. Soil Sci. Soc. Am. Meeting; Pittsburgh, PA.
  159. **Prater, J. R.**, R. Chatterjee, M. Thompson, and R. Horton. 2009. Impacts of Colloidal Material On the Fate of Estrogens in Soils. Soil Sci. Soc. Am. Meeting; Pittsburgh, PA.
  160. **Daigh, A.**, M. Helmers and R. Horton. 2010. Field Water Budget and Tile-Drainage Effluent Loads as Affected by Lignocellulosic-Feedstock Production Systems. ASA-CSSA-SSSA Annual Meeting. Long Beach, CA.
  161. **Daigh, A.**, T. Sauer and R. Horton. 2010. No-till Bioenergy Cropping Systems

- Effect on Soil Gas Dynamics. ASA-CSSA-SSSA Annual Meeting. Long Beach, CA.
162. Ren, T., S. Lu, Z. Ju, and R. Horton 2010. Method to Estimate the Water Vapor Enhancement Factor in Soil. ASA-CSSA-SSSA Annual Meeting. Long Beach, CA.
  163. **Prater, J.**, T. Chua, M. Thompson and R. Horton. 2010. The Role of Colloids in Estrogen Transport through Soil. ASA-CSSA-SSSA Annual Meeting. Long Beach, CA.
  164. **Xiao, X.**, R. Horton, T. Sauer, J.L. Heitman, T. Ren, and R. Ewing. 2010. Measuring Soil Water Evaporation with New Design Heat Pulse Probes in a Corn Field. ASA-CSSA-SSSA Annual Meeting. Long Beach, CA.
  165. Heitman, J.L., R. Horton, T. Sauer, T. Ren, **X. Xiao, and P. Deol**. 2010. Latent Heat Sink in Soil Heat Flux Measurements. ASA-CSSA-SSSA Annual Meeting. Long Beach, CA.
  166. **Deol, P.**, J.L. Heitman, A. Amoozegar, T. Ren and R. Horton. 2010. Developing Methodology to Characterize Soil Limited Evaporation. ASA-CSSA-SSSA Annual Meeting. Long Beach, CA.
  167. **Davis, D.**, R. Horton, J.L. Heitman and T. Ren. 2010. Non-Isothermal Water and Solute Redistribution in Two Wettable and Non-Wetttable Soils. ASA-CSSA-SSSA Annual Meeting. Long Beach, CA.
  168. **Zhang, X.**, L. Zhang, T. Ren, J. Heitman and R. Horton. 2011. Determining sensible heat fluxes at and beneath a soil surface. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
  169. Heitman, J., R. Horton, M. D. Novak, **X. Xiao, P. K. Deol**, and T. Ren. 2011. On measuring shallow liquid water fluxes associated with evaporation. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
  170. **Deol, P.K.**, J. Heitman, A. Amoozegar, T. Ren, and R. Horton. 2011. Experimental evaluation of heat pulse energy balance approach for measuring transient evaporation. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
  171. **Sidhu, D.** and R. Horton. 2011. Effect of fast pyrolysis biochar on selected physical properties of two Iowa soils. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
  172. **Kojima, Y.**, R. Horton, J. Heitman and G. Flerchinger. 2011. Sensible heat balance method to determine rates of soil freezing and thawing: model evaluation. Soil Sci. Soc. Am. Meeting; San Antonio, TX.

173. **Xiao, X.**, T. Sauer, J. Singer, R. Horton, J. Heitman, and T. Ren. 2011. Partitioning evapotranspiration into evaporation and transpiration in a corn field. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
174. **Davis, D.D.**, R. Horton, J. Heitman and T. Ren. 2011. Coupled heat and mass transfer in wettable and non-wettable salinized soils. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
175. **Daigh, A.**, M. Helmers, X. Zhou and R. Horton. 2011. Tile-drainage of bioenergy cropping systems. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
176. **Prater, J.**, T. Chua, M. Thompson and R. Horton. 2011. Sorption of estrogens to colloidal material: of swine manure and soil origin. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
177. **Basso, A.**, F. Miguez, D. Laird and R. Horton. 2011. Assessing the potential of biochar in increasing water holding capacity of sandy soils. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
178. Zhu, Y., Y. Wang, M. Shao and R. Horton. 2011. Estimating soil water content from surface digital image gray level measurements under visible spectrum. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
179. **Xiao, X.**, T. Sauer, and R. Horton. 2011. Comparison of buried soil sensor, surface chamber and above ground measurements of carbon dioxide fluxes. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
180. **Daigh, A.**, T. Sauer and R. Horton. 2011. Soil-surface carbon dioxide efflux of bioenergy cropping systems. Soil Sci. Soc. Am. Meeting; San Antonio, TX.
181. Davis, D.D., J.L. Heitman, T. Ren and R. Horton. 2012. Modeling of coupled heat, water, and solute transfer in wettable and non-wettable soils. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
182. Wang, Y., Y. Lu, T. Ren and R. Horton. 2012. Specific heat of soil solids and its influence on soil water content measurements from the heat pulse method. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
183. Deol, P.K., J.L. Heitman, A. Amoozegar and R. Horton. 2012. Quantifying evaporation in the field from the inception of subsurface evaporation. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
184. Helmers, M., X. Zhou, A. Daigh, R. Horton, T. Isenhardt, R. Kolka, A. Mallarino, C. Pederson and L. Schulte-Moore. 2012. Impact of Biomass Production Strategies On

- Nitrate-Nitrogen Concentrations and Fluxes In Iowa. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
185. Ewing, R.P. and R. Horton. 2012. Soil Water and Temperature Under Bioenergy Cropping Systems At the COBS Site. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
186. Thompson, M., R. Anex, E. Bach, T. Chua, R. Cruse, A. Daigh, R. Dietzel, M. Helmers, K. Hofmockel, R. Horton, M. Jarchow, M. Liebman, F. Miguez, V. Nichols, F. Rivas, T. Sauer and D. Sundberg. 2012. Biomass Production and Ecosystem Services in Iowa Biofuel Cropping Systems. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
187. Thompson, M., R. Anex, E. Bach, T. Chua, R. Cruse, A. Daigh, R. Dietzel, M. Helmers, K. Hofmockel, R. Horton, M. Jarchow, M. Liebman, F. Miguez, V. Nichols, F. Rivas, T. Sauer and D. Sundberg. 2012. Biofuel Cropping Systems for Feedstock Production and Greenhouse Gas Mitigation. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
188. Ewing, R.P., A.G. Hunt, and R. Horton. 2012. What's Wrong with Soil Physics? I. Perilous Presumptions. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
189. Hunt, A.G., R.P. Ewing, and R. Horton. 2012. What's Wrong with Soil Physics? II. Concealed Contradictions. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
190. Horton, R., R.P. Ewing, and A.G. Hunt. 2012. What's Wrong with Soil Physics? III. Dynamo or Dirt. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
191. **Daigh**, A., T. Sauer, and R. Horton. 2012. Cumulative Soil Carbon Dioxide Emissions: Accounting for Intra-Crop Spatial and Temporal Variability. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
192. Xiao, X., T. Sauer, and R. Horton. 2012. Soil Carbon Dioxide Fluxes with Time and Depth in a Corn Field. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
193. **Prater**, J.R., M.L. Thompson, and R. Horton. 2012. Impacts of Environmental Colloids On the Transport of 17-B Estradiol in Intact Soil Cores. Soil Sci. Soc. Am. Meeting; Cincinnati, OH.
194. Heitman, J.L., X. Xiao, P. Deol, R. Horton, and T. Ren. 2013. Advances in Sensible Heat Balance Characterization of Soil Water Evaporation. Am. Geophys. Union Meeting of the Americas, Cancun, Mexico.
195. Ewing, R. P., A. G. Hunt, and R. Horton. 2013. Missing links: Unifying concepts in soil transport processes, GSA regional meeting, Austin, TX.

196. Horton, R. and R. P. Ewing. 2013. Soil structure and transport processes across scales. ASA-CSSA-SSSA annual meeting, Tampa, FL.
197. Luo, C., Z. Wang, T. J. Sauer, M. J. Helmers, D. Sidhu, and R. Horton. 2013. Evapotranspiration measurements in reconstructed prairie and row crop systems with a portable canopy chamber. ASA-CSSA-SSSA annual meeting, Tampa, FL.
198. **Kojima**, Y., D. D. Davis, K. Noborio, J. L. Heitman, T. Ren, and R. Horton. 2013. Thermal property measurements of partially frozen soils with single probe and dual-probe heat pulse methods. ASA-CSSA-SSSA annual meeting, Tampa, FL.
199. **Kojima**, Y., J. L. Heitman, G. N. Flerchinger, Ren, and R. Horton. 2013. Field Test and Sensitivity analysis of a sensible heat balance method to determine rates of soil freezing and thawing. ASA-CSSA-SSSA annual meeting, Tampa, FL.
200. **Daigh**, A. L., M. J. Helmers, R. P. Ewing, T. J. Sauer, and R. Horton. 2013. Field water budget of subsurface-drained corn and prairie systems. ASA-CSSA-SSSA annual meeting, Tampa, FL.
201. **Ketpratoom**, S., D. D. Davis, R. P. Ewing, and Robert Horton. 2013. Measured and Estimated soil hydraulic conductivity in continuous corn and reconstructed prairie. ASA-CSSA-SSSA annual meeting, Tampa, FL.
202. **Wang**, Z., Y. Kojima, Y. Chen, and R. Horton. 2013. Determination of reflection positions in TDR signals with curvature analysis. ASA-CSSA-SSSA annual meeting, Tampa, FL.
203. Xiao, X., A. Howard, J. L. Heitman, and R. Horton. 2013. Quantifying water flux changes in evaporating soils. ASA-CSSA-SSSA annual meeting, Tampa, FL.
204. **Lu**, Y., M. Zhang, T. Ren, and R. Horton. 2013. Spatial and temporal variability of soil thermal properties in tilled layers. ASA-CSSA-SSSA annual meeting, Tampa, FL.
205. **Dokoohaki**, H., F. Miguez, D. A. Laird, R. Horton, and A. Basso. 2014. How Does Biochar Affect the Pore Size Distribution, S-Index and Saturated Hydraulic Conductivity of a Sandy Soil? Soil Science Society of America annual meeting, Long Beach, CA.
206. **Wang**, Z., Y. Chen, China and R Horton. 2014. Stochastic Differential Equations to Decide Soil Water Movement. Soil Science Society of America annual meeting, Long Beach, CA.

207. Xiao, X., R. Horton, T. Ren, and J. L. Heitman. 2014. Water Fluxes Determined from Sensible Heat and Mass Balance. Soil Science Society of America annual meeting, Long Beach, CA.
208. **Kojima**, Y., J.L. Heitman, K. Noborio, T. Ren, and R. Horton. 2014. Sensitivity analysis of soil thermal property measurements with heat pulse probes in partially frozen soils. SSSA annual meeting. Long Beach. CA.
209. **Kojima**, Y., J.L. Heitman, G.N. Flerchinger, T. Ren, and R. Horton. 2014. Test of a sensible heat balance method to determine rates of soil freezing and thawing under controlled boundary temperature. SSSA annual meeting. Long Beach. CA.
210. **Lu**, Y., T. Ren, X. Liu, Y. Kojima, and R. Horton. 2014. A new approach for in situ determination of soil bulk density with the thermo-TDR technique. SSSA annual meeting. Long Beach. CA.
211. **Luo**, C., Z. Wang, T. J. Sauer, M. J. Helmers and R. Horton. 2014. Portable Canopy Chamber Measurement of Evapotranspiration in Corn, Soybean and Reconstructed Prairie. Soil Science Society of America annual meeting, Long Beach.
212. Xiao, X., J.L. Heitman, T. Ren, and R. Horton. 2014. Sensible heat balance method for quantifying water phase changes in evaporating soils. S-1048 South Regional Soil Physics Research Meeting, Raleigh, NC.
213. Lu, Y., T. Ren, S. Lu, and R. Horton. 2014. A Model for Estimating Soil Thermal Conductivity from Texture, Water Content, and Bulk Density at Moderate Temperature. 20th WORLD CONGRESS OF SOIL SCIENCE, S. Korea.
214. **Lu**, Y., T. Ren, R. Horton and S. Lu. 2014. A model for estimating soil thermal conductivity from texture, water content, and bulk density. SSSA/Bouyoucos Funds, Berkeley Lab Complex Soil Systems Conference, Berkeley, California.
215. Xiao, X., J.L. Heitman, T.J. Sauer, J.W. Singer, and R. Horton. 2014. A new approach to measure soil water evaporation as a component of evapotranspiration. Evapotranspiration: Challenges in measurement and modeling from leaf to landscape scale and beyond. ASABE meeting. Raleigh, NC.
216. Xiao, X., A. Howard, J.L. Heitman, and R. Horton. 2014. Sensible heat balance method for measuring water fluxes in evaporating soil. NC Soil Sci. Soc. Am. Meeting. Raleigh, NC.
217. Xiao, X., T.J. Sauer, J.W. Singer, T. Ren, R. Horton, and J.L. Heitman. 2014. Partitioning Evaporation and Transpiration in a Maize Field with Heat-pulse Sensors Used for Evaporation. Am. Meteor. Soc. 31st Conf. Ag. For. Meteor. Portland, OR.



218. Horton, R. 2014. Sensors For Measuring: Soil Water Content, Soil Water Content/Bulk Density, Soil Water Content/Matric Potential, Soil Water Evaporation, Soil Ice Content, and Crop Evapotranspiration. Xian University of Science and Technology, Xian, China.
219. Horton, R. 2015. Kudos to John Hanks for Recognizing the Concept of Sensible Heat Balance in Soils. ASA-CSSA-SSSA International Annual Meetings, Minneapolis, MN.
220. **Wang, Z.**, C. Luo, B.D. Carr, T.J. Sauer, M.J. Helmers and R. Horton. 2015. Evapotranspiration and Carbon Dioxide Exchange Rates in a Corn-Soybean Rotation System and a Reconstructed Prairie Using a Portable Canopy Chamber. ASA-CSSA-SSSA International Annual Meetings, Minneapolis, MN.
221. Dietzel, R., M. Liebman, R.P. Ewing, M.J. Helmers, R. Horton and S.V. Archontoulis. 2015. How Efficiently Do Corn- and Soybean-Based Cropping Systems Use Water? a Systems Modeling Analysis. ASA-CSSA-SSSA International Annual Meetings, Minneapolis, MN.
222. **Peng, X.**, Y. Lu, J. Heitman, R. Horton and T. Ren. 2015. Determining Near-Surface Heat Flux Density Using Modeled Soil Thermal Conductivity. ASA-CSSA-SSSA International Annual Meetings, Minneapolis, MN.
223. Sauer, T.J., R. Horton, X. Xiao and Sasha Ivans. 2015. Improving Surface Energy Balance Closure By Reducing Errors in Soil Heat Flux Measurement. ASA-CSSA-SSSA International Annual Meetings, Minneapolis, MN.
224. Kojima, Y., J.L. Heitman and R. Horton. 2015. Numerical Evaluation of Transient Bulk Density Impact on Surface Energy Balance and Coupled Heat and Water Transfer in Soils. ASA-CSSA-SSSA International Annual Meetings, Minneapolis, MN.
225. **Wang, Z.**, M. Ankeny and R. Horton. 2016. The Impact of Water Vapor Diodes on Soil Water Redistribution. ASA-CSSA-SSSA annual meeting, Phoenix, AZ.
226. **Akuoko, O.**, D. Kool, T.J. Sauer, J.L. Heitman and R. Horton. 2017. Comparison of Surface Energy Balance Components between a Tilled and an Un-Tilled Bare Soil. ASA-CSSA-SSSA annual meeting, Tampa, FL.
227. **Tong, B.**, D. Kool, O. Akuoko, J.L. Heitman, T.J. Sauer and R. Horton. 2017. Soil Thermal Property Values As a Function of Water Content and Bulk Density. ASA-CSSA-SSSA annual meeting, Tampa, FL.
228. **Wen, M.**, G. Liu and R. Horton. 2017. In Situ Correction of Probe Deflection for a

- Thermo-TDR Sensor Provides Accurate Determination of Soil Water Content. ASA-CSSA-SSSA annual meeting, Tampa, FL.
229. **Xie, X.**, T. Ren, Y. Lu and R. Horton. 2017. A Model for Predicting Soil Thermal Diffusivity from Texture, Bulk Density, and Degree of Saturation at Room Temperature. ASA-CSSA-SSSA annual meeting, Tampa, FL.
230. **Lu, Y.**, T. Ren and R. Horton. 2017. A Heat Pulse-Based Approach for Simultaneous Determination of Soil Bulk Density and Water Content. ASA-CSSA-SSSA annual meeting, Tampa, FL.
231. Horton, R., T. Ren, J.L Heitman and Y. Lu. 2017. Measuring Soil Properties and Processes with Thermo-Time Domain Reflectometry Sensors. ASA-CSSA-SSSA annual meeting, Tampa, FL.
232. **Kool, D.**, O. Akuoke, B. Tong, J.L. Heitman, T.J. Sauer and R. Horton. 2017. Soil Water Retention of a Bare Soil with Changing Bulk Densities. ASA-CSSA-SSSA annual meeting, Tampa, FL.
233. **Tian, Z.**, J.L Heitman and R. Horton. 2017. Revealing in-Situ Unsaturated Soil Hydraulic Conductivity at Fine Depth Scale. ASA-CSSA-SSSA annual meeting, Tampa, FL.
234. Daigh, A.L.M., J. DeJong-Hughes, A. Foster Wick and R. Horton. 2017. Spatial Response of Near-Surface Soil Water Contents to Newly Imposed Soil Management. ASA-CSSA-SSSA annual meeting, Tampa, FL.
235. Kool, D., Z. Tian, B. Tong, J.L. Heitman, T.J. Sauer and R. Horton. 2018. Dynamic pore volumes and hydraulic properties in a tilled soil. AGU fall meeting, Washington D.C.
236. Lu, Y., W. Peng, X. Xie, T. Ren and R. Horton. 2019. Field Evaluations of Heat Pulse-Based Approach for Simultaneous Determination of Soil Bulk Density and Water Content. SSSA annual meeting, San Diego, CA.
237. Luo, C., Z. Wang, B. Yang, Y. Zhang, S. Kim, B. Cetin, H. Ceylan and R. Horton. 2019. The Influence of Concrete Grinding Residue on Soil Physical Properties and Plant Growth. SSSA annual meeting, San Diego, CA.
238. Noborio, K., Y. Kojima, H. He and R. Horton. 2019. Analytical Solution for Estimating in Situ Soil Thermal Properties. SSSA annual meeting, San Diego, CA.
239. Kojima, Y., H. Saito, R. Horton and J. Heitman. 2019. Quantifying Two-Dimensional Subsurface Evaporation Rates from Sensible Heat Balance. SSSA

- annual meeting, San Diego, CA.
240. Tian, Z., J.L. Heitman and R. Horton. 2019. Estimating Soil Bulk Density with Combined Commercial Soil Water Content and Thermal Property Sensors. SSSA annual meeting, San Diego, CA.
241. Sunakawa, Y., M. Shiozawa, E. Inao, R. Horton and K. Noborio. 2019. Evaluation of Transfer Characteristics of Radiocesium By Soil Column Experiments. SSSA annual meeting, San Diego, CA.

**IX. PATENTS (bold indicates student)**

1. **Ankeny**, M. D., T. C. Kaspar, and R. Horton. 1989. An automated tension infiltrometer. U. S. Patent 4 884 436. Date issued: 5 Dec. 1989.
2. Horton, R., D. E. **Ressler**, T. C. Kaspar, and J. L. Baker. 1998. Method and tool to increase N-use efficiency and reduce leaching. U. S. Patent 5 797 459. Date issued: 25 Aug. 1998.
3. Horton, R., D. E. **Ressler**, T. C. Kaspar, and J. L. Baker. 1998. Method to increase N-use efficiency and reduce leaching. U. S. Patent 5 913 368. Date issued: 22 June 1999.
4. Liu, G., M. Wen, R. Horton, R. Ren, B.C. Si, J. Wang, and B. Li. 2017. In situ spacing-correcting heat pulse sensor and method for measuring sap flow or water flux U.S. Patent 9 638 558 B2. Date issued: 2 May 2017.

**X. GRANTS AND CONTRACTS (funded)**

- 1983-1986 Principal Investigator for "Determination of Effective Porosity of Soil Materials", funded by U.S.-E.P.A. (\$140,000 shared with M. L. Thompson).
- 1984-1985 Principal Investigator for "Improving Soybean Production-Ridges", funded by the Iowa Soybean Promotion Board. (\$9,000 shared with S. Henning).
- 1984-1987 Principal Investigator for "Effect of Soil Technologies Amendment on the Mass Transport Properties of Soil", funded by Soil Technologies Corporation. (\$35,000).
- 1984-1989 Principal Investigator for "Crop Responses to Fly Ash Applications on Sand Soils at Muscatine Island", funded by Iowa-Illinois Gas and Electric Company. (\$150,000 shared with S. Henning and H. Taber).
- 1984-1985 Principal Investigator for "Develop and Test a Method to Predict Miscible Displacement in Porous Media", funded by ISU Achievement Foundation. (\$2,000).

- 1985-1986 Principal Investigator for "Effect of a Soil Conditioner, Agric-SC, on Soil Physical Properties", funded by Four Star Agr. Serv., Inc. (\$7,000 shared with S. Melvin).
- 1985-1988 Principal Investigator for a National Needs Graduate Research Fellowship funded by USDA. (\$45,000).
- 1985-1988 Principal Investigator for "Nitrogen Fertilizer Research Project", funded by Iowa Fertilizer and Ag. Chemical Association. (\$300,000 with A. Blackmer and R. Killorn).
- 1986-1987 Principal Investigator for "Develop a Model to Predict Heat, Moisture, and Solute Transport in Soil", funded by ISU Achievement Foundation. (\$2,000).
- 1987-1988 Principal Investigator for "Test and Demonstrate Alternative Descriptions of Water and Solute movement Through Iowa Soils", funded by State Ag. Energy Mgmt. Fund. (\$40,000).
- 1987-1989 Principal Investigator for "Theoretical Description of Water Flow for a Dual-Level Subirrigation and Drainage System", funded by State Legislature. (\$70,000 Co-PI was D. Kirkham).
- 1987-1990 Principal Investigator for "Demonstration of a Water and Nutrient Management System to Improve Nitrogen Efficiency and Reduce Environmental Stress", funded by State Ag. Energy Mgmt. Fund (\$150,000 shared with S. Melvin and R. Kanwar).
- 1988-1992 Principal Investigator for "In situ infiltration tests", funded by Iowa Department of Natural Resources (\$90,000).
- 1989-1992 Principal Investigator for a National Needs Graduate Research Fellowship funded by USDA. (\$50,000).
- 1990-1998 Principal Investigator for "Development of a preferential water and chemical transport model", funded by USDA-CSREES. (\$230,000)
- 1990-1992 Principal Investigator for "The Management of Beach Renourishment with Respect to the Conservation of Sea Turtle", funded by Florida DNR (\$50,000 shared with R. Ackerman).
- 1990-1993 Principal Investigator for "Fall-planted Spring Oats: A low risk cover crop to reduce erosion following soybean", funded by Iowa Leopold Center (\$90,000 shared with T. C. Kaspar)
- 1990-1991 Principal Investigator for "Transport of Nickel in Iowa Soils", funded by Iowa

Science Foundation (\$5,000 shared with M. L. Thompson and R. C. Schultz)

- 1990-1991 Principal Investigator for scientific exchange with Agrophysics Institute, Leningrad, U.S.S.R., funded by ISU/VASKhNIL Agreement (\$4,000)
- 1990-1992 Principal Investigator for "Use of Horizontal Wells for Soil Venting", funded by Department of Energy, Ames Lab (\$40,000 shared with L. C. Jones and T. A. Austin)
- 1990-1991 Principal Investigator for "Soil Heat, Water, and Chemical Transport in Soil", funded by Department of Energy, Ames Lab (\$30,000)
- 1991-1993 Co-Principal Investigator for "A Regional Assessment of Soil Nitrogen Tests in Iowa, Minnesota, and Wisconsin", funded by C.S.R.S. (\$60,000 shared with R. Killorn)
- 1991-1994 Principal Investigator for a National Needs Graduate Research Fellowship funded by USDA. (\$54,000).
- 1991-1994 Principal Investigator for "Nonisothermal water movement for soils engineered for environmental protection", funded by US – Environmental Protection Agency (\$227,000).
- 1992-1995 Principal Investigator for "Localized compaction and doming to increase N-use efficiency and reduce leaching", funded by USDA-National Research Initiative (\$100,000 shared with J. L. Baker and T. C. Kaspar).
- 1993-1995 Principal Investigator for "Automated system for field measurement of non-steady state solute transport" funded by USDA-National Research Initiative (\$100,000 shared with J. B. Swan and D. B. Jaynes).
- 1994-1996 Principal Investigator for "Linking soil crack morphology to surface-applied pesticides", funded by USDA-National Research Initiative (\$77,000 shared with R. Ewing).
- 1996-1999 Principal Investigator for a National Needs Graduate Research Fellowship funded by U.S.D.A. (\$54,000).
- 1997-2001 Principal Investigator for "Fate and transport of organic pollutants in soil", funded by Raymond and Mary Baker Trust (\$1,100,000 shared with L. Halvorson, M.L. Thompson, and L. Ukrainczyk).
- 1999-2001 Principal Investigator for "Field assessment of groundwater quality beneath

- cracking soil with surface-applied hog manure", funded by US-Geological Survey through Iowa State Water Resources Research Institute (\$57,440).
- 2000-2002 Principal Investigator for "Reclamation of ammonium contaminated soil", funded by United Agri Products (\$220,000, shared with B. Evangelou, M. Thompson, and L. Halvorson).
- 2000-2003 Principal Investigator for "Managing Interactive Stresses to Increase Soybean Yields", funded by Soybean Research and Development Council (\$905,000, shared with W. Batchelor, M. Owen, M. Westgate, G. Tylka, G. Munkvold, B. Meyer).
- 2001-2003 Principal Investigator for "Field determination of soil hydraulic and chemical transport properties", funded by USDA - National Research Initiative (\$103,000 shared with D. Jaynes).
- 2001-2003 Principal Investigator for "Coupled Heat and Water Flow Near the Soil Surface", funded by Agronomy Department Endowment Funds (\$28,000 shared with T. Sauer).
- 2001-2004 Principal Investigator for "An Agroecosystem Water Management Model: Coupling of Plant, Soil, and Climate Component ", funded by Agronomy Department Endowment Funds (\$150,000 shared with Z. Pan).
- 2004-2008 Principal Investigator for "Coupled heat and water transfer in soil", funded by US - National Science Foundation (\$350,000 shared with R. Ewing and T. Ochsner).
- 2007-2007 Principal Investigator for "Lignocellulosic Feedstock Production Systems: Environmental Impacts of Contrasting Cropping Systems", funded by ConocoPhillips (\$105,000 for 2007 shared with M. Thompson and R. Cruse).
- 2007-2010 Principal Investigator for "Colloid-Mediated Transport of Hormones with Land-Applied Manure", funded by USDA - National Research Initiative (\$300,000 shared with M. Thompson).
- 2008-2008 Principal Investigator for "Lignocellulosic Feedstock Production Systems: Environmental Impacts of Contrasting Cropping Systems", funded by ConocoPhillips (\$140,000 shared with M. Thompson and R. Cruse).
- 2008-2011 Principal Investigator for "Determining Soil Water Evaporation and Subsurface Evaporation Zones", funded by US - National Science Foundation (\$380,000 shared with J. Heitman and R. Ewing).
- 2009-2009 Principal Investigator for "Lignocellulosic Feedstock Production Systems:

- Environmental Impacts of Contrasting Cropping Systems”, funded by ConocoPhillips (\$140,000 shared with M. Thompson, R. Cruse, and M. Helmers).
- 2009-2011 Principal Investigator for “Land Use Conversion to Perennial Vegetation: Quantifying Soil Water Regime and Aeration and the Implications for Enhancing Soil Resilience to Climate Change”, funded by Leopold Center (\$83,000 shared with T. Sauer and H. Asbjornsen).
- 2010-2010 Principal Investigator for “Lignocellulosic Feedstock Production Systems: Environmental Impacts of Contrasting Cropping Systems”, funded by ConocoPhillips (\$140,000 shared with M. Thompson, R. Cruse, and M. Helmers).
- 2011-2015 Co-Principal Investigator for “Biofuel Cropping Systems for Feedstock Production and Greenhouse Gas Mitigation” funded by USDA (\$726,508 shared with Thompson et al.).
- 2012-2014 Principal Investigator for “Quantifying Field Water Balance Components as Affected by Shifts in Land-Use Patterns: Implications for Minimizing Agricultural Impacts on Water Quality in Iowa”, funded by the Iowa Water Center (\$35,000 shared with M. Helmers and T. Sauer).
- 2012-2016 Principal Investigator for “Measuring soil water fluxes due to evaporation and freezing”, funded by US - National Science Foundation (\$364,910 shared with J. Heitman).
- 2013-2016 Co-Investigator for “Environmental Fate of Endocrine-Disrupting Chemicals: Association with Biosolids-Derived Dissolved Organic Matter”, funded by BARD (\$300,000 shared with M.L. Thompson et al.).
- 2016-2018 Co-Investigator for “Concrete Grinding Residue: It’s effect on roadside vegetation and soil properties,” pending with MnDOT Office of Environmental Stewardship (\$130,000, shared with Halil Ceylan).
- 2016-2019 Co-Investigator for “Transient Soil Density: Measuring Change and Developing Models that Account for its Effects,” pending with US ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND, ARMY RESEARCH OFFICE (\$300,000 shared with J. Heitman).
- 2016-2019 Principal Investigator for “Is Static Soil Density a Viable Assumption for Studying Surface Hydrologic Processes?,” US - National Science Foundation (\$419,530 shared with J. Heitman).
- 2017-2019 Co-Principal Investigator for “Low-Cost Rural Surface Alternatives Phase IV: Frost Depth Monitoring and Prediction,” Iowa-Department of Transportation (\$300,000

shared with J. Ashlock).

## **XI. MENTORING**

### **A. Faculty**

1. Ljerka Ukrainczyk (1994)
2. Michael Castellano (2010)
3. Marshall McDaniel (2016)

### **B. Visiting Scientists**

1. Rienk van der Ploeg, Hohenheim University, Stuttgart, Germany, worked on soil drainage (1989)
2. Alexander Globus, Agrophysics Institute, Leningrad, Soviet Union, worked on coupled heat and water transfer in soil (1991)
3. Dimitri Kurtener, Agrophysics Institute, Leningrad, Soviet Union, worked on soil heat transfer (1991).
4. Keith Bristow, CSIRO, Townsville, Australia, worked on soil heat transfer (1991).
5. Rienk van der Ploeg, University of Hannover, Germany, worked on soil drainage (1993).
6. Alexander Globus, Agrophysics Institute, Leningrad, Soviet Union, worked on coupled heat and water transfer in soil (1993-1994)
7. Keith Bristow, CSIRO, Townsville, Australia, worked on soil surface modeling (1993)
8. Ibrahim Nassar, University of Alexandria, Egypt, worked on soil heat and mass transfer (1995)
9. Alexander Globus, Agrophysics Institute, St. Petersburg, Russia, worked on soil heat and mass transfer (1997)
10. Jan Ilsemann, University of Hannover, Germany, worked on preferential flow (1997)
11. Joerg Bachmann, University of Hannover, Germany, worked on soil heat and mass transfer (1997)



12. Ibrahim Nassar, University of Alexandria, Egypt, worked on soil heat and mass transfer (1997)
13. Mingan Shao, Chinese Academy of Sciences, worked on soil water flow (1998)
14. Tusheng Ren, worked on soil heat transfer (1999)
15. Dirk Hermsmeyer, University of Hannover, Germany, worked on water flow modeling (1999)
16. Joerg Bachmann, University of Hannover, Germany, worked on heat and mass transfer (2000)
17. Alexander Globus, worked on heat and mass transfer (2000)
18. Jan Ilseman, University of Hannover, Germany, worked on preferential flow (2000)
19. Mingan Shao, Chinese Academy of Sciences, worked on soil erosion (2000)
20. Nandor Fodor, Hungarian Academy of Sciences, worked on soil water flow (2000)
21. Quanjiu Wang, Xian Technological University, China, worked on transport in soil (2000-2001)
22. Mingan Shao, Chinese Academy of Sciences, worked on soil water retention (2004)
23. Baiqun Wang, Chinese Inst. Soil & Water Conservation (2006)
24. Yi Li, Northwest China Agricultural and Forestry University (2008-2009)
25. Xiaoli Fu, China Institute of Soil and Water Conservation (2009)
26. Jing-hui Xu, Northwest China Agricultural and Forestry University (2010)
27. Xiao Zhang, China Agricultural University (2011)
28. Yili Lu, China Agricultural University (2014-2015)
29. Bing Tong, Nanjing University of Information Science and Technology (2016-2018)
30. Minmin Wen, China Agricultural University (2016-2017)
31. Junko Nishiwaki, Japan (2017-2018)

32. Yuki Sunakawa, Meiji University (2018)

33. Xiaoting Xie, China Agricultural University (2018)

## **XII. PRESENTATIONS**

### **A. Invited (USA)**

1. Hydraulic conductivity of compacted Iowa soil materials. 1984. US-Environmental Protection Agency Workshop on Hydraulic Conductivity Testing of Compacted Clay Soils, held in Atlanta, GA.
2. Estimating transit times of non-interacting pollutants through compacted soil materials. 1985. US-Environmental Protection Agency Sponsored Research Symposium for Land Disposal of Hazardous Waste, held in Cincinnati, OH.
3. Soil physics research. 1985. Agronomy Department, New Mexico State University.
4. Determination of effective porosity of soil materials. 1986. E.P.A. Sponsored Research Symposium for Land Disposal of Hazardous Waste, held in Cincinnati, OH.
5. Nitrate movement in soil. 1986. Iowa Fertilizer and Ag. Chemical Dealers sponsored Groundwater Conference in Ames, IA.
6. Does anion leaching occur in Iowa soils? 1986. Fertilizer and Ag. Chemical Dealers Conference in Des Moines, IA.
7. Preferential flow of water and solutes in structured soils. 1986. Soil Science Society of America Workshop on Perspectives on the Contamination of Groundwater from Agriculture, held in New Orleans, LA.
8. Modeling soil heat flow. 1987. Symposium - Modeling of Plant and Soil Systems, American Society of Agronomy, Annual Meetings in Atlanta, GA.
9. Tillage and compaction effects on hydraulic properties and water flow. 1988. NATO Advanced Research Workshop on mechanics and related processes in structured agricultural soils, St. Paul, MN.
10. Mulch and canopy effects on surface energy and water exchange. 1990. Agronomy Dept., Kansas State Univ., Manhattan.
11. Sensible and latent heat flux at the soil surface. 1990. NCR-160 Meeting, Ames, IA

12. Mechanisms of Soil heat transfer. 1991. US-National Science Foundation sponsored Soil-warming workshop, Woods Hole, Massachusetts.
13. Soil temperature. 1991. Soil Science, University of Hawaii, Honolulu.
14. Subsurface flow barriers to reduce nitrate leaching. 1992. Crop production and protection conference, Ames, Iowa.
15. Surface crop residue effects on radiation and energy balances. 1993. American Society of Agronomy Symposium, Cincinnati, Ohio.
16. Coupled heat and water flow in compacted clay liners. 1993. US-Environmental Protection Agency Research Conference, Cincinnati, Ohio.
17. Measuring solute transport parameters. 1994. US Salinity Laboratory, Riverside, California.
18. Subsurface compaction to reduce nitrate leaching. 1994. USDA-Agricultural Research Service, Watkinsville, Georgia
19. Heat, water, and chemical movement in freezing soil. 1994. USDA-ARS Frozen soil workshop. Morris, Minnesota.
20. Determining hydraulic properties and solute transport parameters of field soil. 1997. USDA-Agricultural Research Service, Beltsville, Maryland.
21. Method to reduce leaching losses of nitrogen fertilizer. 1997. Agronomy Dept. University of Maryland.
22. Preferential flow of chemicals in soil. 1998. American Geophysical Union Conference, Boston, MA.
23. Methods to artificially warm soil. 1999. US-National Science Foundation sponsored workshop on global warming, Santa Barbara, California.
24. Temperature effects on soil hydraulic properties. 2001. Soil Science Society of America annual meeting, Charlotte, NC.
25. Controlling fertilizer nitrogen leaching. Natural Resources Seminar. University of Illinois.
26. A vision for soil science. 2002. University of California, Riverside.

27. Measuring soil hydraulic and chemical transport properties. Natural Resources Seminar. University of Illinois.
28. Advancing environmental investigations by taming the challenges posed by dynamic surface soil properties. 2004. Campbell Lecture, Washington State University.
29. Determining solute transport properties of soil and predicting solute transport to tile drains. 2005. School of Natural Resources. Ohio State University.
30. Advancing environmental investigations by taming the challenges posed by dynamic surface soil properties. 2005. Environmental Graduate Program. Ohio State University.
31. Advancing Hydrological Investigations by Addressing Some Challenges Posed by Dynamic Surface Soil Properties. 2005. Frontier Lecture in Hydrological Science. American Geophysical Union.
32. Congressional Soils Caucus 15 House Staffers March 27, 2006 Cannon House Office Building Washington, DC Making a case for a house soils caucus.
33. FFA – Ames 70 youth 6/8/2006 Welcome to the Agronomy Department at Iowa State University.
34. World Food Prize Laureates 10/16/2006 40 people The Importance of Soils.
35. Deans COA – 3 June 23, 2006 Wintersteen, Coletti, and Acker Making a case for a soils institute at Iowa State University.
36. St. Louis University April 20, 2006 Advancing Environmental Investigations by Addressing Some Challenges Posed by Dynamic Surface Soil Properties. 30 attendees. Geological and Atmospheric Sciences.
37. OBP –ISU 10/10/2006 Making a case for a soils institute at Iowa State University.
38. Measuring soil water evaporation. 2008. Texas A & M University.
39. Science and religion. 2008. Sacred Heart Seminary. Detroit, MI.
40. Horton, R. and R. P. Ewing. 2013. Soil structure and transport processes across scales. ASA-CSSA-SSSA annual meeting, Tampa, FL.

41. Horton, R. 2014. Priority on God in the Workplace – study, prayer, and evangelization. Oklahoma State University Christian Faculty and Staff Assoc.
42. Horton, R. 2014. Reasons to Believe in God. Oklahoma State University Christian Graduate Student Club.
43. Horton, R. 2014. Coupled Heat and Water Movement in Soil: advances on measuring and modeling soil properties and fluxes. Oklahoma State University Plant and Soil Sciences Department.
44. Horton, R. 2016. Heat Pulse Sensors and Sensible Heat Balance Measurements Provide New Details on Soil Physical Properties and Processes. ASA-CSSA-SSSA annual meeting, Phoenix, AZ.
45. Horton, R. 2016. Sensible Heat Balance Determines Subsurface Evaporation or Freezing and Thawing Rates. Michigan State University.
46. Horton, R. 2016. Soils are a Critical Component of Earth's Critical Zone. Michigan State University.
47. Horton, R. 2017. Mentoring students in a manner to help them grow academically and personally. Utah State University.
48. Horton, R. 2017. Mentoring students in a manner to help them grow academically and personally. Iowa State University.
49. Horton, R. 2017. Measuring Soil Properties and Processes with Thermo-TDR Sensors. Soil Science. Soc. Amer. Annual Meetings. Tampa, FL.
50. Horton, R. 2018. Mentoring students in a manner to help them grow academically and personally. University of Delaware.
51. Horton, R. 2018. Coupled Heat and Water Movement in Soil: advances on measuring and modeling soil properties and fluxes. University of Delaware.
52. Horton, R. 2018. Mentoring students in a manner to help them grow academically and personally. Texas A&M University.
53. Horton, R. 2018. Coupled Heat and Water Movement in Soil: advances on measuring and modeling soil properties and fluxes. Texas A&M University.

Dr. Horton has also presented invited seminars at Iowa State University to the Agronomy Department, Agricultural Engineering Department, Civil Engineering Department,

Mathematics Department, Meteorology Faculty/Graduate Seminar, Physics Department, Water Resources Program, Osborn Faculty Research Club, and the Christian Faculty and Staff Association.

**B. Invited (international)**

1. Soil heat transfer. 1984. Department of Land Resource Science at Guelph University, Canada.
2. Spatial variability of field-measured solute transport properties. 1989. Workshop on Field-scale water and solute flux in soils. Monte Verita, Ascona, Switzerland.
3. Field estimates of hydraulic conductivity from unconfined infiltration measurements. 1989. Workshop on Field-scale water and solute flux in soils. Monte Verita, Ascona, Switzerland.
4. Soil-water infiltration, subirrigation and drainage, and hazardous waste storage. 1989. Civil Engineering Department at the University of Brussels, Belgium
5. Dual-pipe subirrigation and unsaturated infiltration. 1989. Soil physics researchers at the Agricultural University, Wageningen, The Netherlands.
6. Soil heat transfer and solute transport in structured soils. 1989. Institute of Soil Ecology, Munich, Germany.
7. Groundwater management by a dual-pipe subirrigation system. 1989. IAHS International Symposium on Groundwater Management: Quantity and Quality, Benidorm, Spain.
8. Coupled transport of heat, moisture and solutes in soil. 1990. Agrophysics Institute, Leningrad, USSR.
9. Soil-aggregate mulches for conserving water. 1991. Soil Science Dept., Shenyang Agricultural University, Shenyang, China.
10. Solute leaching in soil. 1991. Soil Science Dept., Wuhan Agricultural University, Wuhan, China.
11. Coupled heat, water, and chemical transport in soil. 1992. Soil Science Institute. University of Hannover, Germany.
12. Soil science opportunity for young scientists. 1992. University of Klaipeda. Lithuania.

13. Heat and water transfer in compacted soil material. 1993. University of Berlin, Germany.
14. Managing chemical transport in soil. 1994. Soil Science Dept., Assiut University, Egypt.
15. Determining soil thermal properties. 1994. Mechanical Engineering Dept., Assiut University, Egypt.
16. Nitrogen and salt leaching. 1994. Soil Science Dept., University of Alexandria, Egypt.
17. Managing nitrate leaching. 1994. Soil Science Institute, University of Hannover, Germany.
18. Reducing nitrogen fertilizer leaching. 1995. Agrophysics Institute. St. Petersburg, Russia.
19. Holistic teaching of soil science students. 1995. Presov University, Slovakia.
20. Managing nitrogen fertilizer. 1995. Soil Science Dept., University of Philippines, Los Banos, Philippines.
21. Measuring soil water infiltration. 1995. Soil Science Dept., University of Philippines, Los Banos, Philippines.
22. Water and chemical transport in soil. 1995. Soil Science Dept., University of Philippines, Los Banos, Philippines.
23. Soil erosion factors. 1995. Soil Science, Benguet State University, Philippines.
24. Determining soil particle size distribution. 1995. Soil Science, Benguet State University, Philippines.
25. Controlling nitrogen leaching losses. 1995. College of Agriculture, Benguet State University, Philippines.
26. Localized compaction and doming to reduce fertilizer leaching. 1995. College of Agriculture, Xavier University, Philippines.
27. Water and chemical movement in field soil. 1996. CSIRO Davies Laboratory, Townsville, Australia.

28. Field method to determine hydraulic and solute transport parameters. 1996. Western Pacific Geophysics Conf. Brisbane, Australia.
29. Water and solute transport in field soil. 1997. Soil Science Institute, University of Hannover, Germany.
30. Field method to determine hydraulic and solute transport properties. 1997. Environmental Engineering Faculty, University of Warsaw, Poland.
31. Soil water and chemical transport. 1997. Soil Science Institute, Hungarian Academy of Sciences, Budapest, Hungary.
32. Tension infiltrometer for determining water and chemical properties of field soil. 1997. Soil Science Institute, ETH-Zurich, Switzerland.
33. Coupled heat and water movement in soil. 1997. University of Vienna, Austria.
34. Quality education for university students. 1997. University of Presov, Slovakia.
35. Vadose zone hydrology. 1997. Institute of Hydrology, Bratislava, Slovakia.
36. Controlling solute transport in soil. 1998. Soil Science Institute, University of Hannover, Germany.
37. Soil water flow. 1998. Hydrology group. Xian Technological University. China
38. Localized compaction and doming method to reduce fertilizer leaching. 1998. Institute of Environmental Science, Beijing, China.
39. Environmental soil physics. 1998. Physics Dept., Zhengzhou University, China.
40. Reducing fertilizer leaching in soil. 1998. Environmental Science, Zhengzhou University, China.
41. Managing fertilizers in soil. 1998. Zhengzhou Agricultural University, China.
42. Method to reduce nitrate leaching. 1998. Henan Inst. of Science & Technology, China.
43. Chemical transport in soil. 1998. Chinese Academy of Sciences, Institute of Soil Science, Yangling, China.



44. Gave a series of lectures as a short course on mass and heat transfer in soil. 1998. Soil Science Institute, University of Hannover, Germany.
45. New instruments to measure soil water. 1999. Hungarian Academy of Sciences, Budapest, Hungary.
46. New instruments to measure soil water. 1999. Soil Science Institute, University of Hannover, Germany.
47. New instruments to measure soil water. 1999. Chinese Academy of Sciences, Institute of Soil Science, Yangling, China.
48. Measuring soil hydraulic and chemical transport properties. 1999. Chinese Academy of Sciences, Institute of Soil Science, Yangling, China.
49. Coupled heat and water movement in soil. 1999. Chinese Academy of Sciences, Institute of Soil Science, Yangling, China.
50. Method to reduce leaching of nitrogen fertilizer. 1999. Chinese Academy of Sciences, Institute of Soil Science, Yangling, China.
51. Method to reduce leaching of nitrogen fertilizer. 1999. China Agricultural University, Beijing, China.
52. Solute transport in soil. 2000. Benguet State University, Baguio, Philippines.
53. Measuring soil hydraulic and chemical transport properties. 2000. International Rice Research Institute, IRRI, Philippines.
54. Method to reduce leaching of nitrogen fertilizer. 2000. Univ. of Philippines. Los Banos.
55. Measuring soil hydraulic and chemical transport properties. 2000. Hungarian Academy of Sciences, Budapest.
56. Measuring soil hydraulic and chemical transport properties. 2000. Chinese Academy of Sciences, Institute of Soil Science, Yangling, China.
57. Measuring soil hydraulic and chemical transport properties. 2000. Soil Science Institute, University of Hannover, Germany.
58. Measuring soil hydraulic and chemical transport properties. 2001. China Agricultural University. Beijing, China.

59. A vision for soil science. 2002. Chinese Academy of Science Conference, Yangling, China.
60. Heat method to determine soil water velocity. 2003. Hydrology Dept., Xian Technological University, China.
61. Soil temperature and wettability. 2003. Hydrology Dept., Xian Technological University, China.
62. Solute transport in soil. 2003. Hydrology Dept., Xian Technological University, China.
63. Developing as a young scientist. 2003. Soil Science graduate seminar. Northwest Agricultural University, China.
64. Developing as a young scientist part 1. 2003. Soil Science graduate seminar. Northwest Agricultural University, China.
65. Developing as a young scientist part 2. 2003. Soil Science graduate seminar. Northwest Agricultural University, China.
66. Developing as a young scientist. 2003. College of Agriculture graduate seminar. Northwest Agricultural University, China.
67. Determining soil water flux with a thermo-TDR. 2004. Soil science seminar. Iwate, University, Morioka, Japan.
68. Determining soil solute transport properties. 2004. Soil science seminar. Iwate, University, Morioka, Japan.
69. Addressing the challenges posed by dynamic surface soil properties. 2005. Soils, Water, and Agricultural Dept., Sultan Qaboos University. Muscat, Oman.
70. Determining water and solute transport properties. 2005. Chinese Academy of Sciences, Institute of Soil and Water Conservation. Yangling, China.
71. Yangling, China keynote address. 2006. Making a case for expanding soils research. 2nd International Symposium of Soil Erosion and Dryland Farming".
72. Temperature, Salinity, and Wettability Effects on Soil Water. 2006. Sultan Qaboos University, Muscat, Oman.

73. Institute of Soil and Water Conservation Yangling, China. 2007. Workshop on Soils Research.
74. China Agricultural University. 2007. Importance of soils research.
75. China Institute of Atmospheric Sciences. 2007. Measuring soil water evaporation.
76. Measuring soil water evaporation. 2008. Institute of Soil and water conservation, Yangling, China.
77. Measuring soil water evaporation. 2008. Technion Institute. Israel.
78. Soil physics research. 2009. Institute of Soil and water conservation, Yangling, China.
79. Soil physics research. 2009. China Agricultural University, Beijing, China.
80. Soil Physics Research Update – heat, water, and chemical transfer in soil. 2010. Institute of Soil and Water Conservation, Yangling, China.
81. Advancing Soil Science by Addressing Some Challenges Posed by Dynamic Soil Surface Conditions. 2010. NW China Agricultural and Forestry University, Yangling, China.
82. Advancing Soil Science by Addressing Some Challenges Posed by Dynamic Soil Surface Conditions. 2010. University of the Philippines in Los Banos.
83. Soil Physics Research Update – heat, water, and chemical transfer in soil. 2010. China Agricultural University, Beijing, China.
84. Short-course on Soil Heat Transfer. 2010. Institute of Soil and Water Conservation, Yangling, China. Six lecture topics, including – Soil Temperature and Mechanisms of Soil Heat Transfer; Soil Thermal Properties; Soil Heat Transfer by Combined Conduction and Liquid Water Flow; Coupled Heat and Mass Transfer in Soil – Measurements; Coupled Heat and Mass Transfer in Soil – Model Results; Heat-Pulse Probe Method for Measuring Soil-Water Evaporation.
85. Coupled heat, water, and solute transfer in soils of the China Loess Plateau. 2010. Chinese Academy of Sciences Conference for Foreign Visiting Scientists, Beijing, China.
86. Soil Physics Research Update – heat, water, and chemical transfer in soil. 2010. Xian University of Science and Technology, Xian, China.

87. Soil Physics Research Update – heat and water transfer in soil. 2010. Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China.
88. Coupled Heat and Water Movement in Soil: recent advances on measuring dynamic soil water content, temperature, vapor fluxes and liquid water fluxes. 2011. Brazil Soil Physics Conference. Sao Paulo, Brazil.
89. Soil Physics Research Update – heat and water transfer in soil. 2012. Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China.
90. Horton, R. 2013. Soil physics research update – heat, water, and chemical transfer in soil. Xian University of Science and Technology, Xian, China.
91. Horton, R. 2013. Soil physics research update – heat, water, and chemical transfer in soil. China Agricultural University, Beijing, China.
92. Horton, R. 2013. Soil physics research update – heat, water, and chemical transfer in soil. Institute of Soil and Water Conservation, Yangling, China.
93. Horton, R. 2013. What’s wrong with soil physics? China Agricultural University, Beijing, China.
94. Horton, R. 2013. Workshop for young scientists - communication, finances, and relationships. China Agricultural University, Beijing, China.
95. Horton, R. 2014. Sensors For Measuring: Soil Water Content, Soil Water Content/Bulk Density, Soil Water Content/Matric Potential, Soil Water Evaporation, Soil Ice Content, and Crop Evapotranspiration. Xian University of Science and Technology, Xian, China.
96. Horton, R. 2014. Sensors For Measuring: Soil Water Content, Soil Water Content/Bulk Density, Soil Water Content/Matric Potential, Soil Water Evaporation, Soil Ice Content, and Crop Evapotranspiration. China Agricultural University, Beijing, China.
97. Horton, R. 2014. Sensors For Measuring: Soil Water Content, Soil Water Content/Bulk Density, Soil Water Content/Matric Potential, Soil Water Evaporation, Soil Ice Content, and Crop Evapotranspiration. Institute of Soil and Water Conservation, Yangling, China.
98. Horton, R. 2014. Sensors for Measuring: Soil Water Content, Soil Water Content/Bulk Density, Soil Water Content/Matric Potential, Soil Water

- Evaporation, and Crop Evapotranspiration. Keynote address at the Evapotranspiration Conference, 111 Plan, Beijing, China.
99. Horton, R. 2016. Heat transfer in the root zone: measurements, models, and unresolved questions. Kirkham Conference, Sede Boqer, Israel.
  100. Horton, R. 2016. Surface Soil Processes. Nanjing University of Information Science and Technology.
  101. Horton, R. 2016. Measuring Soil Properties and Processes with Thermo-TDR Sensors. Nanjing Institute of Soil Science.
  102. Horton, R. 2016. Root Zone Soil Temperature. China Agricultural University.
  103. Horton, R. and Y. Kojima. 2017. Sensible Heat Balance Determines Subsurface Evaporation or Freezing and Thawing Rates. Joint JpGU-AGU Conference, Tokyo, Japan.
  104. Horton, R. 2017. Recent Advances in Soil Physics. Meiji University, Japan.
  105. Horton, R. 2017. Recent Advances in Soil Physics. Gifu University, Japan.
  106. Horton, R. 2017. The Importance of Soils. Nagoya University, Japan.
  107. Horton, R. 2017. Soils are a Critical Component of Earth's Critical Zone. Tokyo University, Japan.
  108. Horton, R. 2017. The Importance of Soils. Mie University, Japan.
  109. Horton, R. 2017. Mentoring students in a manner to help them grow academically and personally. China Agricultural University.
  110. Horton, R. 2017. Heat transfer in the root zone: measurements, models, and unresolved questions. International Workshop: Soil Physics & the Nexus of Food, Energy and Water. Shenyang, China.
  111. Horton, R. 2018. Mentoring students in a manner to help them grow academically and personally. China NW A&F University, Yangling, China.
  112. Horton, R. 2018. Coupled Heat and Water Movement in Soil: advances on measuring and modeling soil properties and fluxes. China NW A&F University, Yangling, China..

### **C. Volunteered**

1. Water use of chile peppers. 1979. Inter-American Conference in El Paso, TX.
2. Chile pepper growth as affected by high frequency deficit irrigation. 1979. American Society of Agronomy annual meetings.
3. Estimating the apparent thermal diffusivity of soil near its surface. 1981. Soil Science Society of America annual meetings.
4. Two-dimensional soil temperature distribution in a row crop. 1983. Soil Science Society of America annual meetings.
5. A method of modeling soil porosity using Markov statistics. 1985. Soil Science Society of America annual meetings.
6. Water table control with subirrigation systems. 1986. Soil Science Society of America annual meetings.
7. Water flow analysis of a dual pipe subirrigation-drainage system. 1987. Soil Science Society of America annual meetings.
8. Water flow analysis of a dual pipe subirrigation-drainage system. 1988. Iowa Academy of Science Annual Meetings.
9. Simultaneous transfer of heat, moisture, and solute in porous media. 1989. Soil Science Society of America annual meetings.
10. Subirrigation and drainage by ditches. 1989. Soil Science Society of America annual meetings.
11. Water flow in soil. 1990. Science in Agriculture Day: Science Experience. Iowa State University, Ames, Iowa.
12. Soil water flow. 1991. Sciences in Agricultural Day: Science Experience, Iowa State University, Ames, Iowa.
13. Salinity and compaction effects on soil water evaporation and solute transport. 1992. Soil Science Society of America annual meetings.
14. Soil water flow. 1992. Sciences in Agriculture Day: Science Experience, Iowa State University, Ames, Iowa.

15. Soil water and chemical movement. 1993. Sciences in Agriculture Day: Science Experience, Iowa State University, Ames, Iowa.
16. Soil water and chemical movement. 1994. Sciences in Agriculture Day: Science Experience, Iowa State University, Ames, Iowa.
17. Soil water and chemical movement. 1995. Sciences in Agriculture Day: Science experience, Iowa State University, Ames, Iowa.
18. Coupled heat, water, and chemical transport in soil. 1996. Soil Science Society of America annual meetings.
19. Determining soil hydraulic properties from horizontal infiltration. 1996. Soil Science Society of America annual meetings.
20. Determining preferential flow properties of field soil. 1996. American Geophysical Union annual meetings.
21. Heat and mass transfer in freezing soil. 1997. Soil Science Society of America annual meetings.
22. Instrument for simultaneous measurement of soil water content and pressure potential. 1998. Soil Science Society of America annual meetings.
23. Effects of soil wettability on coupled heat and water movement. 2000. American Geophysical Union annual meetings.
24. Field determination of soil hydraulic and chemical transport properties. 2001. American Society of Agricultural Engineers, Preferential Flow Symposium.
25. Opportunities Exist for Soil Science to Become a Major Player in the Education and Training of Future Environmental and Ecological Scientists. 2005. ASA-CSSA-SSSA International Annual Meetings.
26. Heitman, J.L., X. Xiao, P. Deol, R. Horton, and T. Ren. 2013. Advances in Sensible Heat Balance Characterization of Soil Water Evaporation. Am. Geophys. Union Meeting of the Americas, Cancun, Mexico.

### **XIII. REVIEWER AND EDITOR RESPONSIBILITIES**

#### **A. Editing**

1. Associate Editor for *Agronomy Journal* (1989-1995)

2. Consulting Editor for *Soil Science* (1994-)
3. Associate Editor for *Soil Science Society of America Journal* (2001- 2002)
4. Editorial Committee for Methods of Soil Analysis. Part 4. ASA and SSSA, Madison, WI. (2002)
5. Editorial Board for Bulletin of Soil and Water Conservation (2001 – 2004)

**B. Reviewing or Examining**

1. Dr. Horton has served national and international journals as a reviewer for an average of one manuscript per month for the past 20+ years.
2. Ph.D. dissertation, "Some fluctuating flow problems in hydro-dynamics and hydromagnetics", Dept. of Mathematics, Utkal University, India. (1982).
3. US-Environmental Protection Agency research project proposals. (1985, 1986, 1988).
4. USDA research project proposals. (1985, 1987, 1992, 2008).
5. US-Environmental Protection Agency research project. (1986).
6. Ph.D. dissertation, "Effects of mulching on the surface energy balance and soil thermal regimes", Dept. Soil Science, Univ. British Columbia, Canada. (1988).
7. Virginia Water Resources Research Center research project documents. (1988).
8. USDA Small Business Innovation Research Proposals (1990-1993).
9. National Sciences and Engineering Research Council for Canada research project proposal (1990, 2000, 2009).
10. Panel reviewer for C.S.R.S. Water Quality Program (1991)
11. B.A.R.D. research project proposal (1992, 1993, 2000)
12. National Research Council research project proposal (1992)
13. U.S. Air Force research proposal (1993)
14. Ph.D. dissertation for the University of Hannover, Germany (2001)
15. Ph.D. dissertation for the University of Hannover, Germany (2004)



16. NSF proposals (2004, 2005, 2007, 2009, 2010, 2011)
17. Numerous national and international evaluations for faculty promotion and tenure

**C. Program reviews**

1. USDA-CSREES reviewer of the Soil Science Department at North Dakota State University. (1989).
2. Reviewer of the National Soil Tilth Laboratory of the USDA-ARS. (1999)
3. Reviewer of the Key State Laboratory of Soil Erosion and Dryland Farming, Yangling, China (2003)
4. Examiner of the Soils, Water, and Agricultural Engineering Department of Sultan Qaboos University in Muscat, Oman (2005 and 2006).
5. Reviewer of the entire United States Department of the entire USDA–Agricultural Research Service Soil Science research program. A review of five years of soil science research (2005).
6. Member of Technical Advisory Committee for USA-Israel Bi-national Agricultural Research and Development, BARD (2007-2010).

**XIV. CONSULTING**

1. Advised Bolton and Menk, Inc. (Consulting Engineers) on the Wisconsin DNR proposed regulations for land application systems (1989).
2. Worked on a one-step outflow device for Daniel B. Stephens and Assoc. (1993).
3. Advised Daniel B. Stephens and Assoc. on soil physical measurements (1996).