

LETTER OF INTEREST AND STATEMENT ON QUALIFICATIONS

Drs. Aguirre and VandeWoude and Members of the Search Committee:

Please accept my application for the position of Dean of the College of Agricultural Sciences (CAS) at Colorado State University. Along with this letter of interest and statement of qualifications, I have included my CV and a statement describing my philosophy of education, research, leadership, communications, and management. Thank you for your time and effort in this critical endeavor.

In my seven years as the Director of the Center for Agricultural Resources (CARR) here in Fort Collins, I have been deeply impressed and positively impacted by the College of Agricultural Sciences, its faculty and staff, and the direction it is taking in leading the University. The atmosphere generated by students eager to learn and by faculty dedicated to educating the next generation is truly invigorating. While I truly appreciate USDA-ARS, my agency home for 25 years, the desire to serve the Land Grant mission has tugged at my heart for some time. Agriculture now faces an unprecedented set of environmental, societal, and economic pressures on both local and global scales, and concurrently, Colleges of Agriculture are faced with immense challenges related to funding and changing demographics. I would cherish the opportunity to serve as Dean utilizing my experience gained in leading a USDA-ARS Laboratory in Texas, and now all USDA-ARS research and administrative activities in Colorado and Wyoming, to serve the College and support Colorado agriculture through these challenging times.

Although my inner nature would vehemently oppose any suggestion of me as a salesman, the reality is that I have chosen to be just that for more than a decade. I assumed positions of leadership in USDA-ARS following years of flat budgets, which severely hampered our ability to conduct world-class research in support of the USDA-ARS mission to develop and transfer solutions to agricultural problems of high national priority. Instead of simply managing available fiscal, personnel, and physical resources as many do, I chose to shoulder the responsibility of selling the value of our research and obtaining the necessary resources to serve our employees and stakeholders that depended on our research solutions. To accomplish that monumental task, I built strong, broad stakeholder coalitions and earned the trust and respect of Congressional representatives in the district and in Washington, DC. The result was tremendous growth in appropriated funding in Texas (+\$1.23M annual increase) and in Colorado and Wyoming (+\$1.93M annual increase).

I credit those successes to my sincere belief and unmistakable passion for the product - USDA-ARS research discoveries and solutions - and its value. If selected to serve as Dean, I would be thrilled to bring that same belief in and passion for the products of the College. Those products - research discoveries and solutions and CAS educated students - are truly fundamental for sustainable success and prosperity of the industries and people of Colorado. Leading the CAS team and championing its amazing products with a foundation of customer trust and commitment to delivering quality products would be a joy and a tremendous honor.

In previous statements on leadership, I have not presented my vision but have instead emphasized my commitment to co-develop a shared vision. I feel that it is too self-centered to walk in and work toward a personal vision without first learning the needs and visions expressed by organizational leaders, stakeholders, and staff. I still hold that fundamental belief, and I am committed to building a shared vision for CAS based on the following foundational commitments:

- Advance President Parson’s commitment to the Land Grant mission, specifically that ALL should have access to higher education; and
- Enhance and strengthen the College’s commitment to global excellence in agricultural research, education, extension, outreach, and engagement.

After much thought and gathering insight from colleagues and stakeholders in Colorado and across the country, I have concluded that the only way to meet these commitments is with visionary research, teaching, and extension/outreach partnerships recognizing the reality of the rapidly evolving socio-political landscape in Colorado, our nation, and around the world. With this in mind, **Together** we will establish CAS as the national pioneer in honoring and adapting the Land Grant mission for the future. By leading our College into the future - and being a pioneer for Colleges of Agriculture at Land Grant Universities around the nation - we will honor the past and transform the land grant way. And by leading the way, we will ensure that CAS is equipped and empowered to meet emerging state, national, and international needs and that CAS assumes even greater national and international leadership in food safety, food security, wellness, and economic prosperity through the sustainable use of natural resources. In doing so, we will achieve our vision to “Revolutionize how we nurture people and our planet” to ensure “Excellence in our 21st century land-grant mission” (as stated in the 2024 Dean’s Prospectus and CAS Strategic Plan 2022-2025). How will we do this? We will do it **Together**. The College’s stated values are: “Actions manifest our essence. With CSU’s Principles of Community as a guide, we serve with excellence, intention, rigor, optimism, empathy, creativity and wisdom.” You see, our values, and those of leadership, set the tone for organizations. Therefore, it is imperative that I state that a deep and sincere commitment that guides my every decision, and the reason that I would cherish the opportunity to serve as Dean – only **Together** will we succeed.

The foundation of this transformation is provided in the priorities of the CAS Strategic Plan 2022-2025; therefore, my contributions to the plan and its priorities will focus on honoring the forethought and wisdom shown by the developers through diligent implementation of that Plan. I have no intention of walking in and disregarding the Plan in place of personal preferences or agendas. The Plan’s success will require that I ensure adequate resources are made available and properly aligned to the Plan’s priorities: Innovating local and global food systems; Advancing the science of regenerative agricultural systems; Accelerating agriculture’s climate resiliency; and Nurturing human wellness and thriving communities. While the impact of the CSU Budget Model Redesign on CAS departments and programs is not yet fully realized and understood, I am confident that **together** we will develop successful funding strategies. This will occur by bringing those affected to the

table and finding ways to effectively utilize current resources and developing new income streams through a combination of growth in student numbers, extramural research funding, commercialization of Intellectual Property, state and federal funding, private donations, and industry partnerships. The right leadership, working together with university administration and CAS faculty and staff to serve stakeholders by enhancing agricultural sustainability, profitability, and food security. What a worthy endeavor!

In stating that only ***Together*** can we succeed, we will not forget the foundation of successful Colleges of Agriculture - their relationships with industry groups, state and federal agencies, alumni, research partners, customers, and other stakeholders. Healthy relationships produce advocates for the College; advocates that bring political influence, financial resources, research relevance, and employment and mentoring opportunities. As Dean, I will invest substantial time and energy strengthening well-established relationships, as well as bringing new partners to the table from my professional and political networks and through proactive engagement with novel or previously forgotten groups. I also look forward to collaborating with the Department Heads to mentor faculty in terms of increased investment and understanding of the value of building customer and stakeholder relationships to better learn, understand, and address their concerns. I have an extremely successful record in establishing close relationships with U.S. senators and representatives and their staff, reaching a level of trust such that they reach out to me for guidance and input on authorizing and appropriations bills and funding requests. I have also established wonderful relationships with commodity groups; relationships built by transparency and my commitment to understand and meet their needs. These strong relationships will bring additional credibility, stature, and support to the College.

Not only will everyone be invited to “Come to the Table”, the invitation is only the first step. We will reach out and show potential students, alumni, and stakeholders in every corner of our state, in cities and rural communities, and across the nation, just how wonderful our table is: How inclusive it is! How valuable it is! How enjoyable it is! This will require a daily commitment to consider and include everyone, not just those that look like us, think like us, believe like us. ***Together*** refers to those people and communities who have been and continue to be disadvantaged, overlooked, or forgotten; those who own or manage agricultural lands, producing crops and livestock; those corporate and industry partners that rely on research knowledge and university educated employees; those laborers that too often do not receive the pay and recognition they deserve; and those customers and consumers that enjoy daily the fruits of agricultural production.

I am committed to diversity of thought, background, and experience instead of taking the much easier short-term, narrow, and exclusive path. Those in leadership have the responsibility to advance diversity, equity, inclusion, and social justice, although some forget or ignore this moral imperative. To face the monumental challenges facing humankind and agriculture, I will embrace and showcase the value of all perspectives, all ideas, and all voices. That is the only path to creating a better world for all. In agriculture, only ***Together*** can we feed those who daily struggle with hunger; only ***Together*** can we protect the precious natural resources that we have been given the responsibility to steward; only ***Together*** can we improve the profitability, welfare, and societal concerns of

horse and food animal production; only *Together* can we provide the education that will enlighten, encourage, and equip future generations; and only *Together* can we train the next generation of professionals with these values.

STATEMENT ON REQUIRED AND PREFERRED JOB QUALIFICATIONS

I am an accomplished leader in agriculture and agricultural science, nationally and internationally recognized for my research on measuring and mitigating water quality impacts of agriculture, especially as related to alternative management strategies to balance producer returns and environmental concerns. Through hard work and perseverance, I earned a Ph.D. in Biosystems and Agricultural Engineering from Oklahoma State University and a M.S. in Plant and Soil Sciences from Texas Tech University. I have 14 years of experience in multifaceted leadership of agricultural research teams including my current role administering more than 150 permanent staff, a \$21.7M annual budget, and numerous laboratory, office, and greenhouse facilities.

- I have a proven record of outstanding research, as illustrated by 157 refereed publications with more than 22,000 citations and numerous paper awards).
- I am dedicated to giving back through teaching, extension, and service, as highlighted by Adjunct Faculty positions at Colorado State Univ. and Texas A&M Univ.; teaching numerous workshops and guest lectures; and service in Division Editor and Associate Editor roles, Graduate Committees, Board of Trustees, and national scientific advisory panels.
- I have a proven record of visionary leadership and have built and enhanced interdisciplinary, multi-agency, regional and national collaborations, highlighted by bringing together “non-traditional” partners such as Monsanto, National Corn Growers, and the Nature Conservancy and Texas Farm Bureau, Dairy Farmers of America, and EPA to develop and achieve mutually beneficial outcomes. In addition, I brought together numerous university partners (i.e., Baylor Univ., Texas A&M Univ., and Univ. Texas) to establish and lead the Texas Gulf Research Partnership and its Long-Term Agro-ecosystem Research (LTAR) network site. All of these team successes were built on trust, understanding, and appreciation of stakeholders such as producers, agribusiness, land managers, and rural communities, and the commitment that as public servants we have the amazing opportunity and responsibility to serve their economic interests and enhance their quality of life, now and for generations to come.
- I have also built broad stakeholder coalitions, including Congressional representatives in the district and in Washington, D.C., to achieve growth in research infrastructure and appropriated funding (> \$3.1M annually). During my seven-year leadership tenure in Fort Collins, appropriated and extramural funding increases have totaled \$12.5M. My efforts largely focused on increasing federal

appropriations; however, in meeting with CSU University Advancement and CSU Strata staff, I am convinced that the elements of success in university advancement and development campaigns are the same – trust, commitment, and quality products.

- I have attracted, supported, retained, and advanced a diverse and superior scientific, technical, and administrative staff. As highlighted under my direction, we have hired internationally recognized Research Leaders, and we greatly expanded candidate pools for Research Scientists (> 100 applicants compared to ~10 in previous searches, one of which resulted in the hire of a Harvard Univ. professor). In addition, I have both supported and created national leadership opportunities, recognizing the need to ensure that female and minority Research Scientists can take advantage of these opportunities.
- I have demonstrated in-depth understanding of the financial complexities of multi-disciplinary, multi-constituent institutions, including a Research Unit (\$4.63M annual budget) and a two-state Center (\$21.7M annual budget), both with numerous extramural projects and associated budgets.
- I have led numerous collaborative and inclusive strategic planning processes, including 5-year USDA Project Plans, which addressed budget, personnel, facilities, and research expertise, ensuring alignment with USDA and ARS Strategic Plans. I also enacted participatory leadership at our Center, such that every staff member has a voice and opportunity to lead, and thus creating a shared vision.
- I have extensive knowledge of the complexities of operating off-campus research centers, managing two research farms in Texas, including the Historic Riesel Watersheds, along with two research farms (Limited Irrigation Research Farm, Greeley, CO; Central Great Plains Research Station, Akron, CO) and two research ranches (High Plains Grasslands Research Station, Cheyenne, WY; Central Plains Experimental Range, Nunn, CO). Under my leadership and at each of these sites, we work directly with local/rural stakeholders (such as the Crow Valley Livestock Cooperative, Texas GLCI) to ensure station activities meet their needs.
- I have a personal and professional commitment to diversity and inclusive excellence based on my belief that those in leadership have the responsibility to champion such efforts and that as humankind, we are all in this together.

My beliefs related to education, research, leadership, communications, and management are best expressed and understood by statements of philosophies coupled with commitments and actions supporting those beliefs. Such statements appear subsequently.

Support faculty as the key to educational and research success. My commitment to faculty will be multi-faceted and much deeper than simply advocating for diversity in hiring and for appropriate faculty compensation, for example. As Dean, I will lead by example so that the faculty know I care about them personally and professionally as individuals. I will invest the time to listen to their needs and learn their individual and collective strengths and concerns. I gain tremendous joy in promoting others and have a great track record of promoting researchers through successful nominations for prestigious awards, USDA “super grade” recognition, and local and national leadership opportunities.

Be an unwavering advocate for educational quality. It is refreshing to know that research and educational excellence at CSU are not mutually exclusive goals, as many universities only pay lip service to this dual commitment. I understand full well budget realities and the need for extramural funding and indirect costs; however, I will not minimize the value of educational excellence in terms of promotion and tenure, salary, and budget decisions. The CSU Catalog beautifully describes the Land Grant Tradition, “We believe in the transformational power of education to prepare the next generation of scientists, artists, educators, entrepreneurs and more.” Continuing the College’s long-standing legacy of educational excellence will be a top priority.

I will proudly promote the value of a CAS education and the ability to change the world that it brings, as many prospective students have a passion for societal contributions, such as feeding the world, caring for its animals, and protecting its precious natural resources. I will also utilize my extensive stakeholder network of CSU alumni, elected officials, state and federal agencies, and industry to expand experiential learning and professional contact opportunities for students. My insight into the agricultural industry and extensive experience in hiring and mentoring technical, administrative, and scientific staff has prepared me to develop career development partnerships and hiring pipelines that ensure CAS graduates provide the enthusiasm, knowledge, and training needed by industry.

Increase research quality, impact, and funding. Agricultural sciences research must remain on the cutting edge of innovation, commercialization, and IP; it must deliver sustainable solutions considering economic, environmental, and societal implications; and it must remain relevant in our rapidly changing global community. The research conducted by CAS is critical to our state, to our nation, and to people around the world, many of whom are desperate for science-based solutions to problems we face as humankind. To deliver these solutions, I will work diligently to increase research ***quality*** to bring heightened appreciation and respect to the College, elevating its national and international recognition; ***impact*** to produce loyal, passionate, and outspoken advocates and stakeholders; and ***funding*** to meet ever increasing demands for science-based solutions. I have established numerous successful research partnerships between land grant universities, NRCS, and ARS in which together we produced more relevant and more impactful results than could have ever been possible from any of us alone. My knowledge and experience will facilitate

expanded funding opportunities with ARS partnerships utilizing both competitive grant funds to conduct short-term research on high-profile problems and USDA base funds to conduct longer-term research to address persistent and emerging problems.

Be an efficient and effective decision maker. Many administrators get bogged down in making decisions. My leadership will be characterized by efficient and effective decision making and my ability to discern whether the issue at hand is: 1) well-understood thus warranting prompt, decisive action, 2) not completely understood thus warranting additional information to inform decision making, or 3) divisive, controversial, and/or consequential thus warranting patience, additional discussion, and consensus. When consensus is needed, I will rely on the foundation of a culture of trust and inclusivity that we build together. I will not rely on an inner circle of “yes men”. Instead, I am committed to an inclusive approach that brings those affected to the table - and a variety of ideas, opinions, viewpoints, and backgrounds - and to have their voices heard and valued.

Lead by serving. My desire to lead is driven by my commitment to serve. Serving CAS would be an honor and privilege that I would attack by rolling up my sleeves and working hand-in-hand with university administration, especially Drs. Underwood and Pritchett, and CAS leadership, faculty, and staff. I will work to serve the students by ensuring that their education remains the primary focus and that research enhances that education. I will serve the faculty and staff by supporting their efforts to conduct unparalleled and innovative research that solves problems facing Colorado’s agricultural producers, industries, and the natural resource base. Researchers have the responsibility to attract research funding, but leadership also has a critical responsibility to provide resources and support, so they can focus on research not administrative barriers. I will serve industry, and all stakeholders who face problems that CAS can solve. I am committed to meeting face-to-face with industry, producers, commodity groups, private interests, and state and federal agencies to listen to and learn their challenges and then work together to earn their trust and build confidence knowing CAS will deliver needed solutions.

Implement only necessary changes. Incoming leaders too often implement poorly conceived, self-serving changes in programs, policies, and procedures despite little need for bureaucratic change. I recognize the value and reduced opportunity costs of staying the course with programs that are working well and of making only minor adjustments when needed to maintain relevancy. Early in my tenure, I will dedicate a great deal of time to listening and learning from students, faculty, staff, and university leadership. Only then will I be able to best evaluate current programs, understand the rationale for their implementation, assess successes and failures, and chart future direction. When it is thoughtfully and carefully determined that improvement is needed, then proposed changes will be well-planned, adequately vetted, and rigorously evaluated in partnership with students, faculty, customers, and stakeholders, as well as expert partners from other agencies and universities. Where extensive evaluation is not practical, smaller scale “pilot programs” will serve as surrogates. Many proposed changes look good on paper but do not perform as promised when faced with practical realities, stakeholder scrutiny, or real-world constraints. Instead, I will use proven discretion to avoid unnecessary changes, focusing instead on needed improvements.

R. DAREN HARMEL, PHD

EDUCATION

Ph.D. (1997), Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, OK
M.S. (1995), Soil Physics, Texas Tech University, Lubbock, TX
B.A. (1992), Chemistry, Central College, Pella, IA

PROFESSIONAL EXPERIENCE

Director, USDA-ARS Center for Agricultural Resources (CARR), Fort Collins, CO (2016-Present). Lead all ARS research and administrative activities in Colorado and Wyoming to accomplish the mission of ensuring the security and future use of agricultural, genetic, and natural resources with a research portfolio that includes irrigated and dryland production, source water protection, sugar beet breeding, soil health, climate resiliency, adaptive rangeland management, and curation of plant, animal, insect, and microbial germplasm. Manage \$21.7M/yr appropriated budget, permanent staff (> 150), and infrastructure including: two research farms [Limited Irrigation Research Farm, Greeley, CO; Central Great Plains Research Station, Akron, CO] and two research ranches [High Plains Grasslands Research Station, Cheyenne, WY (2870 ac); Central Plains Experimental Range, Nunn, CO (15,500 ac)]. Lead biosafety efforts as Chair of the Institutional Biosafety Committee, as well as animal welfare efforts as Institutional Official for two Institutional Animal Use and Care Committees (IACUCs). Selected leadership accomplishments include:

- ***Led critical change of culture related to diversity and inclusion, modeling this behavior.***
 - Enacted participatory leadership to model and create a workplace in which:
 - Bullying, discrimination, and bias are called out by staff and addressed by leadership;
 - Diversity of thought, experience, and background are valued; and
 - Safety, trust, and respect are demanded.
 - Together with input from all staff, led development of the foundational “Who We Are” statement: “CARR prioritizes diversity of thought, background, and experience in a fair and just workplace. In so doing, CARR fosters a creative work environment in which employees thrive and relish the privilege to serve our customers and stakeholders who rely upon the genetic, natural, and agricultural resources that we have the responsibility to help steward.”
- ***Led growth of the Center in terms of research capacity and funding.***
 - Increased annual appropriations by \$1.93M through strong stakeholder relationships and effective communication with Congressional representatives both in the district and in DC.
 - Led consolidation of research units from Cheyenne, WY and Akron, CO into the Center.
 - Developed creative solutions to increase discretionary (research) funding levels despite inflationary pressures and increased facilities and administrative costs.
- ***Pioneered “data stewardship” ethic.***
 - Led Agency transition beyond simply discussing the importance of data management to a data stewardship ethic that seizes upon Digital Age potential.
 - Served on Board of the \$2.67M Partnerships for Data Innovations (2019-2022).
- ***Serve as ARS Pandemic Coordinator for Colorado and Wyoming.***
 - Developed creative solutions to advance the Agency mission despite COVID challenges.
 - Led national team that created ARS Check I/O app adopted by Agency for contact tracing.

Research Leader, USDA-ARS Agricultural Genetic Resources Preservation Research Unit, Fort Collins, CO (2019-present). Provide programmatic, budget, and facilities leadership of the world's largest agricultural genebank, which houses the USDA National Animal Germplasm Program and the security backup for the USDA-ARS National Plant Germplasm System. Diligently implemented curation and research consolidation through inclusion and staff empowerment, which improved performance, morale, teamwork, and critical workflow.

Research Leader, USDA-ARS Grassland, Soil and Water Research Laboratory, Temple, TX (2010-2016). Provided research and administrative for the Lab, managing a \$4.63M/yr appropriated budget and > 30 permanent staff. Managed all infrastructure, including a research farm in Temple, TX and a research farm and ranch in Riesel, TX. Provided research leadership to support the Lab's mission to develop technology and solutions that increase efficient use of soil and water resources, enhance forage and crop production, and support sustainable agricultural production in healthy ecosystems. Led broad research portfolio with focused programs on decision support tools for crop and forage production and watershed management; soil, water, and crop management; rangeland productivity and quality; and mitigation of global change effects on agriculture. Selected leadership accomplishments include:

- ***Led growth of the Lab in terms of research capacity, stature, and appropriated funding.***
 - Increased annual appropriated budget by \$1.23M through effective relationships with stakeholders and Congressional representatives both in the district and in DC.
 - Established and led the Texas Gulf Research Partnership and its Long-Term Agro-ecosystem Research (LTAR) network site.
 - Led successful campaign to designate the Riesel Watersheds as a Historic Landmark of Agricultural and Biological Engineering.
 - Consolidated three research units into two to decrease administrative burden and align scientists into more cohesive teams.
 - Led major facility improvement projects to decrease costs and house additional staff from agency partners (EPA, Texas A&M, Texas NRCS, national NRCS CEAP modeling team).
- ***Increased productivity of Lab scientists.***
 - Enhanced successful extramural grant record (>\$3.7M/year, \$413,000/scientist/year).
 - Increased annual refereed publication rate from three per scientist in 2010 to eight in 2016.
- ***Led transformative efforts to enhance agricultural resiliency.***
 - Led a research partnership with Texas GLCI, NRCS, Noble Foundation, and Texas A&M GAN Lab to implement a long-term study comparing continuous and rest-rotation grazing.
 - Led research to incorporate cover crops, organic fertilizer, and other regenerative practices to increase production and economic resiliency on croplands.
 - Co-developed lab and field methods to quantify nutrient cycling and soil health.

Research Agricultural Engineer, USDA-ARS Grassland, Soil and Water Research Laboratory, Temple, TX (1999-2016). Led research to address the difficult problem of balancing agricultural productivity and profitability with protection and enhancement of water resource quantity and quality. Established successful grant record (\$3.4M), and averaged > 5 refereed publications/year.

Watershed Coordinator, Texas Natural Resources Conservation Commission, Austin, TX (1998). Served as technical manager for three TMDL projects. Authored and edited portions of the TMDL project guidance for Texas.

Graduate Research Fellow, Biosystems and Agricultural Engineering Department, Oklahoma State University, Stillwater, OK (1995-1997). Led research on stream morphology and riparian vegetation effects. Coordinated technical aspects of Oklahoma Riparian Management Program.

Graduate Research Assistant, Plant and Soil Science Department, Texas Tech University, Lubbock, TX (1992-1994). Led research on environmental effects of biosolid application in arid climates.

Intern, Soil Conservation Service, Knoxville, IA (1992). Assisted in conservation compliance plan development, estimated impacts of farming practice on soil loss using CAMPS model, and assisted in terrace and farm pond design.

Agricultural Producer, R.M. Harmel Ranch, Olney, TX (through 2016). Assisted in operations of family cattle ranch and wheat farming operation in north central Texas.

RELATED EXPERIENCE

Adjunct Faculty Positions

- Soil and Crop Sciences Department, Colorado State Univ. (2022-present)
- Civil and Environmental Engineering Department, Colorado State Univ. (2017-present)
- Biological and Agricultural Engineering Department, Texas A&M Univ. (2005-2020).
- Member of Graduate Faculty, Texas A&M Univ. (2008-2020)

Teaching Experience

- Guest lecturer – Texas A&M Univ., Colorado State Univ., Iowa State Univ., North Carolina A&T Univ.
- Numerous hydrology and water quality seminars, regional and national training sessions, and professional workshops with hundreds of attendees including university faculty, consultants, and regional water authorities, and state/federal agency technical personnel and leadership.

Editorial Service

- **Ad Hoc Division Editor**, *Transactions of ASABE* and *Applied Engineering in Agriculture* (2009-present)
- **Associate Editor**, *Transactions of ASABE* and *Applied Engineering in Agriculture* (2003-present)
- **Guest Editor**, Global Water Security ASABE Special Collection (2019-2020)

Post-Doc, Graduate, and Undergraduate Advisory Committee and Examination Roles

- Ph.D., Tad Trimarco, Colorado State Univ. (2022-present)
- Ph.D., Austin Hopkins, Colorado State Univ. (2021-present)
- Ph.D., Robert Sargent, Monash Univ., Australia (2021)
- M.S., Meaghan Owens, Texas A&M Univ. (2016-2017)
- Ph.D., Lucas Gregory, Texas A&M Univ. (2011-2016)
- M.S., Kori Higgs (Co-Chair), Texas A&M Univ. (2012-2014)
- M.S., Scott Winkler, Texas A&M Univ. (2011-2013)
- Ph.D., Takele Dinka, Texas A&M Univ. (2008-2011)
- Ph.D., Kevin Wagner, Texas A&M Univ. (2006-2011)
- M.WM., Allen Berthold, Texas A&M Univ. (2009-2010)
- Post-Doc, Mike White, USDA-ARS, Temple, TX (2008-2010)
- Ph.D., Sanghyun Kim, Texas A&M Univ. (2007-2010)
- Ph.D., David Wachal, Univ. of North Texas (2005-2007)
- M.Eng., Mauricio Taulis, Lincoln Univ., New Zealand (2002)
- Senior Thesis, Tara Stanton, Baylor Univ. (2001)

Society Leadership and Service

- ASABE Metrics Committee, guide Board of Trustees in assessing Society goals (2023-present)
- ASABE Soil and Water Division Publications Review Committee (Member 2003-present)
- Chair, Publications Committee, and Organizing Committee member, Global Water Security Conference, Hyderabad, India (2018)
- **Member, ASABE Board of Trustees (2014-2017)**
- Chair, ASABE Model Validation and Calibration Workgroup, “Communication” subcommittee (2010-2017). Co-led development of “Guidelines for Calibrating, Validating, and Evaluating Hydrologic and Water Quality (H/WQ) Models”, approved as an ASABE Engineering Practice Standard 621 (2017)
- ASABE Publications Council (Board of Trustees Liaison 2014-2017, Member 2017-2020)
- ASABE Hancor Soil and Water Engineering Award Selection Committee (Member 2010-2014)
- ASABE Refereed Publications Committee (Division Rep. 2006-2013)
- **Chair, ASABE Meetings Council (2013, Vice-Chair 2012, Division Rep. 2011-2012)**
- Chair, ASABE New Holland Young Researcher Award Selection Committee (2012, Member 2010-2012)
- Chair, ASABE Soil and Water Division Forward Planning Committee (2011, Member 2011-2014)
- **Chair, ASABE Soil and Water Division (2010, Vice-Chair 2009, Secretary 2008, Member 2003-2012)**
- Chair, ASABE Soil and Water Division Program Committee (2009, Member 2003-2009)
- **Chair, ASABE Hydrology Group (2005-2006, Vice-Chair 2003-2004, Member 2000-present)**
- Chair, ASABE Soil and Water Division Paper Awards Committee (2003, Member 2003-2004)
- Co-Chair, ASABE Mini-Symposium “Statistical Methods in Hydrology” (2001)

Leadership Development and Training

- **Key Executive Leadership Program, American University (2022)**
- Ecological Society of America, Sustaining Biological Infrastructure: Strategies for Success, Linthicum Heights, MD (2014)
- New Research Leader Training Program, Beltsville, MD (2012-2013)
- Managing the Federal Employee: Discipline and Performance Process, Brookings Institution Course, College Station, TX (2010)
- Congressional Briefing Conference, Washington, DC (2009)
- One of a limited number of early career ARS scientists selected by the Area Director to participate in the ARS National Scientific Leadership Meeting and Annual Recognition Program: Proud Past and Promising Future, New Orleans, LA (2004)

Selected Scientific/Technical Advisory Committee Service

- **Core Group Member “National Climate Change Roadmap: A Research Framework for U.S. Agriculture, Forestry, and Working Lands” (2023)**
- Colorado Ag Nutrient Taskforce (2016-2023)
- USDA-ARS Nutrient Management Database Steering Committee (2016-2021)
- **National Soil Health Partnership Science Advisory Council (2014-2020)**
- National Water Monitoring Council’s Methods and Data Comparability Board, USDA-ARS Representative (2006-2020)
- **International Plant Nutrition Institute 4R Research Fund Technical Advisory Group (Chair of Meta-Analysis group) (2013-2019)**
- Texas State Soil and Water Conservation Board, Water Supply Enhancement Program Science Advisory Committee (2013-2016)
- USDA-NRCS, Texas State Technical Advisory Committee (2012-2016)

- EPA Region VI Technical Advisory Group on nutrient water quality criteria (2004-2016)
- Texas Water Resources Institute, Lone Star Healthy Streams Project Steering Committee, (2007-2013), Program Development Committee (2010-2013)
- Leon River TMDL Steering and Technical Advisory Committees (2007-2011)
- Texas Forest Service, BMP Effectiveness Monitoring Technical Advisory Committee (2004-2007)

Agency Leadership, Diversity, and Management Committee Service

- USDA Qualifications and Evaluation Review Panelist
 - Senior Science and Technology (SSTS) - Center Directors (2022, 2023)
 - Senior Executive Service (SES) - Scientists (2021, 2023), Deputy Director HR (2023)
- USDA-ARS Partnerships for Data Innovations Board Member (2019-2022)
- USDA-ARS Realignment of Acquisition Resources Committee (co-chaired team that developed best practices for the realignment) (2020)
- USDA-ARS Plains Area Council for Engagement (PACE) Action Team (2016-present)
- USDA-ARS Office of Chief Information Officer (OCIO) Council (2016-2019)
- USDA-ARS Southern Plains Area Awards Committee (2012-2014)
- USDA-ARS Southern Plains Area Leadership Conference Planning Committee (2011-2013)
- USDA-ARS AFM Restructure Focus Group (2011)
- USDA-ARS Southern Plains Area Executive Assistant Interview Panel (2009)
- USDA-ARS Southern Plains Area New Scientist Orientation Committee (2008)

HONORS AND AWARDS

- ASABE Outstanding Reviewer Award (2019, 2022)
- ASABE Outstanding Associate Editor Award (2016, 2018, 2022)
- **ASABE Fellow (Inducted 2021)**
- ARS Plains Area Outreach, Diversity & Equal Opportunity Award (2021)
- Esri Special Achievement in GIS Award, Team award and recognition of the Citrus Research and Field Trial (CRAFT) Foundation and the USDA-ARS Partnerships for Data Innovations (selected from more than 100,000 organizations) (2021)
- Esri Special Achievement in GIS Award, Team award and recognition of the USDA-ARS Partnerships for Data Innovations (selected from more than 100,000 organizations) (2020)
- ASABE Standards Development Award: EP621, Guidelines for Calibrating, Validating, and Evaluating Hydrologic and Water Quality Models (2018)
- **ASABE ADS/Hancor Soil and Water Engineering Award (2016)**
- ASABE Natural Resources and Environmental Systems Distinguished Lecturer (2016)
- ASABE Leadership Citation (2013)
- ASABE Soil and Water Division Distinguished Lecturer (2011)
- **ASABE New Holland Young Researcher Award for Engineering Achievement (2009)**
- Gamma Sigma Delta - The Honor Society of Agriculture (Inducted 1997)
- Alpha Epsilon - Honor Society of Agricultural Engineering (Inducted 1996)
- USDA National Needs Water Quality Fellowship, Oklahoma State Univ. (1995-1997)

Paper Awards

- Editor's Choice Award, *Water* (2020)
- Superior Paper Award (Highest honor given to ASABE papers), *Transactions of ASABE* (2007, 2010), *Applied Engineering in Agriculture* (2016)
- Best Research Paper Award for Impact and Quality, *Journal of Soil and Water Conservation* (2016)
- Best Research Paper Award for Impact and Quality - Honorable Mention, *Journal of Soil and Water Conservation* (2014, 2023)
- Honorable Mention Award, *Transactions of ASABE* (2010)
- Nominee, ASABE Soil and Water Division Paper Award (2003, 2009)
- Nominee, *Journal of the American Water Resources Association* Paper of the Year (2006)
- Award for Excellence in a Scientific/Technical Publication, Ohio Soil and Water Conservation Society (2005, 2006)

SELECTED INVITATIONS

Expert Reviewer, Great Barrier Reef (Australia) Water Quality Scientific Consensus Statement (2023)

International Reviewer, Great Barrier Reef Catchment Loads Monitoring Program, Queensland Department of Natural Resources, Mines, and Energy, Queensland, Australia (2022 – declined due to USDA policy)

International Reviewer, Paddock to Reef (P2R) Integrated Modelling, Monitoring and Reporting Program, Queensland Department of Natural Resources, Mines, and Energy, Queensland, Australia (2019)

Keynote Speaker, “Vision for Ag Research in Colorado”, Colorado State Univ. Agricultural Experiment Station Research Center Conference, Fort Collins, CO (2018)

Member, Coordinating Committee, and Chair, Publications Committee, ASABE Global Water Security Conference, Hyderabad, India (2017-2018)

Author “Measuring edge-of-field water quality: Where we have been and the path forward” *Journal of Soil and Water Conservation* Special Issue Edge-of-Field Monitoring for Nutrient Losses: From the Great Lakes to the Gulf (2018)

Speaker, “Leading and Conducting Applied Research: Agriculture and Water Resources”, Iowa State Univ., Ames, IA (2017)

Speaker, “Agricultural Impacts on Water Resources: Recommendations for Leading Applied Research”, Soil and Water Engineering Distinguished Lecture Series, ASABE Annual International Meeting, Orlando, FL (2016)

Speaker, “Monitoring to Support and Improve Hydrologic and Water Quality Modelling”, Colorado State University CLEAN Center (Comprehensive, optimal and Effective Abatement of Nutrients) Annual Stakeholder Workshop, Fort Collins, CO (2016)

Speaker, "Looking Forward to the Next 75 Years of Research at the USDA-ARS Riesel Watersheds", Science and Engineering for Sustainability Lecture Series, Texas A&M Univ. (2015)

Speaker, "Agricultural Impacts on Water Resources: Recommendations for Successful Applied Research", American Geophysical Union Meeting, San Francisco, CA (2014)

Co-author, "Quality assurance/quality control in water sampling: Stormwater" book chapter in Quality Assurance and Quality Control of Environmental Field Sampling (2014)

Participant (along with senior NRCS and ERS leadership), National Academy of Sciences and Technology Board Planning Session – Nutrient Trends in the Nation's Waters. Washington, DC, (2014)

Speaker, "Communication Considering Intended Use", 6th International Conference on Water Resources and Environmental Research: Water and Environmental Dynamics, Koblenz, Germany (2013)

Guest Lecturer, "Collecting Small Watershed Runoff and Water Quality Data" to graduate course, Martin Luther Univ., Halle/Saale, Germany (2013)

Speaker, "Measured Data Uncertainty: Impacts on Research and Monitoring, Data Reporting, Regulation and Policy, and Model Evaluation", Leibniz Institute for Agricultural Engineering Potsdam-Bornim, Potsdam, Germany (2012 - Declined)

Technical Leader, two USDA Water Quality Monitoring Activity Standards (Data Collection and Evaluation 201, System Installation 202) by NRCS Deputy Chief for Science and Technology (2012)

Speaker, "Supporting Agriculture in Texas and Across the Country", American Farm Bureau Federation Environmental Issues Conference, Corpus Christi, TX (2013)

Expert Panelist, Environmental Issues, Texas Farm Bureau Agricultural Water Summit, Waco, TX, (2012)

Speaker, "Measured Data are Uncertain: So What??", Soil and Water Engineering Distinguished Lecture Series, ASABE Annual International Meeting, Louisville, KY, (2011)

Author, "Uncertainty in Measured Water Quality Data" and "Surface Water Sampling in Small Streams and Canals" in Yuncong L. and Migliaccio K.L. (eds.), Water Quality Concepts, Sampling, and Chemical Analysis (2010)

Speaker, "Data Uncertainty Estimation Tool for Hydrology and Water Quality (DUET-H/WQ): Estimating Measurement Uncertainty for Monitoring and Modelling Applications, 4th Biennial Meeting of the International Congress on Environmental Modelling and Software (iEMS), Barcelona, Spain, 2008.

Author, "The Original USDA-ARS Experimental Watersheds in Texas and Ohio: Contributions from the Past and Visions for the Future", Soil and Water Centennial Collection, *Transactions of ASABE* (2007)

Visiting Scientist, Institute of Geosciences at Martin-Luther University, Halle-Wittenberg, Germany (2007)

Speaker, "Uncertainty in Model Calibration, Validation, and Evaluation Data", SERA-17 Modeling Phosphorus Transport in Agroecosystems Conference, Ithaca, NY (2006)

Author, "The GEM Experience: Weather Generator Technology Development in the USDA", *Bulletin of the American Meteorological Society* (2002)

Co-author, "Precision Farming Effects on Corn Productivity in the Blackland Prairie of Texas (Book Chapter in Spanish)" in *Avances de Investigacion en Agricultura de conservacion II* (2001)

Co-author "Feeding Turf with Wastewater", *Golf Course Management* (1999)

EXTRAMURAL FUNDING/GRANTS AWARDED

As PI or Co-PI, awarded \$6.3M in external grants.

Collaborator (at request of CSU Vice President for Research) "Colorado-Wyoming Climate Resilience Engine (CO-WY Engine)". National Science Foundation, \$160M to CSU (2024-2033).

Principal Investigator "Partnerships for Data Innovations". USDA-ARS Office of National Programs, \$2.67M (2019-2023)

Planning Committee "Global Water Security for Agricultural Production and Natural Resources." USDA-NIFA to support ASABE Global Water Security Conference, Hyderabad, India. \$50,000 (2018)

Co-Principal Investigator "USDA-NRCS and USDA-ARS Grazing, Soil Health, and Sustainability." USDA-NRCS Texas. \$150,000 (2016-2018)

Co-Principal Investigator "Improving Runoff Water Quality from Small Pork Production Facilities using Vegetative Treatment Areas." Texas State Soil and Water Conservation Board. \$28,697 (2016)

Co-Principal Investigator "Evaluation and demonstration of VTA effectiveness to protect runoff water quality on small pork production facilities in Texas." Texas State Soil and Water Conservation Board. \$285,000 (2013-2016)

Co-Principal Investigator "A 'MANAGE'ed approach for 4R Nutrient Stewardship on Drained Land." Fertilizer Institute, 4R Research Fund. \$69,069 (2014)

Ecological Society of America, Sustaining Biological Infrastructure: Strategies for Success, Linthicum Heights, MD. \$1000 travel award (2014)

Co-Principal Investigator "Bacteria Growth, Persistence, and Source Assessment in Rural Texas Landscapes and Streams." Texas State Soil and Water Conservation Board. \$346,612 (2013-2015)

Co-Principal Investigator "Soil Testing for Soil Health." USDA-NRCS East National Technology Support Center. \$100,000 (2013-2015)

Co-Principal Investigator "Expanding the Soil Health, Soil Testing, and Grazing Land Management Cooperation between ARS (Temple, TX) and Texas NRCS." USDA-NRCS Texas. \$98,010 (2013-2014)

Co-Principal Investigator "Development of Web-based Versions of Soil Nutrient Assessment Program and Texas BMP Evaluation Tool." Texas State Soil and Water Conservation Board. \$167,300 (2012-2014)

Co-Principal Investigator "Building Soil Health through Grazing Management: Using Conservation Practice Innovation to Enhance Knowledge, Face Tradition, and Grow Partnerships." USDA-NRCS Texas. \$150,000 (2012-2014)

Co-Principal Investigator "Preliminary Evaluation of VTA Effectiveness to Protect Runoff Water Quality on Small Pork Production Facilities in Texas." Texas State Soil and Water Conservation Board. \$254,345 (2012-2013)

Co-Principal Investigator "Environmental Effects of In-House Windrow Composting (IWC) of Poultry Litter." USEPA and the Texas State Soil and Water Conservation Board. \$268,236 (2009-2012)

Co-Principal Investigator "Efficient Nitrogen Fertilization: Accounting for Field Nitrogen Mineralization." USEPA and Texas State Soil and Water Conservation Board. \$293,883 (2009-2011)

Cooperator "Fate and Transport of *E. coli* in Rural Texas Landscapes and Streams." USEPA and Texas State Soil and Water Conservation Board. \$282,000 (2008-2010)

Principal Investigator "Development and Testing of a BMP Evaluation Tool for Texas." Texas State Soil and Water Conservation Board. \$155,250 (2008-2009)

Co-Principal Investigator "The Impact of Proper Organic Fertilizer Management in Production Agriculture." USEPA and Texas State Soil and Water Conservation Board. \$186,352 (2005-2009)

Co-Principal Investigator "Plan for Tomorrow: Poultry Litter Application on New Sites." USEPA and Texas State Soil and Water Conservation Board. \$210,000 (2005-2009)

Principal Investigator "Enhancement of Economic and Environmental Modeling Capabilities for Land-Applied Poultry Litter." Texas State Soil and Water Conservation Board. \$80,000 (2003-2004)

Principal Investigator "Investigation of Nutrient Loss Mechanisms from Land-Applied Poultry Litter." Texas State Soil and Water Conservation Board. \$130,000 total, \$130,000 to ARS. 2002-2005.

Co-Investigator "Surface and Subsurface Water Quality Data Collection and Model Development for a Watershed Scale Turfgrass System." United States Golf Association. \$78,000 (2000-2003)

Co-Principal Investigator “Phosphorus Reduction in Runoff from Poultry By-Product Application.” Texas State Soil and Water Conservation Board. \$70,484 (2000-2002)

Principal Investigator “Characterization of Streambank Erosion on the Illinois River in Northeast Oklahoma.” Oklahoma Conservation Commission and US Environmental Protection Agency. \$21,060 (1996-1998)

PUBLICATIONS IN PREPARATION OR REVIEW (Post Doc and Graduate student advisees underlined)

1. Haney, R.L., E.B. Haney, and **R.D. Harmel**. 2024. Climatic and fertilizer N effects on wheat yield in long-term trials **(In preparation)**.
2. Cheng, G., L. Ma, Q.X. Fang, Z. Qi, J.D. Derner, D.J. Augustine, **R.D. Harmel**, and Q. Yu. 2024. Simulated climate change effects on forage growth and cattle production in the Western Great Plains Using APEX **(In preparation)**.
3. Hopkins, A.P., **R.D. Harmel**, and J. Ippolito. 2024. Examining the combined effect of agricultural management decisions on N and P runoff across US ecoregions **(In preparation)**.
4. Trimarco, T., J. Ippolito, and **R.D. Harmel**. 2024. Conservation tillage improves soil health in furrow-irrigated production-scale plots **(In preparation)**.
5. Trimarco, T., J. Ippolito, and **R.D. Harmel**. 2024. Impact of soil health changes on water quality **(In preparation)**.
6. Hopkins, A.P., **R.D. Harmel**, J.A. Ippolito, P.J.A. Kleinman, and D. Sahoo. 2024. Nutrient runoff from agricultural lands in North American ecoregions. *Journal of Hydrology* **(In preparation)**.
7. Smith, D.R., C.B. Hajda, M.J. White, and **R.D. Harmel**. 2024. Nutrient reductions at the Riesel Watersheds: Current status of conservation and forecasts to meet water quality targets. *Journal of Soil and Water Conservation* **(In Review)**.
8. Trotter, B., T. Wible, P. Brink, M. Arabi, C. Newton, T. Bauder, E. Wardle, J. Carlson, and **R.D. Harmel**. 2024. Water quality impacts of EQIP-funded conservation practices on irrigated fields in Colorado. *Journal of Soil and Water Conservation* **(In Review)**.
9. Busari, I., D. Sahoo, K.P. Sudheer, **R.D. Harmel**, C. Privette, M. Schlautman, and C. Sawyer. 2024. Investigating the influence of measurement uncertainty on chlorophyll-a predictions as an indicator of harmful algal blooms in machine learning models. *Science of the Total Environment* **(In Review)**.

REFEREED PUBLICATIONS (Post Doc and Graduate student advisees underlined)

Authored or co-authored 157 refereed journal articles (with 23,124 citations, h-index = 48, and i10-index =107, as of 1-31-24), 4 book chapters, 4 methods in the USGS-EPA National Environmental Methods Index, and 2 USDA-NRCS Conservation Activities.

1. Busari, I., D. Sahoo, **R.D. Harmel**, and B.E. Haggard. 2024. Prediction of chlorophyll-a as an index of harmful algal blooms using machine learning models. *Journal of Natural Resources and Agricultural Ecosystems* **x(x):x-x**.
2. Kleinman, P.J.A., and **R.D. Harmel**. 2023. Grappling with the success and trade-offs of global nutrient redistribution. *Environment, Development and Sustainability* **x(x):x-x**.
3. Cheng, H., Q. Yu, M.S. Bukovsky, L. Xue, V.L. Jin, L. Ma, **R.D. Harmel**, X. Chen, S. Ji, L. Miao, S. Feng, and Z. Qi. 2023. Simulating synergistic effects of climate change and conservation practices on greenhouse gas emissions and crop growth in long-term maize cropping systems. *Computers and Electronics in Agriculture* 215(2023):1-13.
4. Busari, I., D. Sahoo, **R.D. Harmel**, and B.E. Haggard. 2023. A review of machine learning models for algal bloom monitoring in freshwater systems. *Journal of the ASABE* 1(2):63-76.
5. **Harmel, R.D.**, H.E. Preisendanz, K.W. King, D. Busch, F. Birgand, and D. Sahoo. 2023. A review of data quality and cost considerations for water quality monitoring on field-scale and small watersheds. *Water* 17(3310):1-19.
6. Barnard, D.M., T.R. Green, K.R. Mankin, K.C. DeJonge, C.C. Rhoades, S.K. Kampf, J. Giovando, M.J. Wilkins, A.L. Mahood, M.G. Sears, L.H. Comas, S.M. Gleason, H. Zhang, S.R. Fassnacht, **R.D. Harmel**, and J. Altenhofen. 2023. Wildfire and climate change amplify knowledge gaps linking mountain source-water systems and agricultural water supply in the western United States. *Agricultural Water Management* 286:108337.
7. Li., L., L. Ma, Q. Zhiming, Q. Fang, **R.D. Harmel**, M.R. Schmer, and V.L. Jin. 2023. Measured and simulated effects of residue removal and amelioration practices in no-till irrigated corn (*Zea mays* L.). *European Journal of Agronomy* 146:126807.
8. **Harmel, R.D.**, P.J.A. Kleinman, A.P. Hopkins, P. Millhouser, J.A. Ippolito, and D. Sahoo. 2022. Updates to the MANAGE database to facilitate regional analyses of nutrient runoff. *Agricultural and Environmental Letters* 7:e20095, 1-6.
9. Cheng, G., **R.D. Harmel**, L. Ma, J.D. Derner, D.J. Augustine, P.N.S. Bartling, Q.X. Fang, J.R. Williams, C.J. Zilverberg, R.B. Boone, and Q. Yu. 2022. Evaluation of the APEX cattle weight gain component for grazing decision-support in the Western Great Plains. *Rangeland Ecology and Management* 82(2022):1-11.
10. Meredith, G.R., S. Spiegel, P.J.A. Kleinman, and **R.D. Harmel**. 2022. The social networks of manure management. *Journal of Environmental Quality* 51:566–579.
11. Fang, Q.X., **R.D. Harmel**, L. Ma, P.N.S. Bartling, J.D. Derner, J. Jeong, J.R. Williams, and R.B. Boone. 2022. Evaluating the APEX model for alternative cow-calf grazing management strategies in Central Texas. *Agricultural Systems* 195 (2022):103287.

12. **Harmel, R.D.**, D.R. Smith, R.L. Haney, J. Angerer, N. Haile, L. Grote, S. Grote, K. Tiner, J. Goodwin, R. Teague, and J.D. Derner. 2021. Transitioning from conventional continuous grazing to planned rest-rotation grazing: A beef cattle case study from Central Texas. *Journal of Soil and Water Conservation* 76(6):534-546.
13. **Harmel, R.D.**, P.J.A. Kleinman, M. Eve, J.A. Ippolito, S. Beebout, J. Delgado, B. Vandenberg, and M. Buser. 2021. The Partnerships for Data Innovations (PDI): Facilitating data stewardship and catalyzing research engagement in the Digital Age. *Agricultural and Environmental Letters* 2021,6(4):e20055.
14. Bos, J., M.R. Williams, D.R. Smith, S.D. Armstrong, and **R.D. Harmel**. 2021. Long-term effect of poultry litter application on phosphorus balances and runoff losses. *Journal of Environmental Quality* 50:639–652.
15. Cheng, G., **R.D. Harmel**, L. Ma, J.D. Derner, D.J. Augustine, P.N.S. Bartling, Q.X. Fang, J.R. Williams, C.J. Zilverberg, R.B. Boone, D. Hoover, and Q. Yu. 2021. Evaluation of APEX modifications to simulate forage production for grazing management decision-support in the Western US Great Plains. *Agricultural Systems* 191(2021):103139.
16. Wagner, K.L., T.J. Gentry, **R.D. Harmel**, E.C. Pope, and L.A. Redmon. 2021. Grazing effects on bovine-associated and background fecal indicator bacteria levels in edge-of-field runoff. *Water* 13:928.
17. Flores, L., R.T. Bailey, and **R.D. Harmel**. 2021. Using nutrient transport data to identify the presence of surface inlets in regions with subsurface drainage. *Journal of Environmental Quality* 50:396-404.
18. Ma, L., Q.X. Fang, M.W. Sima, K.O. Burkey, and **R.D. Harmel**. 2021. Climate change effects on soybean production using two crop modules in RZWQM2. *Agronomy Journal* 2021:1-17.
19. Douglas-Mankin, K.R., M. Helmers, and **R.D. Harmel**. 2021. Review of filter strip performance and function for improving water quality from agricultural lands. *Transactions of ASABE* 64(2): 659-674.
20. Baffaut, C., J. Baker, J. Biederman, D. Bosch, E. Brooks, A. Buda, E. Demaria, E. Elias, G. Flerchinger, D. Goodrich, S. Hamilton, S. Hardegree, **R.D. Harmel**, D. Hoover, K. King, P. Kleinman, M. Liebig, G. McCarty, G. Moglen, T. Moorman, D. Moriasi, J. Okalebo, F. Pierson, E. Russell, A. Saha, D.R. Smith, and L. Yasarer. 2020. Comparative analysis of water budgets across the U.S. Long-Term Agroecosystem Research network. *Journal of Hydrology* 588:125021.
21. Smith, D.R., **R.D. Harmel**, and R.L. Haney. 2020. Long-term agro-economic and environmental assessment of adaptive nutrient management on cropland fields with established structural conservation practices. *Journal of Soil and Water Conservation* 75(3):416-425.
22. Mukherjee, M., T. Gentry, H. Mjelde, J.P. Brooks, **R.D. Harmel**, L. Gregory, and K. Wagner. 2020. Escherichia coli antimicrobial resistance variability in water runoff and soil from a remnant native prairie, an improved pasture, and a cultivated agricultural watershed. *Water* 12:1251.

23. Ale, S., **R.D. Harmel**, A.P. Nejadhashemi, K.C. DeJonge, S. Irmak, I. Chaubey, and K.R. Douglas-Mankin. 2020. Global water security: Current research and priorities for action. *Transactions of ASABE* 63(1):49-55.
24. **Harmel, R.D.**, I. Chaubey, S. Ale, A.P. Nejadhashemi, S. Irmak, K. DeJonge, S. Evett, E.M. Barnes, M. Catley-Carlson, S. Hunt, and I. Mani. 2020. Perspectives on global water security. *Transactions of ASABE* 63(1):69-80.
25. Smith, R.D., M. White, E.L. McLellan, R. Pampell, **and R.D. Harmel**. 2019. Using the Conservation Practice Effectiveness (CoPE) database to assess adoption tradeoffs. *Journal of Soil and Water Conservation* 74(6):554-559.
26. Li, Y., H. Yen, **R.D. Harmel**, Q. Lei, J. Zhou, W. Hu, W. Li, H. Lian, A-X. Zhu, L. Zhai, H. Wang, W. Qiu, J. Luo, S. Wu, H. Liu, and X. Li. 2019. Effects of sampling strategies and estimation algorithms on total nitrogen load determination in a small agricultural headwater watershed. *Journal of Hydrology* 579: 124114.
27. Gregory, L.F., **R.D. Harmel**, R. Karthikeyan, K.L. Wagner, T.J. Gentry, and J.A. Aitkenhead-Peterson. 2019. Elucidating the effects of land cover and usage on background Escherichia coli sources in edge-of-field runoff. *Journal of Environmental Quality* 48:1800-1808.
28. Ma, L., J.D. Derner, **R.D. Harmel**, J. Tatarko, A.D. Moore, C.A. Rotz, D.J. Augustine, R.B. Boone, M.B. Coughenour, P.C. Beukes, M.T. van Wijk, G. Bellocchi, B.R. Cullen, and H. Wilmer. 2019. Application of grazing land models in ecosystem management: Current status and next frontiers. *Advances in Agronomy* 158:173-215.
29. Smith, D.R., H.P. Jarvie, **R.D. Harmel**, and R.L. Haney. 2019. The role of field-scale management on soil and surface runoff C/N/P stoichiometry. *Journal of Environmental Quality* 48:1543-1548.
30. Hertzberger, A., C. Pittelkow, **R.D. Harmel**, and L.E. Christianson. 2019. Analysis of the MANAGE drain concentration database to evaluate agricultural management effects on drainage water nutrient concentrations. *Transactions of ASABE* 62(4):929-939.
31. **Harmel, R.D.**, D.R. Smith, R.L. Haney, and P.M. Allen. 2019. Comparison of nutrient loss pathways: Runoff and seepage flow in Vertisols. *Hydrological Processes* 33:2384-2393.
32. Fang, Q., L. Ma, **R.D. Harmel**, Q. Yu, M.W. Sima, P.N.S. Bartling, R.W. Malone, B.T. Nolan, and J. Doherty. 2019. Uncertainty of CERES-Maize calibration under different irrigation strategies using PEST optimization algorithm. *Agronomy* 9(241):1-17.
33. Sima, N.Q., A.A. Andales, **R.D. Harmel**, L. Ma, and T.J. Trout. 2019. Evaluating RZWQM2-CERES-Maize and water production functions for predicting irrigated maize yield and biomass in eastern Colorado. *Transactions of ASABE* 62(1):213-223.
34. Hertzberger, A., C. Pittelkow, **R.D. Harmel**, and L.E. Christianson. 2019. The MANAGE Drain Concentration database: A new tool compiling North American drainage nutrient concentrations. *Agricultural Water Management* 216:113-117.
35. Delgado, J.A., B. Vandenberg, N. Kaplan, D. Neer, G. Wilson, R. D'Adamo, J. Carter, L. O'Gan, N. Grow, R. Marquez, D. Arthur, M. Eve, S.J. Del Grosso, J.M-F. Johnson, D.L. Karlen, L. Durso, J.

- Finley, V. Acosta, D.B. Knaebel, **R.D. Harmel**, and J. Derner. 2018. Agricultural Collaborative Research Outcomes System (AgCROS): A network of networks connecting food security, the environment, and human health. *Journal of Soil and Water Conservation* 73(6):158A-164A.
36. Tasdighi, A., M. Arabi, and **R.D. Harmel**. 2018. A probabilistic appraisal of rainfall-runoff modeling approaches within SWAT in mixed land use watersheds. *Journal of Hydrology* 564:476-489.
37. Tasdighi, A., M. Arabi, **R.D. Harmel**, and D. Line. 2018. A Bayesian total uncertainty analysis framework for assessment of management practices using watershed models. *Environmental Modeling and Software* 108:240–252.
38. Nummer, S.A., S.S. Qian, and **R.D. Harmel**. 2018. A meta-analysis on the effect of agricultural conservation practices on nutrient loss. *Journal of Environmental Quality* 47:1172-1178.
39. **Harmel, R.D.**, C. Baffaut, and K. Douglas-Mankin. 2018. Review and development of ASABE Engineering Practice 621: Guidelines for calibrating, validating, and evaluating hydrologic and water quality models. *Transactions of ASABE* 61(4):1393-1401.
40. **Harmel, R.D.**, R. Pampell, T. Gentry, D.R. Smith, C. Hajda, K. Wagner, P.K. Smith, R.L. Haney, and **K.D. Higgs**. 2018. Vegetated treatment area (VTA) efficiencies for *E. coli* and nutrient removal on small-scale swine operations. *International Soil and Water Conservation Research* 6(2):153-164.
41. Haney, R.L., E.B. Haney, D.R. Smith, **R.D. Harmel**, and M.J. White. 2018. The soil health tool - theory and initial broad-scale application. *Applied Soil Ecology* 125:162-168.
42. Sima, N.Q., **R.D. Harmel**, Q.X. Fang, L. Ma, and A.A. Andales. 2018. A modified F-test for evaluating model performance by including both experimental and simulation uncertainties. *Environmental Modeling and Software* 104:236-248.
43. Spiegel, S., B. Bestelmeyer, D. Archer, D.J. Augustine, E.H. Boughton, R.K. Boughton, P.E. Clark, J.D. Derner, E. Duncan, S. Hamilton, C. Hapeman, **R.D. Harmel**, P. Heilman, M. Holly, D. R. Huggins, K. King, P. Kleinman, M.A. Liebig, M. Locke, G. McCarty, N. Millar, S. Mirsky, T.B. Moorman, F. Pierson, J.R. Rigby, P. Robertson, J.L. Steiner, T.C. Strickland, H. Swain, B. Wienhold, J.D. Wulfhorst, M. Yost, and C. Walthall. 2018. Evaluating strategies for sustainable intensification of U.S. agriculture through the Long-Term Agroecosystem Research network. *Environmental Research Letters* 13(3):1-16.
44. Daniels, M.B., A. Sharpley, **R.D. Harmel**, and K. Anderson. 2018. The utilization of edge-of-field monitoring of agricultural runoff in addressing nonpoint source pollution. *Journal of Soil and Water Conservation* 73(1):1-8.
45. **Harmel, R.D.**, K.W. King, D. Busch, D.R. Smith, F. Birgand, and B. Haggard. 2018. Measuring edge-of-field water quality: Where we have been and the path forward. *Journal of Soil and Water Conservation* 73(1):86-96.
46. Smith, D.R., R. Wilson, K. King, M. Zwonitzer, J. McGrath, **R.D. Harmel**, and R.L. Haney. 2018. Lake Erie, phosphorus and microcystin: Is it really the farmer's fault? *Journal of Soil and Water Conservation* 73(1):48-57.

47. **Harmel, R.D.**, R.A. Pampell, A.B. Leytem, D.R. Smith, and R.L. Haney. 2018. Assessing edge-of-field nutrient runoff from agricultural lands in the US: How clean is clean enough? *Journal of Soil and Water Conservation* 73(1):9-23.
48. Manter, D.M., J.A. Delgado, H. Blackburn, **R.D. Harmel**, A.A. Perez De Leon, and C.W. Honeycutt. 2017. A new concept: National living soil repository. *Proceedings of the National Academy of Sciences* 114(52):13587-13590.
49. He, Z., M. Zhang, A. Zhao, H.M. Waldrip, P.H. Pagliari, and **R.D. Harmel**. 2017. Impact of management practices on water extractable organic carbon and nitrogen from 12-year poultry litter amended soils. *Open Journal of Soil Science* 7: 259-277.
50. Gregory, L., R. Karthikeyan, J.A. Aitkenhead-Peterson, T.J. Gentry, K.L. Wagner, and **R.D. Harmel**. 2017. Nutrient loading impacts on culturable *E. coli* and other heterotrophic bacteria fate in simulated stream mesocosms. *Water Research* 126: 442-449.
51. Eagle, A., L.E. Christianson, R.L. Cook, **R.D. Harmel**, F. Miguez, S.S. Qian, and D.R. Diaz. 2017. Meta-analysis constrained by data: Recommendations to improve relevance of nutrient management research. *Agronomy Journal* 109:1-9.
52. Winkler, S., C. Coufal, **R.D. Harmel**, E. Martin, J.P. Brooks, S. Popham, and T.J. Gentry. 2017. Within-house spatial distribution of fecal indicator bacteria in poultry litter. *Journal of Environmental Quality* 46:103-109. doi:10.2134/jeq2017.05.0188.
53. Tian, J., G. Dong, R. Karthikeyan, L. Li, and **R.D. Harmel**. 2017. Phosphorus dynamics in long-term flooded, drained and reflooded soils. *Water* 9(531) doi:10.3390/w9070531.
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