

Marty D. Matlock, PhD, PE, BCEE
Professor
Biological and Agricultural Engineering Department
University of Arkansas



January 15, 2024

Dear Colorado State University Dean of Agricultural Sciences Search Committee,
I am respectfully submitting this application for the position of Dean of the College of Agricultural Sciences at Colorado State University (CSU). I believe I have the requisite experience and skills to be an impactful dean at this critical time for the College of Agricultural Sciences. This letter and supporting *curriculum vita* (CV) provide an overview of my experience and expertise.

I am a member of the Cherokee Nation, a first-generation college graduate, the son of a machinist and grandson of a sharecropper. Higher education through my state's Land Grant University (Oklahoma State University) was my pathway to prosperity. I have a strong record of accomplishments in academic and administrative leadership as well as a record of innovative research, teaching, and outreach that align with the requirements for this important position.

I have been a faculty member at the University of Arkansas for the past 22 years. I have served in numerous leadership roles across the academy, including founding director of the Center for Agricultural and Rural Sustainability, founding director of the University of Arkansas Office for Sustainability, and founding executive director of the University of Arkansas Resiliency Center. These were progressive positions, expanding my responsibilities and authorities from college-level to university-level. As Executive Director of the Resiliency Center I reported to the provost and worked across all colleges on campus to coordinate undergraduate and graduate programs in sustainability, internships, and research activities. I engaged students across campus to work with the Vice Chancellor for Facilities Management to enhance performance of the built environment and expand transportation options to reduce carbon emissions and address other key indicators of campus sustainability. I worked with campus recruitment to better showcase the opportunities for sustainability research and community service for young people on our campus.

My message to our students is clear and urgent. I was invited to be the World Food Prize Mississippi Youth Summit keynote speaker in February 2024 where I will challenge high school students to create a better world through agriculture. My framing is optimistic: we share Earth with more than 8 billion brothers and sisters today. By the time these students are my age there will be another 2 billion people coming to dinner. Humanity will be more prosperous than at any time in history, so these folks will want to eat more meat, fresh vegetables, and fruit. Most estimates are that we will need to increase current food production by 50 percent in 40 years. How do we feed 10 billion people in 40 years when we already use more than 70 percent of Earth's land for food, feed, fiber, and fuel production? Do we expand production on new lands? If so, what happens to the wildlife that lives there? If not, how do we increase food production on existing farmland? This intensification has costs, especially energy, fertilizers and pesticides.

How do we increase food production without increasing water use? Currently we use more than 70 percent of global fresh water for agriculture production. It is often said that if climate change is a shark, water is its teeth. Freshwater demand across the planet is going to limit all human activities, especially agriculture. Feeding humanity without eating Earth is the challenge for this generation.

These are the challenges we need to prepare our students for: land-based prosperity in a changing world. We need to prepare them for global food and agriculture supply chain leadership and develop the quantitative and heuristic competencies to succeed in every career in the global food and agriculture supply chain. We must be clear in our focus and intentional in our actions to create the next generation of leaders in agriculture and natural resource management.

We must be expansive with access to our academic credentialing programs. I was a pioneer in distance education in my discipline, developing my first multi-institutional distance education course in 1994 using VHS taped lectures. I helped create the online Master of Science in Engineering degree program at the University of Arkansas over 20 years ago; it is routinely ranked in the top 10 in the nation. We will need to expand and amplify existing academic programs, and explore new programs, as the 21st century opens new technologies and social/economic challenges and opportunities.

Successful leaders must be able to articulate a collective vision for the college in order to support common missions across departments and programs. I have unique qualifications in developing a common vision across complex, diverse, and often adversarial groups. As Executive Director of the UA Resiliency Center I was effectively a department head; I directly managed six full-time staff, six teaching appointments for faculty and 10 graduate students and coordinated sustainability research efforts of more than 50 affiliated faculty. I served on the Chancellor's Advisory Policy Council and worked closely with Deans and Department Heads to recruit faculty to teach interdisciplinary courses. I engaged in program implementation alongside department heads in multiple colleges to coordinate activities, teaching assignments, and other interdisciplinary programs. We worked together to develop a Resiliency Graduate Program, support accreditation reviews, and engage in strategic planning activities. I coordinated Resiliency Center activities with the Deans of the College of Engineering and the Walton College of Business to identify and expand opportunities in undergraduate and graduate programs in sustainability and resiliency. I worked with interdisciplinary sustainability program leaders across the US through the National Council for Science and the Environment (NCSE). I was elected chair of the NCSE Leadership Alliance in 2020; we expanded partnerships to become the Global Council for Science and the Environment in 2021.

I accepted a position as Senior Advisor at USDA in 2021. As a Senior Advisor to Secretary of Agriculture Thomas Vilsack I was responsible for developing a common vision and strategy for food systems resiliency at USDA. We had high urgency with ongoing supply chain disruptions from the pandemic yet were severely understaffed, with half the Undersecretary positions still unconfirmed by the Senate when I began working with USDA in July 2021. We had a collective

goal of programming \$5 billion in American Rescue Plan funds by mid-year 2022 in spite of the administrative and logistic barriers.

My first charge at USDA was implementing \$1.6 billion in American Rescue Plan funds to address the meat and poultry supply chain fragility issues that became evident during the pandemic. I began by reviewing the 850 public comments received through a Request for Information, categorizing, and summarizing stakeholder concerns. I convened multiple webinars, listening sessions, and technical meetings across the US so that the concerns of each sector were heard.

I supported and coordinated a team of eight senior administrators from across six mission areas at USDA, organizing leadership teams for each program areas. I was responsible for developing preliminary program guidelines and goals, communicating across program areas to identify barriers for implementation, finding pathways to overcome those barriers, and communicating with stakeholders to keep program elements focused on their needs. There were numerous conflicts, difficulties, disagreements, and frustrations in this process, but I helped the team maintain a positive perspective. I represented the team to the Secretary who on several occasions expressed the importance of the outcomes. By applying the principles of service-leadership I was able to overcome many concerns about jurisdiction and authority across each mission area.

The complex budget and program challenges faced by USDA when I arrived in 2021 required urgent decision making. I marshalled the divergent views of very committed professionals into a common strategy. I communicated that strategy to the Secretary of Agriculture and stakeholders across the U.S. We leveraged the strengths of each mission area to solve unprecedented challenges within the Department. I engaged experts and business leaders from across the US with the Office of the Chief Economist to organize a set of discussions on these challenges. The complex, nuanced, and nonlinear relationships in the meat and poultry supply chain became a common element in all of our decisions. This was a hard message to deliver to many of the new leaders within the Department who had strong preconceived notions of “good guys and bad guys” in the system. However, through data-driven and respectful discourse we were successful in reducing the most severe policy reflexes.

I was also engaged with the White House Economic Council and the USDA General Counsel in revising a set of policies addressing the Presidential Directive on market competitiveness. These issues included revising the Packers and Stockyard Rules, revising criteria for “Product of the USA” labels, and price transparency and fairness practices between meat and poultry processors and producers. Descriptions of these programs can be found at [USDA.gov/Meat](https://www.usda.gov/Meat).

My leadership approach to difficult situations was to always remind the team of the ultimate goals of our efforts, be direct in communications, unbiased in assessment, and realistic in defining what is possible under our constraints. We developed and implemented this portfolio of programs across USDA within 14 months, an unprecedented rollout schedule. The programs we implemented are described in more detail in my CV.

Working with corporate and multistakeholder organizations has provided me with formal training in communicating across multiple platforms and with a broad range of stakeholders. I have made over 500 invited presentations in the past 20 years, published articles in technical and trade journals, and participated in media interviews, podcasts, and webinars. My work was recognized in 2018 by the Council for Agricultural Science and Technology with the Borlaug CAST Communications Award for “achievements as an internationally recognized expert in agricultural sustainability metrics and assessment.”

Administrative competency is the backbone of effective leadership. My administrative experience began in 1992 when I was promoted to vice president of an engineering consulting firm, where I was responsible for operations of an ecotoxicology laboratory, a water quality laboratory, and an engineering design laboratory. I supervised three laboratory managers and 32 laboratory technical staff in developing and implementing USEPA-compliant laboratory services using Quality Assurance and Quality Control documentation. These early lessons in effective leadership served me well in subsequent leadership positions across academic and professional organizations, where I developed experience creating, implementing, and managing complex budgets, reconciling unexpected shortfalls, and finding common solutions to complex policy and budget challenges.

I understand the importance of recruiting and hiring effective professionals for all levels of our academic team. An equitable workplace is a prerequisite to an ethical workplace. Equity comes from inclusion and diversity. A clear commitment to inclusion and diversity at the outset is critical for transparent communication of shared values. I describe my efforts in supporting and advancing diversity, inclusion, and equity in my CV. Timely implementation is also critical. Finally, a clear understanding of who gets to say Yes or No is essential, so that expectations are realistic for everyone. I have experience implementing these processes.

I have spent the past 30 years building and maintaining relationships with people across the food and agriculture supply chain. Creating trust requires time, effort, and intention. I have worked with US and global food and agriculture supply chain companies to identify and reconcile challenges to resiliency in their supply chains. These relationships allow me to better understand the opportunities and challenges our students face when they graduate.

In 2006 when sustainable agriculture initiatives were emerging as major concerns for food systems in the US, I was asked to join a group of leaders from more than a dozen leading groups to create Field to Market: The Alliance for Sustainable Agriculture (<https://fieldtomarket.org/>). These groups included conservation groups (World Wildlife Fund, The Nature Conservancy), agriculture technology companies (Dupont, Syngenta, Crop Life America, Corteva, John Deere), agriculture producer representatives (Farm Bureau, National Corn Growers Association, United Soybean Board, The US Soybean Export Council, The Cotton Council, Riceland), integrators (Cargill Corporation, Bunge Corporation), and retailers (McDonalds, Wal-Mart, Unilever). We established governance policies, technical committees, and approval guidance to standardize metrics and indicators for environmental sustainability. I served as a founding board member for

two terms (eight years) and now serve as a science advisor to the group. Field to Market is now the largest multistakeholder food and agriculture sustainability organization in the world, with over 200 members from across the supply chain.

This work has translated into more than \$8 million in gifts, grants, and contracts with the University of Arkansas in the past decade and more than \$16 million to the Walton College of Business through the Sustainability Consortium. The key to successful development is building strong relationships with the organizations whose missions align with ours. I am very effective at building and maintaining relationships with donors and academic partners.

I was elected to the Board of Agriculture and Natural Resources (BANR) of the National Academy of Science, Engineering, and Math in 2022 in part because of the long-lasting relationships I built with scientists across the US. We are working to define the roadmap to net-negative carbon emissions for US agriculture, in support of the USDA Climate Smart Agriculture program. These efforts resulted in my being named a Fellow of the American Ecological Engineering Society as well as a Fellow in the American Society of Civil Engineering in 2023.

Relationships are built on trust and understanding, not agreement or alignment. Those often come later. My goal as a leader is to understand the motivations, values, and histories of those I work with so that I can better align our actions for common outcomes. This process is time-consuming but there is no better investment of time for any leader.

Finally, I have experienced the power of higher education in transforming the lives of rural communities. Oklahoma State University transformed my life, starting with the 4H program at my small rural high school, and culminating with the unprecedented access of a world class education to poor kids like me. Still, major challenges remain. We have to extend our efforts to Black, Hispanic, and Native American students to overcome impacts of centuries of exclusion. I have worked for the past 22 years at the University of Arkansas to engage, recruit, and retain underserved students from poor communities. My work with rural communities through the UA Community Design Center has been recognized with more than 50 national and international design awards.

I believe the Colorado State University College of Agricultural Sciences is poised to extend its global impact, focusing on Sustainable Development Goals Number 1 and 2: ending poverty and zero hunger, starting in Colorado then the world. I am confident that I can play a significant part in making that vision a reality. I am honored to submit this letter of application, statement of philosophy, CV and list of references for your consideration.

Best regards,



Marty D. Matlock

Marty D. Matlock, PhD, PE, BCEE
Professor, Biological and Agricultural Engineering
University of Arkansas



January 15, 2024

Dear Colorado State University Dean of Agricultural Sciences Search Committee,

I am respectfully submitting this description of my philosophy of education, research, leadership, communications, and management for the position of Dean of the Colorado State University (CSU) College of Agricultural Sciences. These topics are included in the narrative of my qualifications in the Letter of Application but are highlighted in this document.

Education

I am an evangelical advocate of active learning. The simplest explanation of active learning is that education should be about learning not teaching¹. Active learning is not new; John Dewey argued for “learning by doing” over 118 years ago². Dewey warned against an “all or nothing” pedagogy and advocated for a whole student approach to education; Bloom defined this in his *Taxonomy of Educational Objectives*³. Learning by doing strategies must continue to evolve as learning styles change. This generation of students has never lived in a world without access to the knowledge of the ages at their fingertips. Our challenge in response to their new ways of knowing and understanding the world is to develop common bodies of knowledge that also embrace cultural and social contexts. Higher education disruptions from the recent pandemic created opportunities for exploring the impacts of technology-dominated experiences. Some of our experiments in online learning generated positive results, while many did not. Land Grant Institutions (LGIs) must make decisions about how aggressively we embrace online pedagogies without losing the power of learning by doing. These will be hard decisions with significant reputational, economic, and cultural consequences for our institutions. I strongly believe that our Land Grant Mission demands that we reach as many citizens as possible with our expertise and credentialing opportunities while holding to our high standards of expertise and competency.

Research

The role of the LGI in society is different than other public and private institutions of higher learning. We serve the needs of our State and world. Research is the beating heart of any institution of higher education. We create knowledge. We expand technologies. We solve problems that matter to our state and our world. We often fail to adequately explain to our stakeholders how these activities make us better at teaching and outreach. We can do better. Throughout my career I have conducted and supported research to answer questions through hypothetical reductionism. I have applied knowledge to improve technologies through entrepreneurial ventures. I have developed federal research initiatives to improve food and worker safety. I reject the false duality of basic versus applied research. All research is applied; understanding a basic phenomenon in biochemistry is an application of existing knowledge to create new knowledge, even if there is no apparent market purpose for that knowledge. We explore the boundaries of knowledge and understanding. We do so in the light of the challenges faced by our communities.

Leadership

Leadership is a human endeavor requiring emotional intelligence and highly developed communications

¹ Freire, P. (1993). *Pedagogy of the Oppressed*. New York: Continuum Books

² Dewey, J. (1916) *Democracy and education*. An introduction to the philosophy of education (New-York, Free press).

³ Forehand, M. (2005). Bloom's taxonomy: Original and revised. *Emerging perspectives on learning, teaching, and technology*, 8, 41-44.

skills. I have taken every opportunity in my journey to learn and grow as a communicator and leader. These experiences are outlined in my curriculum vita. I am a collaborative leader with a service-based approach. This philosophy of leadership means that as the dean of a college as complex as the CSU College of Agricultural Sciences I will work to bring the faculty, staff, and student communities together through a common understanding of our mission and approach to serving our state and world. The dean manages and promotes the most important priorities of each department and program to create the focus for the College, working transparently with the community of stakeholders (students, staff, faculty, citizens, business leaders, community leaders, and NGOs). Most importantly, the dean is the face of the academic community. The dean must celebrate the exceptional performance of students, staff, and faculty as the product of the whole community's support and efforts.

Communications

Perhaps my strongest professional talent is as a communicator. Expertise in communications requires understanding formal and informal language modes as well as the history, context, and values of the people we are communicating with. The power of effective communications in creating positive workplaces, addressing concerns of the community in a timely and effective manner, and unifying efforts to achieve difficult goals is profound. I have also observed the disastrous impact of poor communications from leaders, resulting in disharmony, distrust, and disengagement. Care must be taken to keep messages to the community clear, simple to remember, and backed up by actions in order to build trust in the leadership team. Communicating with stakeholders across the state requires a coordinated community effort to explain our collective priorities and values. I work with students, staff, and faculty to create and share effective messaging through personal relationships, community outreach, and technology media.

Management

Management is making decisions about prioritization of critical and often scarce resources, including money, people, and reputation. My management philosophy is reflected in my leadership philosophy; I respect the decision making and management priorities across departments and programs, am engaged to support priorities, and make certain we all respect and abide by the culture and policies of the institution. Personnel management begins with departmental leadership. The Dean must support the decision-making process at the department level and enforce institutional policies equally and transparently. I am an effective budget analyst and planner/implementer with significant experience programing funds to support large programs. I understand the difficulty of transitioning from an incremental budgeting process to a hybrid responsibility centered management approach. The next Dean will need to anticipate potential risks and opportunities, and work with the College community to make transparent decisions that support programmatic priorities during this budget transition process. The College has significant opportunities with the new CSU budget model but must be willing to adapt and implement programs to drive positive change across departments.

These brief statements of my philosophies of education, research, leadership, communications, and management provide insight into my core values. These can be summarized as open discovery, collaborative decision-making, transparent engagement with stakeholders, and competent administration of resources in support of a common vision for the college.

Best regards,



Marty D. Matlock

MARTY D. MATLOCK, Ph.D., P.E., B.C.E.E.

Professor
Department of Biological and Agricultural Engineering
University of Arkansas
Fayetteville, AR 72701



Educational Background

- Ph.D.** Biosystems Engineering, 1996. Oklahoma State University, Stillwater, Oklahoma.
- M.S.** Plant Physiology (Botany), 1989. Oklahoma State University, Stillwater, Oklahoma.
- B.S.** Soil Chemistry (Agronomy), 1984. Oklahoma State University, Stillwater, Oklahoma.

Professional Experience

Professor, Biological and Agricultural Engineering Department (July 2009 – Present) University of Arkansas, Fayetteville, Arkansas.

Elected Member, Board of Agriculture and Natural Resources, National Academies of Science, Engineering, and Medicine (January 2022 – Present), Washington, DC

USDA Senior Advisor to the Secretary of Agriculture, through the University of Arkansas System's Division of Agriculture (July 2021 – August 2022) Washington, DC

Executive Director, Resiliency Center (July 2017 – July 2021) University of Arkansas, Fayetteville, Arkansas.

Executive Director, Office for Sustainability (August 2012 – July 2017) University of Arkansas, Fayetteville, Arkansas.

Director, Center for Agricultural and Rural Sustainability, UA Division of Agriculture (November 2007 – August 2012) University of Arkansas, Fayetteville, Arkansas.

Associate Professor, Biological and Agricultural Engineering Department (August 2003 – June 2009) University of Arkansas, Fayetteville, Arkansas.

Assistant Professor, Biological and Agricultural Engineering Department (August 2001 – 2003) University of Arkansas, Fayetteville, Arkansas.

Assistant Professor, Agricultural Engineering Department, (May 1996- August 2001) Texas A&M University, College Station, Texas.

Post-Doctoral Fellow (January 1996 – May 1996) Oklahoma State University, Stillwater, OK.

USDA National Needs Fellow/Graduate Research Assistant (November 1992 – January 1996) Oklahoma State University, Stillwater, Oklahoma.

Vice-President and Director of Laboratories (September 1988 – November 1992) Stover Biometric Laboratories, Inc., Stillwater, Oklahoma.

Professional Certifications

- **Professional Engineer**, License Number 88864, Texas Board of Professional Engineers, Austin, TX, 2001 – Present.
- **Certified Ecosystem Designer**, American Ecological Engineering Association, 2010-Present.
- **Board Certified Environmental Engineer**, Certification Number 10-10034, American Academy of Environmental Engineers, 2011-Present.

Leadership Experience

Local

1. Founding Executive Director, University of Arkansas Resiliency Center, 2017 -2021. I coordinated an academic minor, graduate certificate, six staff members, six teaching appointments for faculty, and more than 50 affiliated research faculty.

2. Founding Director, University of Arkansas Office for Sustainability, 2011-2017. I consolidated campus sustainability research, teaching, outreach, and facilities programs under a common advisory committee, coordinated campus outreach and internal sustainability initiatives, chaired the Provost's Sustainability Council, and developed campus strategies for renewable energy, water conservation, and greenhouse gas emissions reductions. The Office for Sustainability was expanded to the UA Resiliency Center in 2017.
3. Founding Director, Center for Agricultural and Rural Sustainability, 2005-2011. I formalized the network of faculty in research and extension across the UA System Division of Agriculture to address challenges faced by rural communities, especially related to land-based prosperity and economic disruption.

State

1. Coordinated Arkansas Natural Resources Commission engagement with municipalities to address water resource management under the USEPA CWA 319 program, 2005-2017. Worked with communities to prepare nine-element watershed management plans, develop low impact development policies, and implement water resource protection programs.
2. In partnership with the UA Community Design Center, worked with Arkansas communities to solve complex sustainability design and science challenges. Projects were broadly implemented, receiving more than 50 national and international design awards.
3. Appointed member of the Governor's Interstate Task Force on Water Quality, 2013-2016. Implemented a three-year study on phosphorus thresholds for ecosystem management of rivers flowing between Oklahoma and Arkansas. Administered the final recommendations and finalized policies for nutrient management.
4. Testified before the Senate Committee on Agriculture, Nutrition and Forestry twice at Senator John Boozman's request on agricultural production challenges and impacts with water resources and water quality.

Tribal Governments

1. Science Advisor, USDA Office of Tribal Relations, 2021-Present.
2. Chaired Cherokee Nation Environmental Protection Commission, 2006-2021.
3. Science Advisor, Native American Agriculture Fund, 2018-2021.
(<https://nativeamericanagriculturefund.org/>)

Industry

1. Founding member and science advisor, Field to Market, the Alliance for Sustainable Agriculture, 2007-Present. We created a multistakeholder decision process for corn, soy, wheat, and cotton supply chains that has become the model for sustainability metric development and implementation around the world.
2. Sustainability science advisor for multiple agricultural organizations, including:
 - a. North American Cattlemen's Beef Association,
 - b. US Roundtable for Sustainable Beef,
 - c. National Pork Board's Sustainable Agriculture Program,
 - d. United Soybean Board's Soy Sustainability Assurance Protocol,
 - e. Science advisor, United States Soybean Export Council
 - f. Cotton Incorporated's Sustainable Cotton Initiative.

- g. Board member, US Cotton Trust Protocol
- 3. Science Advisor for national agricultural initiatives, including:
 - a. U.S. Farmers and Ranchers in Action (USFRA), 2022-Present.
 - b. Native Agriculture Financial Services,
 - c. RBIC programs with Big Idea Ventures, Inc.,

National

- 1. Served as Senior Advisor to USDA Secretary of Agriculture Thomas Vilsack, 2021-2022. I coordinated implementation of American Rescue Plan funds to address immediate challenges of food systems resiliency as a result of the COVID-19 pandemic.
- 2. Elected member of the Board of Agriculture and Natural Resources (BANR) of the National Academy of Science, Engineering, and Math, 2022-Present.
- 3. Appointed Board Member and ASABE Representative, Council for Agricultural Science and Technology, 2022-Present.
- 4. Led development of an ASABE-ANSI standard for agricultural sustainability that has been adopted across almost all US agricultural supply chains (ASABE-ANSI 629), 2021.
- 5. Appointed to the US Secretary of Agriculture's AC21 Committee for the Future of Agriculture, 2011-2017.
- 6. Appointed to the USEPA Science Advisory Board for Agriculture, 2016-2020.
- 7. Chair, The Leadership Alliance, Global Council for Science and the Environment, 2020-2021.
- 8. Science Advisor, US Heartland-China Association, 2022-Present.
- 9. Science Advisor, World Wildlife Fund, 2011-Present. Working with WWF on local-to-global solutions for food security and conservation.

International

- 1. Chair, Metrics Committee, UN Foundation Solutions from The Land Initiative, 2010-2020.
- 2. Advisor to the EU Environmental Program Director for water resources management of EU member nations, 2021. Resulted in development of an advisory report for the United Nations Environmental Program, Geneva, Switzerland
- 3. Sustainability science advisor for Food and Agriculture Organization (FAO) of the United Nations, Rome, Italy, 2012. Reviewed the Sustainability Assessment of Food and Agricultural Systems (SAFA).
- 4. Invited Expert Reviewer, World Economic Forum, 2012. Putting the New Vision for Agriculture into Action: A Transformation Is Happening. World Economic Forum, Geneva, Switzerland.
- 5. Senior advisor, FAO, 2011. Developing a Partnership on Benchmarking and Monitoring the Environmental Performance of Livestock Food Chains.
- 6. Delegate, US Agricultural Trade Mission - Europe, US State Department, 2015 and 2016. Science advisor for sustainable agriculture for
- 7. Delegate, Mid-East Peace Process, Foreign Agriculture Service, USDA 2008-2009. Science advisor for US Foreign Agriculture Service and participating delegate for the environmental deliberation of the Mideast Peace Process, Istanbul, Turkey, 2009.

Commitment to Diversity, Equity, and Inclusion

I am a member of the Cherokee Nation (Registry Number 65205) and a first-generation college student. I know how difficult it is to overcome the feeling of not belonging in an academic setting. I have supported efforts to engage and recruit underrepresented groups to STEM programs my entire career but began to lead programs for Native American students in 2010. These programs have resulted in campus-wide initiatives focused on Native American student recruitment and retention, and include the following activities:

1. Direct the USDA Tribal New Beginnings program (\$500,000 for five years) to create a Native American Student Support program on the UA campus to address the four challenges faced by under-represented and minority students in higher education: 1) a sense of belonging; 2) a vision and purpose; 3) college preparation, and 4) economic support to complete the degree. These challenges have to be clearly articulated and supported as priorities within departments and the college to improve equity and access to education for all Arkansans and students from around the world. The lessons we learn regarding effective implementation will support other underrepresented groups in the region.
2. Created and co-led with Dr. Michelle Evans-White an NSF-funded Research Experience for Undergraduates program from 2012-present, focused on Native American, Alaskan, Hawaiian and Pacific Island students, matriculating 118 participants.
3. Supported Native American undergraduate student recruitment to STEM through the University of Arkansas Indigenous Food and Agriculture Initiative.
4. Created an Indigenous Student Internship through the UA Resiliency Center, providing Native students with paid experiences in sustainability research.
5. Served as advisor to the Native American Agriculture Fund, 2017-2021.
6. Chaired the Anti-Racism committee of the Global Council for Science and the Environment, where we reviewed organization policies and practices to identify barriers to equity and inclusion in the organization.

National Research Policy Leadership

As Senior Advisor at USDA I was responsible for implementing a portfolio of initiatives in support of the American Rescue Plan Act valued at more than \$1.6 billion in 14 months. These initiatives included the following programs:

1. \$750 million in guaranteed loans for the food supply chain guarantee loan program to support new investments in food infrastructure to increase capacity and create a more resilient, diverse, and secure U.S. food supply chain, through Rural Development.
2. \$300 million in grants for local meat capacity grant program (MCAP), divided into simplified grants (up to \$250,000) and process expansion grants (up to \$5 million).
3. \$167 million in guaranteed loans for the Meat and Poultry Intermediary Lending Program (MPILP) to increase access to capital for processors who want to start or expand processing capacity for meat and poultry, through Rural Development.
4. \$146 million in grants through the Meat and Poultry Processing Expansion Program (MPPEP) to help eligible processors expand their capacity to meet US food supply chain needs for mid-sized processors and promote competition in the meat and poultry supply chains, through Rural Development.
5. \$100 million in financial assistance grants for new and existing meat and poultry processing facilities in underserved communities to support upgrades in equipment and technologies to improve worker safety, welfare, and company competitiveness, through Rural Development.
6. \$70 million in research grants through the National Institute of Food and Agriculture (NIFA) focused on innovative technologies for meat and poultry processing.
7. \$55 million in grants through the Meat and Poultry Inspection Readiness Grant Program (MPIRG) to states to help strengthen food safety and develop new market opportunities for

- meat and poultry processors throughout the United States, through FSIS.
8. \$50 million for the Indigenous Animals Harvesting and Meat Processing Grant program (IAG) to support Native American food system resiliency, through Rural Development.
 9. \$35 million to support meat and poultry workforce development, working with 1890 and 1994 Land Grant Institutions and community colleges to create certification programs and on-the-job training partnerships with companies, through NIFA.
 10. \$25 million for the Meat and Poultry Processing Technical Assistance Program (MPPTA) to support federal grant application management, business development and financial planning, meat and poultry processing technical and operation support, and supply chain development, through FSIS.

Recognition for Leadership

My academic services and professional science advising have been recognized by the top organizations in the United States with a number of awards, including:

1. Fellow, The American Society of Civil Engineers, 2023-Present.
2. Fellow, American Ecological Engineering Society, 2023 – Present.
3. Elected Member, National Academy of Sciences, Engineering, and Medicine's Board of Agriculture and Natural Resources, 2022-present.
4. Odom Award for Ecosystem Design, American Ecological Engineering Society, 2022
5. Borlaug CAST Communications Award, Council for Agricultural Science and Technology, 2018.
6. Multiple awards from the European Centre for Architecture Art Design and Urban Studies in partnership with The Chicago Athenaeum: Museum of Architecture and Design (see Awards, partial list of more than 50 since 2006).
7. National Science Foundation Biological Sciences REU Leadership Council, 2009 – 2022.
8. Fellow, National Academy of Inventors, 2016.
9. Author and Reviewer, ASCE-AAES Environmental Engineering Body of Knowledge, 2009.

My academic and professional publications and awards are listed below.

Publications

Peer Reviewed/Refereed Journals (H Index = 30)

- Henderson, A. D., Asselin-Balençon, A., Heller, M. C., Burek, J., Kim, D., Lessard, L., **Matlock, M.**, ... & Jolliet, O. 2023. Spatialized Life Cycle Assessment of Fluid Milk Production and Consumption in the United States. *Sustainability*, 15(3), 1890.
- Matlock, M.**, S. Pfister, B. Ridoutt, K. Rosentrater, G. Thoma, Y. Yao, and J. Tricarico. 2022. Goals, Strengths, and Limitations Governing the Use of Life Cycle Assessment in Food and Agriculture. Council on Agricultural Science and Technology, QTA2022-1.
- Gustafson, D., Asseng, S., Fraise, C., Guan, K., Hoogenboom, G., Kruger, C., **Matlock, M.** ... & Wiebe, K. (2022). In pursuit of more fruitful food systems. *The International Journal of Life Cycle Assessment*, 27(12), 1267-1269.
- Kawamura, A.G., R. Lal, **M. Matlock**, and C. Rice. 2022. Sustainable and Regenerative Agriculture. *Bridges*, 52:2 (22-29). National Academy of Engineering, Washington D.C.
- Parajuli, R., **Matlock, M.**, and Thoma, G., 2022. Environmental life cycle impact assessment of fresh California strawberries: A full supply chain perspective. *Cleaner and Responsible Consumption*, 6, p.100073.
- Bandekar, P. A., Putman, B., Thoma, G., & **Matlock, M.** 2022. Cradle-to-grave life cycle assessment of production and consumption of pulses in the United States. *Journal of Environmental Management*, 302, 114062.
- Gustafson, D., Asseng, S., Fraise, C., Guan, K., Hoogenboom, G., Kruger, J., Kruse, J., **Matlock, M.**, ...Wiebe, K. 2022. In pursuit of more fruitful food systems. *Int J Life Cycle*

- Assess.
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FAO, 2011. Developing a Partnership on Benchmarking and Monitoring the Environmental Performance of Livestock Food Chains. Natural Resources Management and Environment Department, Food and Agriculture Organization of the United Nations, Rome, Italy, March 2011. http://www.fao.org/ag/againfo/home/documents/2011_Global_Agenda_of_action.pdf

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Patents

Osborn, G. S., C. Thompson, **M. D. Matlock**. 2016. U.S. Patent 9,315,402. System and Method for Wastewater Treatment. U.S., Issued – 4/19/16. Patentee– The Board of Trustees of the University of Arkansas.

Osborn, G. S., **M. D. Matlock**, S. S. Teltschik. 2014. U.S. Patent 8,919,743. System and Method for Dissolving Gases in Fluids and for Delivering of Dissolved Gases. U.S., Issued – 12/30/14. Patentee– The Board of Trustees of the University of Arkansas.

Osborn, G. S., **M. D. Matlock**, S. S. Teltschik. 2012. U.S. Patent 8,276,888. UA Disclosure Ref. No. 04-24. System and Method for Dissolving Gases in Fluids and for Delivering of Dissolved Gases. U.S., Issued – 10/2/12. Patentee– The Board of Trustees of the University of Arkansas. Five international patents for this patent.

Osborn, G. S., **M. D. Matlock**, S. S. Teltschik. 2007. U.S. Patent 7,255,332, System and Method for Dissolving Gases in Liquids issued 8/15/07. Patentee – The Board of Trustees of the University of Arkansas.

Membership in Professional Societies

American Academy of Environmental Engineers and Scientists (AAEES) – Board Certified Environmental Engineer, 2011-Present

American Ecological Engineering Society (AEES) – Past-President 2008-2009; President, 2007-2008; Vice President, 2005-6. Founding Member, Certified Ecosystem Designer, 2011-Present.

American Society of Agricultural and Biological Engineers (ASABE) – Standards Committee

The American Society of Civil Engineering (ASCE) – Environmental Engineering Committee

The American Association for the Advancement of Science (AAAS) Section X, Societal Impacts of Science and Engineering.

Select Honors and Awards (past seven years from more than 60 total)

2023

Fellow, American Society of Civil Engineers, by ASCE for leadership in environmental engineering profession, design, and innovation in sustainability.

Fellow, American Ecological Engineering Society, by AEES for recognition of lifetime leadership in the profession.

2022

Odom Award for Ecosystem Design by the American Ecological Engineering Society, Lifetime

Achievement Award for leadership in innovation and application of ecosystem science in addressing critical social needs.

2021

Green GOOD DESIGN Award by the European Centre for Architecture Art Design and Urban Studies and The Chicago Athenaeum: Museum of Architecture and Design for Wood City: Timberizing the Standard Real Estate Product Types, sponsored by the Weyerhaeuser Giving Fund.

American Institute of Architecture Honor Award for Rebuilding a Local Food Economy: Oahu, Hawaii, in partnership with the Hawaii Department of Agriculture.

2020

College of Arts and Sciences Distinguished Alumni, 2020, Oklahoma State University Department of Plant Biology, Ecology, and Evolution.

Green GOOD DESIGN Award from the European Centre for Architecture Art Design and Urban Studies & The Chicago Athenaeum: Museum of Architecture and Design for the Wahiawa Value-Added Product Development Center.

Best of Design Awards 2020: Education Unbuilt category by the Architect's Newspaper, for the Wahiawa Value-Added Agricultural Product Development Center.

2019

Association of Collegiate Schools of Architecture and the American Institute of Architects (ACSA) Housing Design Education Award. UACDC in partnership with the UA Resiliency Center, for Saving Downtown Public Housing: Towards a Blended-Income Community, Willow Heights Public Housing in Fayetteville, Arkansas

World Architecture Festival 2019 Future Project: Education Finalist. for Whitmore Community Food Hub Complex: Building Community around Food.

2018

Borlaug CAST Communications Award for "Matlock's achievements as an internationally recognized expert in agricultural sustainability metrics and assessment. Matlock has become a world leader in the science of agricultural sustainability during the past 10 years through his global communications efforts." Center for Agricultural Science and Technology, Des Moines, IA

American Architecture Award by the Chicago Athenaeum: Museum of Architecture and Design and The European Centre for Architecture Art Design and Urban Studies, for Whitmore Community Food Hub Complex: Building Community around Food

Green GOOD Design Award for Urban Planning/Landscape Architecture by the European Centre for Architecture Art Design and Urban Studies and the Chicago Athenaeum: Museum for Architecture and Design, for Whitmore Community Food Hub Complex: Building Community around Food.

American Institute of Architecture Regional & Urban Design for Urban Watershed Framework Plan: A Reconciliation Landscape for Conway, AR.

Unique Contribution to Planning Award for Livability Improvement Plan for Willow Heights Housing, from the Arkansas Chapter of the American Planning Association.

2017

Standards Development Award - ASABE for the development and approval of ANSI/ASABE S629, Framework to Evaluate the Sustainability of Agricultural Production Systems.

Lafarge-Holcim International Sustainable Design Acknowledgement Award for Urban Watershed Framework Plan: A Reconciliation Landscape for Conway, AR. Geneva, Switzerland

World Architecture Festival Ethics Award for Whitmore Community Food Hub Complex: Building Community around Food. World Architecture Festival, Amsterdam, The Netherlands