Testimony of
Ali Fares, PhD
Endowed Professor of Water Security and Water Energy Food Nexus
Prairie View A&M University, Texas
Before the United States House of Representatives
Agriculture Committee
June 15, 2022

Good morning. Thank you, Chairman David Scott, Vice Chair Alma Adams, and Ranking Member Glenn Thompson, for convening and inviting me to contribute to today's hearing, ***"The Role of Climate Research in Supporting Agricultural Resiliency."*** I am Dr. Ali Fares, Endowed Professor of Water Security and Water Energy Food Nexus at Prairie View A&M University (PVAMU). I want to thank you for your sustained support to research in the Land Grant Institutions such as PVAMU and the 1890 Institutions, specifically to allow us to train future leaders and professionals and conduct fundamental and applied research that addresses the needs of the over 8 million limited resource farmers, ranchers, and community members in Texas through multiple funding programs included in the 2018 Farm Bill. These rural and urban communities have been one of the more impacted portions of society by climate change.

Through the continued support of Congress and the extra-ordinary efforts of leaders of this Commitee, PVAMU, the 1890 Institutions, and other land grant institutions have continued conducting state-of-the-art research while training limited-resources future leaders to address the evolving needs of the US population.

The 1890 Institutions have several active climate research projects; at PVAMU, I am leading the GetAgSmart project, a USDA-NIFA funded project in collaboration with colleagues from Texas A&M University. We have been working on building capacity in smart agricultural technologies to train Texas underserved communities and support them start high-paying careers in this area. The second project is a joint effort with colleagues at the University of Texas at Austin, training over 30 PhD and MS students in the area water-food-energy and climate change. Several of these students graduated and are already training others.

It is crucial to remind ourselves of the critical role research and innovation, R&I, have on the US economy and the US global leadership in this area. The US has been the global leader in R&D investments; The US continues to lead the nations in its spending on R&D; although currently, it was about 30% in 2019, its R&D was 40% of the global R&D in 1999. Our new economy, as many want to call it, is R&D savvy and dominated by tech companies that continuously benefit from R&D. The agricultural sector is one of those economic sectors that heavily rely on research and development (R&I) in its mission to meet ever-increasing demands for food, fiber, clean energy, and ecosystem services while facing an array of climate change-induced challenges, e.g., droughts, flooding, fires, freezes, and pest infestation. Since 2020, the challenges have been compounded by the pandemic and regional wars in crucial food and energy influenceable areas, disrupted the supply chains, and introduced volatility to the food energy markets and the global economy.

The current climate change challenges offer opportunities for economic innovation and the implementation of new growth models. Substantially reducing GHG emissions in about two decades requires innovation in many sectors, especially agriculture, energy, and other related sectors. These innovations will support a new economy with different infrastructure, workforce skills, financial tools, and governance. As a result, new career opportunities will arise, and new markets will develop (e.g., carbon market, resiliency indices), powered by new goods and services. Intentionally embracing this new economy will result in the thriving of the US economy, where small and minority businesses and individuals will play a significant role. Agricultural and natural resources research and innovation helped the agriculture and natural resources sector overcome many of its challenges, including the introduction of erosion control practices that resulted from the extensive soil and water conservation research triggered by the dustbowl in the 1930th of the last century. Results of those practical research have been implemented here in the US and internationally to combat soil erosion and protect the environment. In addition, the green revolution, by introducing the crop breeding efforts of legendary agronomists such as Norman Borlaug, helped achieve food security in the US and other countries such as India.

Although the agriculture sector has been one of the major greenhouses gases emitters, it is looked at as the sector that can not only reverse its course but also can mitigate substantial amounts of GHG via carbon sequestration in soil and biomasses through the adaption of effectively proven management practices.

This will help the US achieve its emission reduction goals, strengthen our resilience to climate change, and strengthen our global economic and moral leadership.
Through R&I, we can develop and implement climate-smart and resilient agricultural practices that will help US individuals, families, and communities weather the impact of climate change through adaptation and mitigation approaches. These approaches are interrelated and must be adopted simultaneously as they are needed to improve changing climate resiliency.

The USDA, through NIFA, enumerates several climate research needs that require several actions to help the agriculture sector and other stakeholders adapt to and address climate change crisis via a joint mitigation and adaptation approach, including:

- Adequate funds are needed to study and develop climate-smart practices and technologies that producers and land managers need to implement these practices and approaches.
- Research on the effectiveness of adaptive practices and technologies regarding productivity synergies, tradeoffs and mitigation co-benefits on soil carbon storage and GHG emission reductions.
- There is an urgent need to support site-specific research on fertilizer technologies, climate-resilient plants and trees, and fate of pollinator communities, and vector-borne livestock diseases.
- Support for reliable modeling efforts on the future affordability of climate-smart activities and project pest and disease outbreaks under different scenarios.
- Water security: long-term monitoring of snowpack, precipitation, and soil moisture networks data is essential to investigate trends and develop management options.

- Integrating climate and socioeconomic change with production and land-management outcomes while considering the secondary effects of climate's influence on pollinators, pests, diseases, invasive species, and extreme events such as flooding and drought.
- The advanced and integrated use of Artificial Intelligence and IoT-based technologies will help efficient and effective decision-making for climate-smart and sustainable agriculture.
- Limited resources and minority farmers have additional challenges besides climate change. They are last in adopting new technologies and practices as most of them lack the resources needed and most of the adopted technologies are costly and require a level of technical understanding, two elements lacking most of the limited resources farmers and ranchers.
- Intentional efforts are needed, especially for commodity-specific objectives (e.g., common crops and animals, corn, wheat, beef, small animals) to develop tools and practices tailored to limited resources for farmers and communities.
- Support technology transfer on newly developed scientific information and tools at the local scale to help land and resource managers increase the resilience of those systems and the communities that depend on them.
- Given the enormity of the tasks, public-private partnerships and international collaborations between US and international academic and research institutions and industries are viable options that it would be wise to consider.
- The 1890 institutions are significant players in this effort in helping the most fundable and impacted section of the population by climate change; however, their researchers and research infrastructure desperately need continued support to build capacity in conducting research and training the next generation of climate-smart agriculture experts.

I encourage Congress to support robust funding increases for the 1890 land-grant programs so we can make even more positive impacts on our country's citizens through our research programs. We will be better able to address specific climate change needs of the underserved farming communities and train future professionals in climate-smart agriculture discipline.

In summary, I request you invest in supporting America's future research and innovation leadership by strengthening the 1890s land-grant universities' research portfolio. PVAMU has a 146-year track record of excellence; it ranks as the No. 1 "best value" HBCU No. 4 among Texas universities.

I look forward to answering questions from you and the committee members in the question and answer session of this hearing.

Thank you.

Ali Fares

Endowed Professor of Water Security and Water-Energy-Food Nexus
College of Agriculture & Human Sciences,
Prairie View A&M University

Professor Fares is an expert in **water-energy-food nexus, water security, and climate change impacts on agriculture, natural resources, and the environment**. He contributed to Florida's citrus nitrogen best management practices, Hawaii's water use allocation, bioenergy mandate, and Texas's **future crop irrigation requirements under climate change** scenarios. Dr. Fares has mentored tens of undergraduate students and chaired or served on tens of doctoral and M.S students in multiple U.S. academic institutions and internationally. Also, he hosted several international professors and students and mentored several junior faculty and postdoctoral fellows.

Dr. Fares has been exercising national leadership on educational and policy issues. He served on **the 2021 Carbon Sequestration from the Ground Up Conference of the Council of State Governments Eastern Regional Conference, East State Legislative** panel. He contributed to the conversation about how natural and working lands can be part of the solution to the climate change crisis.

Currently, **He is serving** as an author on the Southern Great Plains chapter of **the Fifth National Climate Assessment** (NCA5). Also, he is **an affiliate member** of **the U.S. Dep. of the Interior South Central Climate Adaptation Science Center**; the USGS National Climate Adaptation Science Center. **He chaired** the Diversity Catalyst Committee of the Experiment Station Committee on Organization and Policy to explore the topic of Diversity in Research Leadership in Land Grant Institutions. **He served on several working groups** of the Association of Public and Land Grant Universities (APLU), such as the i) **APLU-Board of Agriculture-Working Group on National Initiative on the Improvement of U.S. Water Security**; and ii) **the APLU-Board on Natural Resources-Working on Group Forest Heath Initiative.**

Dr. Fares is the **Co-recipient of several awards,** including the i) 2022 PVAMU-Faculty Senate **Excellence in Research Award**; ii) **2017 Irrigation Association** National Water & Energy Conservation; the **2014 APLU Excellence in Multistate Research**; and **the 2012 University of Hawaii** Team of the Year. His research **received $ 30 million** in extra-mural funding. He is the Editor of several books: **Climate Change and Extreme Events, Advances in Water Security Book Series**. Dr. Fares published over 130 scientific articles that are well cited by the scientific community. He analyzed sugarcane water allocation for the County of Maui, Hawaii, and the Office of Hawaiian Affairs on the Nā Wai' Ehā landmark case adjudicated by the Hawaii Supreme Court. He is a fellow of **the American Society of Agronomy** and **the Soil Science Society of America** and the co-recipient of several national awards.

Prof. Fares worked as Assistant, Associate and Full professor of **Watershed Hydrolgoy at the University of Hawaii-College of Tropical Agriculture and Human Resources** during 2002-2013. Also, He worked the University of Florida after his graduation for 5 years. Dr. Fares also worked at a private company in South Australia in 2000. He received his Ph.D.

and M.S. Degrees from the University of Florida and his B.S. in Agricultural Engineering from Tunisia.

Ali Fares

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Academic and Professional Appointments

Endowed Professor of Water Security and Water Energy and Food Nexus, CAHS-Prairie View A&M University. **Sep 2020 – Present**
Affiliate Member, the Department of the Interior South Central Climate Adaptation Science Center, USGS National Climate Adaptation Science Center, University of Oklahoma.
Professor of Water Security, CAHS-Prairie View A&M University. **2013- 2020.**
Professor of Watershed Hydrology, NREM-CTAHR-UH-Manoa. **2009- 2013.**
Affiliated faculty at UH-Manoa's i) Water Resources Research Center, and ii) Center for Teaching Excellence. **2004- 2013.**
Cooperating Graduate Faculty UH-Manoa: i) Civil and Environ. Engineering; ii) Biological Engineering Program, iii) Geology and Geophysics, UH-Manoa. **2008- 2013.**
Associate Professor of Watershed Hydrology NREM-CTAHR UH Manoa. **2005- 2009.**
Assistant Professor of Watershed Hydrology NREM-CTAHR UH Manoa. **2002- 2005.**
Research Associate, University of Florida. 1996- 1999 & 2001- 2002.
Adjunct Faculty, the Union Institute & University, Cincinnati, OH. 2001- 2002.
Adjunct Faculty, Keiser College, Lakeland Campus, Lakeland, FL. 2001- 2002.
Adjunct Faculty, Warner Southern College, Lake Wales, FL. 2002.
Research Scientist, Sentek, Pty, Ltd., Adelaide, South Australia. 2000.
Graduate Research Assistant, University of Florida. 1991- 1996.
Agricultural Engineer at the Ministry of Agriculture, Tunis, Tunisia. 1984- 1987

Leadership and Administrative Appointments

Interim Vice President for Research, Innovation & Sponsored Programs, 2018-2019

As the university's chief research officer, I oversaw six research centers, the US Department of Education Title III funds, and I managed staff members that handle research compliance, sponsored programs, Title III funding, undergraduate research, and Innovation and Commercialization.

I implemented a new faculty research development initiative to strengthen across-campus faculty research programs using a faculty-postdoctoral-student model by leveraging resources from different funding sources. Twenty-four faculty members were funded in 2019.

I led undergraduate and graduate student research initiatives involving over 100 students.

I established a Research Seminar Series, a venue for faculty, students, industry representatives, and off-campus invited speakers to present the results of their research and innovations.

I initiated an Annual University Research Week to recognize and celebrate faculty, scientists, and students' research, innovation, and creative accomplishments. I represent the University on several boards and committees.

Interim Dean and Director, College of Agriculture and Human Sciences, 2018- Jan – June

I lead more than 400 undergraduate and graduate students supervised by over 15 teaching faculty. I also administrated the Extension Programs, which are mandated to serve over 8.2 million limited resources and underserved Texans and are present in 34 out of the 254 counties of Texas.

The research programs employ over 50 researcher personnel and 50 graduate and undergraduate students supporting CAHS research programs. Annually, PVAMU Land Grant Programs are supported with over $ 20 million through state and federal capacity funds and several millions of Dollars in extra-mural funds.

Associate Director for Research, College of Agriculture and Human Science, 2013-2017

I was responsible for the land grant research programs, personnel, and an annual budget of over 9 million dollars in state and federal capacity building allocations and more than 2.5 million Dollars in extra-mural funded integrated projects. In addition, I lead the water security program. I established a college seminar series. I started as interim in this position then I assumed it regularly.

Chair of the Graduate Program (2008-2010), the Natural Resources and Environmental Management Department (NREM), the College of Tropical Agriculture and Human Resources (CTAHR) at the University of Hawaii-Manoa (UHM).
NREM graduate program had about 70 doctoral and MS degrees students in different natural resources and environment areas. It was one of the top programs in CTAR. During my tenure in Graduate Program, a Profession MS degree program was added, and several improvements were made to course offerings and degree programs contents.

Acting Chair, NREM-CTAHR-UHM, (short periods for several occasions).
Member of PVAMU Academic Council. (2013-2017).
Member of the University Research Council, UHM.
Member of the Council on Program Reviews, UHM.
Member of the UHM and NREM Tenure and Promotion Committees.
Member of the CTAHR-UHM Faculty Senate and Chair of the Instruction Committee.

Administrative Records

2018–2019 (1 year) Interim Vice President for Research, Innovation & Sponsored Programs.
2018- Jan – June. Interim Dean and Director, College of Agriculture and Human Sciences.
2013-2017 Associate Director for Research, College of Agriculture and Human Sciences.

Education

Ph.D. 1996. The University of Florida. Hydrologic Science Cluster.
M.S. 1990. The University of Florida. Agronomy/ Computer Science.
B.S. 1984. College of Horticultural Engineering Sousse, Tunisia.

Professional Memberships

1993-Present	American Geophysical Union
1992-Present	Soil Science Society of America
2001-Present	American Society of Agronomy

2001-Present Crop Science Society of America

Awards and Recognitions

- **The 2021 Fellow of the Soil Science Society of American Award** (aka Hall of Fame award). Awarded to 0.3% of the members.
- **The 2020 Fellow of the American Society of Agronomy Award** (aka Hall of Fame award). Awarded to 0.3% of the members.
- **Endowed Professor of Water Security and Water Energy and Food Nexus,** CAHS-Prairie View A&M University. **Sep 2020.**
- **The National Water and Energy Conservation Award** of the Irrigation Association for the USDA-NIFA Multistate Project W-3128, "Scaling Micro-irrigation Technologies to Address the Global Water Challenge." Orlando, Florida, November 9, 2017.
- **The 2016 Most Read Peer-Reviewed Article** for the International Water Association Journal of Water and Climate Change article: "Irrigation water requirements for seed corn and coffee under potential climate change scenarios."
- **Excellence in Research Award** of the Western Association of Agricultural Experiment Station Directors Excellence. Lake Tahoe, CA July 10, 2014.
- **Excellence in Multistate Research Award** from the Experiment Station Committee on Organization and Policy (ESCOP), the Association of Public and Land-Grant Universities (APLU). APLU Annual Meeting, Orlando, Fla. Nov. 3, 2014.
- **University of Hawaii Team of the Year Award (2012).** This Award an acknowledgment of the exceptional and superior performance NREM-Department.
- **Member of the 2009-10 University of Hawaii President's Emerging Leaders Program**. A cohort program provides participants a professional development opportunity with a base of knowledge about higher education and a chance to develop leadership skills and strategies to make a difference on our campuses and within the system. The participant individuals have exhibited the attitude and capacity necessary for effective leadership within the UH academic community.
- **2010 Essay/Video Contest: Student and their Faculty Representative Award**. Irrigation Foundation at the Irrigation Association Annual Meeting, San Diego, CA November 2010. Students: William Connor, Arlen McCluskey, and Nancy Niklis of the University of Hawaii-Manoa. www.irrigation.org/IrrigationFoundation/Compete/Contest_Past_Winners.aspx www.irrigation.org/News/Press_Releases_2010/IAEF_Names_Essay_Video_Contest_Winners.aspx
- **2011 Essay/Video Contest: Student and their Faculty Representative Award**. Irrigation Foundation at the Irrigation Association Annual Meeting, San Diego, CA 3-8 November 2011. Student: Sergio Santiago-Melendez. The University of Hawaii-Manoa. http://www.irrigation.org/foundation/essaycontest/
- **Best and Most Meritorious Paper in the Citrus Section Award** of the 2004 Florida State Horticulture Society Annual Meeting, Orlando, Fla, June 6-8 2004.
- **2002 Outstanding Academic Service Recognition,** Keiser University, Lakeland-Florida Campus.
- **Student Award,** Gamma Sigma Delta, the Honor Society of Agriculture, 1995
- **Student Scholarship**, Tunisian Minister of Agriculture, 1980-1984.

Research Expertise and Interests

Water, Food and Energy Security; Water Food Energy Nexus; Water Allocation; Sustainable Water Resources Management Climate change effects on watershed hydrology; Adaptation to and Mitigation of Extreme Hydrological Events (Flood and Drought); Numerical Modeling at multi spatial and temporal scales (Watershed, field, and other relevant scales).

Computer Expertise: Hydrological Software

IWREDSS V 2.0 and 1.0 (Irrigation Water Requirement Estimation Decision Support System), has been used by the **Hawaii Commission on Water Resources Management** for water allocation calculation at the farm level. http://files.hawaii.gov/dlnr/cwrm/publishedreports/PR201308.pdf

IManSys, A water management model that uses a water balance approach to simulate different water balance inputs and outputs, e.g., soil water infiltration, redistribution, and extraction by evapotranspiration, rainfall, canopy interception, surface runoff daily.

GIS-IManSys, a User-Friendly Computer-Based Water Management Software Package. The GIS-based IManSys uses a daily water balance approach to calculate irrigation water requirements for different crops in Hawaii.

TheHelper, an irrigation scheduling computer program, targeting citrus growers to help them comply with the irrigation management portion of citrus Best Management Practices.

ETM, An Evapotranspiration Estimation Model, is a mathematical model used to determine potential evapotranspiration for different plants and potential evapotranspiration for soil and water surfaces.

Professional Activities and Services

Tenure and Promotion Review

- **2021 Professor and Department Head**. Penn State University, May 2021.
- **2021 Promotion to Associate Professor.** College of Science and Engineering. Hamad Bin Khalifa University, Qatar.
- **2022 Promotion to Associate Professor.** College of Science and Engineering. Hamad Bin Khalifa University, Qatar.

Serving/Served on non-PVAMU Students Doctoral Degree Committee in the US and International

- **Greg Hendrickson** NSF-NFEWS-NRT Scholar. Center for Water and the Environment, Civil, Architectural and Environmental Engineering. **University of Texas – Austin. 2022.**
- **Àngela Puig-Sirera.** Department of Agriculture, Food and Environment (DAFE). **University of Pisa, Italy.** Feed-forward and feed-back control irrigation scheduling to improve the supplemental irrigation efficiency in woody perennial crops. 2022.
- **Muhammad Naeem Akhtar.** Characterization of Cotton Germplasm for Potassium Uptake and its Role in Drought Tolerance. Doctor Of Philosophy In Soil Science. Faculty of Agriculture and Environmental Sciences, **Mns University Of Agriculture, Multan. Pakistan. 2022**
- **Edgar Muhoyi.** School of Accounting, Economics, and Finance. **College of Law & Management Studies. Westville Campus. South Africa.** Performance Analysis of Small-Scale Irrigation Schemes in Drought-perennial Areas: Evidence from Chipinge District, Zimbabwe. July 2021.
- **Faheem Shahid University of Agriculture, Faisalabad, Pakistan**. Institute of Soil and Environmental Sciences, Improving soil health and crop productivity through conservation tillage and cover crops in the rice-wheat cropping system. October 2021
- **Muhammad Adeel Ahmad**. Soil health and chickpea yield management through application of rhizobacteria and organo-mineral fertilizer. Gomal University, D. I. Khan. Pakistan. May 2021.

- **Haroon Shahzad.** Effect of organic amendments at optimum irrigation level on maize yield, soil carbon dynamics and physical health. The Institute of Soil and Environmental Sciences. **The University of Agriculture, Faisalabad, Pakistan. 2018.**

- **Muhammad Naeem Akhtar.** Characterization Of Cotton Germplasm For Potassium Uptake And Its Role In Drought Tolerance. Thesis of Doctoral of Philosophy In Soil Science. Department of Soil and Environmental Sciences. Faculty of Agriculture and Environmental Sciences, Mns **University of Agriculture, Multan, Pakistan**. **2022.**

Nationally

- **Author** of the Southern Great Plains chapter of **the Fifth National Climate Assessment (NCA5)**. The US Global Change Research Program. **2021-2023.**
- **Affiliate Member,** the Department of the Interior South Central Climate Adaptation Science Center, USGS National Climate Adaptation Science Center, University of Oklahoma.
- Chair of the 2021 Soil Science Society of America **Graduate Student Committee**
- Member **of the Diversity, Equity, and Inclusion Standing Committee**, Consortium of Universities for the Advancement of Hydrologic Science, Inc. **The mission of CUAHUS** is to advance water science and to support over **130 member universities** and the water science community. **2021.**
- Member of the **APLU-Board on Natural Resources**-Working on Group Forest Heath Initiative. Participate in crafting a section of **Forest Health and Water Quantity and Quality** of the white paper on **Forest Health. 2018-2019**.
- **Member of the Diversity Catalyst Committee of the Experiment Station Committee on Organization and Policy. 2015-2020.** This committee is charged to explore the topic of Diversity in Research Leadership, provide ideas and actions for consideration, and supplement institutional, regional and national diversity and inclusion efforts, all in the context of the Experimental Station Section. It is submitted to the **Experiment Station Committee on Organization and Policy.**
- Members of **the Soil Science Society of America Don and Betty Kirkham Soil Physics Award Committee**, Soil Science Society of America. Term: Jan 01, 2018 - Dec 31, 2019.
- Members of **the Soil Science Society of America Graduate Student Committee**, Term: Oct 01, 2018 - Dec 31, 2020.
- **Associate Editor,** the Soil Science Society of America Journal S-1, Soil Physics, Term: Jan 01, 2006 - Dec 31, 2008 Term: Jan 01, 2009 - Dec 31, 2011. Two Terms **six years**
- **Invited Associate Editor,** the Vadose Zone Journal, **2013, and 2015**.
- **Associate Editor**, Journal of Soil and Water Conservation, **2007-2008**.
- **National Club Poster Presentation Contest Committee:** A two-year appointment November 2003 – October 2005).
- **Judge for the American Society of Agronomy** National Undergraduate Student Speech Contest. Denver, CO November 2-6 2003.
- **Member of the Water Resources Working Group (2014)** of the Budget and Advocacy Committee, American Public and Land-Grant Universities-Board on Agriculture Assembly and Policy Board of Directors. 2013-2014. www.aplu.org/members/commissions/food-environment-and-renewable-resources/CFERR_Library/national-initiative-on-the-improvement-of-us-water-security/File
- Co-Chair and Member of the 2016 Soil Interpretations Committee–Southern Regional Cooperative Soil Survey Conference. USDA-Natural Resource and Conservation Service.
- **Editor, Advances in Water Security Book Series**, **Springer-Nature,** Switzerland. www.springer.com/series/13753
- **Lead Editor, Coastal Watershed Management**. **WIT Press,** UK, May 2008. 438 pp. ISBN: 978-1-84564-091-0.
- **Editor, Climate Change, and Extreme Events: Do we know enough? Elsevier Limited**,

Cambridge, UK. Its expected publication is February 2021.

- **Chair of the USDA-NIFA Microirrigation Regional Research Group 2128**: Reducing Barriers to Adoption of Microirrigation **2008-2009.**
- **Vice-Chair of the USDA-CSREES Regional W2128**: Reducing Barriers to Adoption of Microirrigation **2007-2008.**
- **Secretary of the USDA-CSREES Regional W2128**: Reducing Barriers to Adoption of Microirrigation **2006-2007.**

Statewide Services

- **Member of Texas Water Research Network.** This network provides a forum and encouragement for research about water science, management, and policy. Solutions to Texas' water challenges will be addressed through new knowledge, innovative approaches, as well as through the synthesis of existing knowledge. www.esi.utexas.edu/research/texas-water-research-network/members/
- **The Texas A&M Water-Energy-Food Nexus Initiative (WEFNI)**: This initiative will facilitate a dialogue to improve opportunities for economic development, enhance social well-being, and drive innovation and integration in the three sectors for both current and anticipated Nexus-related research.
- **Texas Water Technology Roadmap** (TWTR) Forum: A member of Key Thought Leaders from Texas' water sectors who helped lay the basis for TWTR. San Antonio, TX, Feb. 25th 2015. 67-page Report. http://texaswatertech.org/wp-content/uploads/2015/03/Texas_Water_Tech_Forum_Rept.pdf
- **Texas A&M University System: Resource Nexus: Water-Energy-Food Nexus.** November 17-18, 2015, San Antonio, Texas. **I served as facilitator and a participant.** Report: 41Pp. https://docs.google.com/viewerng/viewer?url=http://assets.system.tamus.edu/files/research-compliance/doc/Nexus_Water_Forum_11.17-18.15.pdf&hl=en_US
- **Texas A&M University Water Energy Food Nexus Initiative Launch.** October 8th, 2015, College Station, Texas. **I participated.** Report: 41Pp

Prairie View A&M University

- **Member of the Search and Selection Committee** for the Dean of Agriculture and Land Grant Programs 2017 and 2018.
- **Member of the Search and Selection Committee** for the Associate-Vice President of Research 2017.
- **Member of the Search and Selection Committee** for the Associate-Director of Research Compliance 2015.
- **Member of the Search and Selection Committee** for the Vice-President of Research and Dean of the Graduate School 2014.
- **Member of the Search and Selection Committee** for several positions at the College of Agriculture and Human Sciences - Prairie View A&M University (2013-Present).

University of Hawaii-Manoa

- Member of three search committees for new NREM faculty, chaired two of these committees.
- Chair of CTAHR senate research committee (2004-2005).
- Judge of in CTAHR annual student research symposium since 2003-2013.
- Member of CTAHR committee for the selection of CTAHR annual Research Award 2006.
- Member chair of CTAHR Distinguished Visiting Scholar Program Committee for the selection of Outstanding Research (2006-2008).

Internationally

- Member of the International Scientific Advisory Committee for the Second International Conference on Coastal Cities and their Sustainable Future. Sep 11-13 2019, Rome, Italy. www.wessex.ac.uk/conferences/2019/coastal-cities-2019
- Member of the International Scientific Advisory Committee for the Second International Conference on Coastal Cities and their Sustainable Future. 24 - 26 April, 2017. Cadiz, Spain. www.wessex.ac.uk/conferences/2017/coastal-cities-2017
- Member of the International Scientific Advisory Committee for the Coastal Cities 2015: International Conference on Coastal Cities and their Sustainable Future. 7 - 9 July 2015 New Forest, UK. www.wessex.ac.uk/conferences/2015/coastal-cities-2015
- Co-Organizer of the Joint Meeting of the Third International Soil Sensing Technology Conference and the ASA Sensor-based Water Management Community. Houston, TX, March 14-16, 2014. www.pvamu.edu/cahs/sensconf/
- Co-Organizer of the Joint Meeting of the Second International Soil Sensing Technology Conference, the Soil Physics Technical Committee Annual Meeting, and the ASA Sensor-based Water Management Community. Honolulu, HI, January 3-7, 2012. www.ctahr.hawaii.edu/faresa/conference/soilmoisture2012/conference2012.htm
- Co-Organizer of the Joint Meeting of the First International Soil Sensing Technology Conference, the Soil Physics Technical Committee Annual Meeting, and the ASA Sensor-based Water Management Community. Honolulu, HI, March 19 – 21, 2007. http://www.ctahr.hawaii.edu/faresa/conference/soilmoisture2007/soilmoisture2007.htm

Review Panels

- 2022 & 2021 NASA's Established Program to Stimulate Competitive Research (EPSCoR)
- 2022 NIFA-USDA Engineering for Ag. Production Systems
- 2022 USDA-ARS Review Panel Member: NP 211 Irrigation West
- 2020 & 2022 NIFA-USDA Foundational Program, in the area of Water Quantity and Quality
- 2020 NASA Minority University Research and Education Project (MUREP) Innovation and Technology Transfer Idea Competition (ITTIC).
- Panel Member of NASA. NASA ROSES 2016 A.50: GEO Work Program. May 22-23 2017.
- Panel Member of NASA Postdoctoral Program. December 2017.
- Panel member of the Small Business Innovation Research (SBIR) 8.4 Panel of USDA-NIFA, February 1-3 2017.
- Review Panel Member: NP 211 Panel 6. Computational Tool Development (2016) of the USDA, ARS 211 Water Availability and Watershed Management National Program.
- Review Panel Member: NP 211 Panel 6. Computational Tool Development (2016) of the USDA, ARS NP 211 Panel 3. Alternative Water Resources (2016)
- Panel Member of United States Department of Agriculture –AFRI-Agricultural Engineering Program. October 24-26, 2016.
- Member of the Protection of Environment and Soil Science Panel for the 2016 US-Ukraine Agricultural Research Competition. Civilian Research Development Foundation Global. Arlington, VA. 2016 and 2017.
- Member of NASA Postdoctoral Research Grants Program. Universities Space Research Association. Columbia, MD. Oklahoma State University, Stillwater, OK. 2016.
- Member of the South-Central Sun Grant Center Oversight Team for the 2016 USDA-NIFA funding opportunity. 2016.
- Member of review panels for the 2016 US Department of the Interior - Bureau of Land Management-Joint Fire Science Program (CFDA No. 15.232).

- Member of review panels for the US Department of Energy and the US Department of Agriculture joint solicitation for Biomass Research and Development Initiative. 2010 - 2012.
- Member of review panels for the American Recovery and Reinvestment Act-US Department of Energy Bioenergy Initiative of 2009.
- Member of the technical committee on Water and Energy of the Arab Science and Technology Foundation. 2008.
- Member of the review panel for FIA-Forest Science Program Business Plan 2007-08, the Ministry of Forests and Range, Provence of British Columbia, Canada.

Conferences and Symposiums

- Member of the Organizing Committee for the National Workshop: Food Energy Water Nexus Workshop on Integrated Science, Engineering, and Policy: A Multi Stakeholder Dialogue. January 26 -27, 2017, College Station Texas.
- Organizer of the symposium titled: Coastal Watershed Management: Issues and Potential Solutions. The 17th Annual Hawaii Conservation Conference, July 28-30, 2009, Honolulu, HI.
- Member of the 2008 Hawaii Water Quality Conference Organizing committee.
- Moderator for Hawaii Water Quality Conference. Honolulu, Hawaii, March 24 and 25 2008.
- Chairperson of the water session at the Arab Technology and Science Foundation, Fez Morocco, October 26-30, 2008.
- Organizer of the short course: Hands-on HYDRUS Workshop of Water Flow and Contaminant Transport in the Vadose Zone. M.T. van Genuchten and J. Simunek, University of Hawaii-Manoa, November 12-13 2007.
- Chair of the organizing committee of the Soil Moisture Sensing Technology Conference: Current and future research directions in soil moisture sensing. Honolulu, HI March 19-21 2007.
- Organizer of the Short course: PC-based Modeling of Water Flow and Contaminant Transport in the Vadose Zone. M.T. van Genuchten and J. Simunek. University of Hawaii-Manoa- Honolulu, HI June 30 – July 1 2005.
- Member of the organizing committee for the WirelessCom 2005 meeting, 11-13 June 2005, Maui Sheraton Hotel, Maui, Hawaii.
- Co-Chairman of the session: Quantifying the effect of land use changes on watershed hydrology: Experimental and/or Numerical Approach**.** The 2005 Summer Specialty Conference, the American Water Resources Association, June 27-29 2005, Honolulu, Hawaii.
- Co-Organizer of the Short course: Applied Modeling of Water Flow and Contaminant Transport in Soils and Groundwater Workshop. M.T. van Genuchten and J. Simunek. University of Hawaii-Manoa- Honolulu, HI Dec. 15-16 2003.
- Co-Organizer of the workshop: AnnAGNPS Training Workshop, University of Hawaii-Manoa, Honolulu, HI May 24-28, 2004.
- Session co-convener: Surface subsurface hydrological responses to land cover and land use West Pacific Geophysical Union Meeting. Honolulu, HI August 16-20, 2004.
- Co-Organizer of: The First International Symposium on Soil Water Measurement Using Capacitance and Impedance, USDA-ARS Beltsville Agricultural Research, Beltsville, MD. November 5-7 2002.

Teaching

- I taught graduate and undergraduate courses at national and international universities including: i) Prairie View A&M University ii) The University of Hawaii-Manoa, Hawaii; iii) Keiser University-Lakeland Campus, Florida; iv) Warner Southern College, Lake Wales, FL; and v) the Union Institute & University, Cincinnati, OH.

- I developed six new courses in watershed hydrology and natural resources at the University of Hawaii-Manoa.
- I also gave lectures to several classes at Prairie View A&M University, the University of Hawaii-Manoa and nationally and internationally; e.g.,
    - Purdue University, Indiana
    - Texas A&M University
    - National College of Engineering, University of Tunis, Tunisia
    - The University of Twente (ITS), the Netherlands
    - El-Mouhamadia School of Engineering, Rabat, Morocco
    - Institute of Agronomy, Chatt Mariam Tunisia.

Outstanding Teaching Recognition

The University of Hawaii-Manoa's Center for teaching excellence invited me to join the center as an affiliated faculty in recognition of my outstanding teaching performance based on their mid-term course evaluations.

Hosting Visiting Professors

Hosted 7 visiting university professors for different sabbatical/visiting periods from Suleyman Demirel Yıldız Technical Universities, Turkey. Savannah State University, the University of Twente, the Netherlands, the Institute of Higher Education, ISET-Sidi Bouzid, Tunisia; and the USDA-ARS Subtropical Horticulture Research Station, Miami, Florida.

Advising Post-Doctoral Fellows and Doctoral and Masters Students

- Supervised 7 post-doctoral scholars who are now successful professors and professionals working across the globe.
- 17 Doctoral and Masters graduate students from US and International institutions.
- Served on graduate committee of 23 Doctoral and Masters Students.

External Member of Doctoral Degree Committees

- Haroon Shahzad. University of Agriculture, Faisalabad, Pakistan. Effect of Organic Amendments at Optimum Irrigation Level on Maize Yield, Soil Carbon Dynamics and Soil Physical Health. 2018.
- Muhammad Adeel Ahmad Soil health and Chickpea yield management through application of Rhizobacteria and Organo-mineral fertilizer. 1549-dagr-08. GOMAL UNIVERSITY DERA ISMAIL KHAN PAKISTAN

Language Skills

- **Arabic:** Native Speaker
- **French**: Fluent
- **English**: Fluent

Extension and Outreach Program

Extension and outreach activities have been a major component of my academic activities at all three land grant universities I worked at. I participated with my students and staff in several outreach activities within and outside the campuses. My academic funding has been supporting extension activities. I

participated in open houses, field demonstrations, and I gave workshops, especially on irrigation and water management.

Research Grants

Pending

- David Mulla **(PI)**, **Fares (Co-PI)**. Farm of Tomorrow: Satellite Data for Smarter Farming Decisions. **NASA. 2022-2027. $20,000,000.**
- Binayak Mohanty (PI), **Fares (Co-PI)**. NSF: AI Institute: Multiscale Multiphysics Guided AI for Climate-Smart Agriculture. **2023-2028. $20,000,000.**
- Bayabil H. (PI), **Fares (Co-PI).** Developing novel and sustainable multi-pronged land management practices that enhance carbon sequestration and reduce greenhouse gas emissions from vegetable production systems. USDA-NIFA. **2022 – 2025. $ 5,000,000.**
- Texas Climate-Smart Initiative. **Fares (Co-PI)** USDA-NRCS 2022 – 2027. **S1,998,020**
- Jay Banner UT-Austin, **A. Fares Co-PI.** NSF-INCLUDES: WATE^{3}R - Water Alliance for Training and Engaging in Environment and Equity for Resilience. **($8,432,804; PV- $818,430). 2022-2026**
- Banner J, J Nielsen-Gammon, J Benavides, K Olofsson, K Hayhoe, D Niyogi, D Tremaine, K Wagner, K Kloesel, V Uddameri, V Casado Perez, Y Gao, **A Fares,** N Colston, N Debbage. 2021. SRS RN: Challenges to and Opportunities for Societal Drought Resilience in a Rapidly Developing, Semi-arid Urban Corridor through Texas and Oklahoma. 2021-2022 (**$150,000**).
- Mohtar, R., A Fares. Safety Assessment of Aquatic Food System in Kafr El-Sheikh Governorate and East Port Said. U.S.-Egypt S&T Joint Fund. 2022-2024 (**$400,000**).

Funded

- **Fares A**, A. Ahmed, R. Awal, R. L. Ray, K. Henry, M. Chouikha. AI-based Program for Advancing Research, Education, and Extension Activities in Precision Agriculture at PVAMU. **$750,000.**
- Ziaul H., Y. Xu, P. Biney, J. Zhou, **A. Fares**, P. Ampim. Research on High Pressure Combustion in Microgravity. NASA-MUREP Institutional Research Opportunity. **$2,000,000**. 2022-2024
- **Fares, A**, R. Awal, A. Ahmad, R. Draw-Hood, R.L. Ray, R. Mohtar, K. Dooley, J Moore, P. Ampim. 2021. GetAgSmart: Building Capacity in Smart Agricultural Technologies for Underserved Communities. NIFA/AFRI EWD. 2021-2024. (**$750,000**).
- **Fares, A.** R. Awal, R. Ray, A El Hassen. 2022. Navasota River Project, Texas A&M University System (Lead: Texas A&M University at Galveston) (**PI**) **$131,681. 2022**
- Envisioning 2050 in the Southeast: AI-driven Innovations in Agriculture, Conference Proposal USDA- NIFA (**PI: B. Ortiz**, Auburn University) (**A. Fares Collaborator**) ($50,000). 2021-2022.
- **Fares, A.** Application of COMET-Farm to Estimate On-farm Carbon and Greenhouse Gas Emissions Across Rio Grande Valley, Texas, Faculty RISE - UNDERGRADUATE RESEARCH Grant Program (**PI**) ($5,000). 2021-2022
- Crop Growth, Air, Soil and Water Quality, Yield, and Economic Benefits of Sweet Corn in Response to Organic Amendment Types and Rates, TAMU Experimental Station (**Co-PI**) ($57,190) 2021-2022.
- Thompson, A, R Mohtar. AccelNet-Design: Soil and land management for food and water security and climate change adaptation and mitigation. **$249,960. 2022-2024.** (**A. Fares Collaborator**)
- Ziaul H., Y. Xu, P. Biney, J. Zhou, **A. Fares**, P. Ampim. Research on High Pressure Combustion in Microgravity. NASA-MUREP Institutional Research Opportunity. **$2,999,568**. 2019-2022
- Awal R. (PI) **A. Fares.** 2021. Integrated approach to develop, test, and disseminate optimum water and nitrogen practices for a sustainable environment in a changing climate, Texas A&M Experimental Station (**Co-PI**) (**$54,331**). **2020-2021**.
- Awal R. (PI), **A. Fares.** 2019. Management of Agriculture, Natural Resources, and Environment using Innovative Approaches, NIFA/Evans Allen ($1,555,764)

- Ray, R., **A. Fares**, N. Daniels, P. Ampim, R. Awal, S. Woldesenbet. An Integrated Approach to Study and Disseminate the Impact of Climate Change on Agriculture and Water Quality. NIFA/1890/CBG. (**$595,751**).
- Jantrania, A., **A. Fares**, P. Smith, T. Gentry, R. Awal, and R. Gerlich. Program for Undergraduate Students in Water Quality. USDA Undergraduate Research and Extension Experiential Learning Fellowships. 2019-2023. NIFA **$ 475,591**.
- Awal, R., **A. Fares**, R. Ray, R., Griffin. Integrated approach to develop, test, and disseminate optimum water and nitrogen practices for a sustainable environment in a changing climate, Texas A&M Experimental Station (PI) **$114,380**. 2018-2020.
- Charles J Werth (PI), **A. Fares** (Co-PI). NRT-INFEWS: Graduate education: Reducing Energy Barriers For Novel Water. NSF-INFEWS 2018-2023. **$3,020,324.**
- Myers, D., **A. Fares,** G.R. Newton, G. Osuji, R. Awal, and A. Parks**.** Food Security, Agriculture, Climate and Environmental Sciences Center for Research. Texas A&M University System Chancellor Research Initiative. 20018-2023. **($5,300,000).**
- Awal, R., **A. Fares**, R.L. Ray, and N. Daniels. 2017. Real-time site specific irrigation scheduling tools for agricultural crops and urban landscape in Texas using mobile web app. NIFA. **($591,622).**
- **Fares, A.** 2016. Soil Calibration of Sentek Drill & Drop Probe. Sentek, Pty, Ltd. South Australia. **$15,459.**
- Jantrania, A., **A. Fares**, P. Smith, T. Gentry, C. Munster, and R. Gerlich. 2015. High Impact Hands-On Learning Program for Undergraduate Students in Water Quality. Submitted to: USDA Undergraduate Research and Extension Experiential Learning Fellowships. **($275,760)**.
- Awal, R., **A. Fares**, and R.L. Ray. 2016. Study on climate change impacts on agriculture (irrigation demand and crop yields) and evaluation of adaptation measures in Texas. PVAMU/ 2016 Research Mini-grant Program. **($20,000).**
- Ray, R.L., **A. Fares**, and R. Awal. 2016. An experimental approach to study water quality and water conservation in an agricultural watershed. PVAMU/ 2016 Research Mini-grant Program. **($20,000).**
- **Fares, A.,** R. Awal, P. Ampim, R. Ray, and B. Lawton. (2014-2015). Integrated Approach to Develop, Test, and Disseminate Optimum Water and Nitrogen Practices for a Sustainable Environment in a Changing Climate. Texas Experimental Station (**$114,380**).
- **Fares, A.**, R. Awal, P. Ampim, R. Ray. Scaling Micro-irrigation Technologies to Address the Global Water Challenge, PVAMU. Evans-Allen-National Institute Of Food and Agriculture -USDA. 2016-2019 **($100,000 yearly**).
- **Fares, A.**, Richards Griffin, Ripendra Awal, Ram Ray, Alton Johnson, Annette James, and Paul Johnson. Impact of Anthropogenic and Natural Changes on Natural Resources and the Environment. 2014-2017. Evans-Allen-National Institute Of Food and Agriculture -USDA. 2014-2019 **($321,800**).
- **Fares, A.** 2012. Water Management Software to Estimate Crop Irrigation Requirements for Consumptive Use Permitting In Hawaii: Version 2.0. Commission on Water Resource Management, Hawaii Department of Land and Natural Resources. **(Project Budget $55,000).**
- **Fares, A. 2012.** Potential impacts of alien invasive species on Hydrologic processes, carbon cycle, and soil erosion in the Pacific Islands ecosystem. USDA National Institute of Food and Agriculture, McIntire-Stennis. 2012-2013; **$25,000).**
- **Fares, A.** and H.R. Valenzuela. 2012. Impact of Potential Climate Changes on Coastal Areas Water Resources. CTAHR-Supplemental Funding (2011-2013; **$50,000**).
- Fares, A., H., Valenzuela, N. Nagata, S. Fares, and S. Waters. 2011. Evaluation of Two Decision Support Systems (IManSys and IWREDSS) for Agricultural and Landscape Settings in Hawaii and Maricopa County, Arizona. USDA-Hatch. (2011-2013).
- **Fares, A.**, Valenzuela, H.R., and Abbas, F. Irrigation and Nitrogen Best Management Practices for Sustainable Use of Natural Resources and Environmental Protection. US-EPA Regional Pollution Prevention Program **(2011-2012; $75,000).**

- **Fares, A.,** R. L., Bowen, H. Valenzuela, and F. Abbas. Environmentally Accepted and Economically Viable Nitrogen and Water Best Management Practices for Tropical Conditions of Hawaii. USDA- T-STAR. **(Project Budget $ 119,948), (2009-2011).**
- **Fares,** A., R. Ogoshi, A. El-kadi and C, I, Evensen. 2009. Evaluate Hawaii's Water Resources and Their Potential to Support Production of Biofuels as a Significant Renewable Energy Resource. Hawaii Department of Business, Economic Development, and Tourism. **($55,000) (2009).** http://www.hnei.hawaii.edu/sites/dev.hnei.hawaii.edu/files/Hawaii_Bioenergy_Master_Plan_FINAL_1209_1.pdf
- **Fares, A.**, Evensen, C., Chan-Halbrendt, K., and El-Kadi, A. 2008. Design and Evaluation of Precision Vegetative Buffer Strips as Sustainable Conservation Management Practice to control Non-Point Source Pollution in Hawaiian Watersheds. USDA-NWQI **($475,000), (2008-2011).**
- **Fares, A.**, P. Sh. Chu, J. Michaud and M. Rosener. 2008. Evaluation of Flash Flood Prediction Models for Small Watersheds in Tropical Islands. NWS-NOAA, **($374,997), (2008-2011).**
- El-Swaify S. A., C. Chan-Halbrendt, E. Jarjees, **A. Fares** and S. Zaghloul. 2006. Hawaii-Iraq Partnership for Revitalizing Kurdistan Agricultural Higher Education and Development. Kurdistan Iraq Regional Government, Iraq. **(Project Budget $6.2 Million), (2006 – 2010).**
- **Fares, A.,** Valenzuela, H, and Bowen, R. Mulching Practice to Manage Pests and Diseases and to Optimize Soil Water and Nutrients in Hawaii Organic Agriculture. USDA-Hatch **$5,000 (2008-2011).**
- **Fares, A.,** and Evensen, C. 2008. The Impact of Alien Invasive Species on Local Hydrology of Mākaha Valley. USDA-Hatch **$30,000 (2008 Budget), (2008-2011).**
- El-Kadi, J. Becker, S. Martel and **A. Fares**. 2007. Estimating hydraulic properties for volcanic island aquifers using wave setup. USGS WRIPP **($30,400), (2007-2008).**
- **Fares, A.** 2006. Water Management Software to Estimate Crop Irrigation Requirements for Consumptive Use Permitting In Hawaii. Commission on Water Resource Management, Hawaii Department of Land and Natural Resources. **(Project Budget $93,500), (2006 –2007).**
- **Fares, A.** and C. Evensen. 2006. Watershed based land use management: an integrated field and modeling approach. USDA McIntire-Stennis. (**Project Budget $45,000), (2006-2009).**
- **Fares A.** 2005. NSPECT: Evaluation of Its Performance in Modeling the Effect of Land Based Management Practices on Costal Areas. NOAA- Coastal Services Center- PSC. **$20,000, 2005–2006.**
- **Fares A.** 2005. Best irrigation Practices to Optimize Crop Production of Hawaii Diversified Agriculture. USDA-HATCH-145H. **(Project Budget $60,409), (2005 – 2008).**
- **Fares A.** 2005. Reducing Barriers to the Adoption of Microirrigation. USDA-HATCH-Regional Project. **(Project Budget $49,800), (2005 –2009).**
- **Fares A.** 2005. Watershed-based Land Use Management: An Integrated Field and Modeling Approach. USDA-McIntire-Stennis. **(Project Budget $35,000), (2005 – 2008).**
- **Fares A**, C. Ferguson and T., Miura. 2005. Hawaii Agricultural Water Use Study. Hawaii Department of Agriculture and Hawaii Commission on Water Resource Management. **(Project Budget $417,000), (2005 –2008).**
- **Fares A**. and D Jenkins. 2005. Developing and Improving Tension Based and Capacitance Based Soil Moisture Sensors as Water Management and Irrigation Scheduling Tools. USDA-T-STAR. **($146,010), (2005-2008).**
- **Fares, A.** 2004. Modeling current and alternative best management practices on Hanalei watershed using AnnAGNPS. USDS-NRCS. **($ 35,000).**
- **Fares, A.** 2003. Evaluation Performance of Best Management Practices on Stream bank Stability and Stream Water Quality. USDA-NRCS. **($ 15,000), (2003).**
- **Fares, A.**, and A. I. El-Kadi.2004. Field and Numerical Evaluation of Best Management Practices to Protect Water Resources at the Hanalei Watershed. USDA-T-STAR. **($159,360), (2004-2007).**
- **Fares, A.,** J. Deenik and T. Miura. 2004. Determining the impacts of water pumping and alien species invasion on stream flow for a sustainable water resource management in Makaha Valley,

Hawaii. USDA-T-STAR. **($158,773), (2004-2007).**

- **Fares, A.,** C.I. Evensen. S.A. El-Swaify and A. I. El Kadi. Controlling Water contaminants at the Source by Integrated Technologies, Kaiaka-Waialua Watershed, North-Shores. Hawaii Dept. of Health, Water Quality Branch 319 Projects. **(Project Budget $153,000, 2003- 2006).**
- **Fares, A.** and H. Valenzuela. 2003. Best irrigation practices to optimize crop production of Hawaii diversified agriculture and minimize negative environmental impact of excess irrigation. USDA-Hacth Project. **(Project Budget $25,000, 2003-06).**
- **Fares, A.,** L.R. Parsons, T.A. Wheaton and K.T. Morgan. 2001. Evaluating low cost irrigation management devices to reduce water use. Southwest Florida Water management District. **(Project Budget $85,000). (2001-2003).**
- Walker, M., Atwill, R., Tate, K., Sweeney, M., **Fares A.**, Evensen, C.I. 2003. Regional Approaches to Water Protection from Non-point Sources of Microbial Contaminants. USDA-NWQI. **(Project Budget $190,909), (2003-2004).**
- El-Swaify S. A., C. Chan-Halbrendt, E. Jarjees, **A. Fares** and S. Zaghloul. 2003. Hawaii-Iraq Partnership for Revitalizing Agricultural Higher Education and Development (Agri-Head). USAID. **(Project Budget $3,770,724), (2003 – 2005).**

Publications

Books

- **Fares, A. (Editor). Climate Change and Extreme Events.** Elsevier Limited, Cambridge, UK. ***February 2021***. **ISBN U1104201903351,** https://www.elsevier.com/books/climate-change-and-extreme-events/fares/978-0-12-822700-8
- **Fares, A. (Editor). Advances in Water Security** Book Series**: Springer International Publishing, New York, USA.** www.springer.com/series/13753
    a. Book 1: Fares, A., 2016. **Emerging Issues in Groundwater Resources** (www.springer.com/us/book/9783319320069). ISBN 978-3-319-32008-3
    b. Book 2: Fares, A. and S. Singh. 2020. **Arsenic Water Resources Contamination.** ISBN 978-3-030-21258-2 www.springer.com/us/book/9783030212575
- **Fares,** A. and A. El-Kadi. 2008 **(Editors)**. Coastal Watershed Management. Progress in Water Resources Series, WIT Press, UK, May 2008. 438 pp. ISBN: 978-1-84564-091-0.

Book Chapters

- **Fares, A**, H Habibi, R Awal. 2020. Extreme Events and Climate Change: A Multi-disciplinary Approach. In A. Fares (ed.), 2020 Climate Change and Extreme Events. Elsevier Limited, Cambridge, UK. ISBN 9780128227008.
- Awal, R., **A. Fares** 2019. Potential Impact of Climate Change on Irrigation Water Requirements for Some Major Crops in the Northern High Plains of Texas. In: O. Wendroth, R.J. Lascano, L. Ma, editors, *Bridging Among Disciplines by Synthesizing Soil and Plant Processes*, *Adv. Agric. Syst. Model. 8*. ASA, CSSA, and SSSA, Madison, WI. doi:10.2134/advagricsystmodel8.2017.0014
- Safeeq, M and **A. Fares.** 2016. Surface and Ground Water Interactions in Relation to Natural and Anthropogenic Landuse Changes. In A. Fares (ed.), **Advances in Water Security: Emerging Issues in Groundwater Resources.** Springer International Publishing, New-York, USA.
- Awal, R. and **A. Fares**. 2016. Hydraulic Fracturing and Groundwater Contamination. In A. Fares (ed.), **Advances in Water Security: Emerging Issues in Groundwater Resources.** Springer International Publishing, New-York, USA. **ISBN 978-3-319-32008-3.**
- **Fares, A.** 2010. Watershed Management for Sustainability in Tropical Watersheds: An Integrated Hydrologic Modeling Approach. *In* J. A. Roumasset, K. M. Burnett, and A.M. Balisacan (eds.), Sustainability Science for Watershed Landscapes. ISEAS Publishing, Singapore and SEARCAL, Los Banos, Philippines. ISBN: 978-981-4279-60-4. **(Invited).**

- **Fares**, **A.,** M. Safeeq, A. Kimoto, and A. Dogan. 2010. Use of Buffers to Reduce Nitrogen Transport to Water Bodies. In J. Delgado and R. Follett (Eds). Advances in Nitrogen Management for Water Quality. Soil and Water Conservation Society. ISBN 978-0-9769432-0-4.
- **Fares**, **A.** and V.O. Polyakov. 2006. Advances in Crop Water Management Using Capacitive Water Sensors. In D. Sparks (ed.) pp. 43-77. Advances in Agronomy. Vol.90, Academic Press, Amsterdam, the Netherlands. **(Invited).**
- **Fares, A.** 2008. Overview of the Hydrological modeling of coastal watershed in small tropical islands. In A. Fares and A.I. Elkadi (ed.) Coastal Watershed Management, WIT Press, WIT Press, Southampton, UK May 2008. 438 pp, ISBN: 978-1-84564-091-0.
- Dogan, A., **A. Fares** and M. Safeeq. 2007. Effects of Land Use Changes and Groundwater Pumping On Salt Water Intrusion in Coastal Watersheds. In A. Fares and A.I. Elkadi (ed.) Coastal Watershed Management, WIT Press, Southampton, UK, May 2008. 438 pp. ISBN: 978-1-84564-091-0.
- Kimoto A., **Fares**, **A.** and V. Polyakov. 2008. Sediment Tracing Techniques And Their Application To Coastal Watersheds In A. Fares and A.I. Elkadi (ed.) Coastal Watershed Management, WIT Press, Southampton, UK, May 2008. 438 pp. ISBN: 978-1-84564-091-0.
- Alva, A.K., S. Paramasivam, **A. Fares**, A.J. Delgado, D. Mattos, Jr. and K. Sajwan. 2006. Nitrogen and irrigation management practices to improve nitrogen uptake efficiency and minimize leaching losses. *In* A. Basra and S. Goyal (ed.) Enhancing the Efficiency of Nitrogen Utilization in Crops. Haworth's Food Products Press, Binghamton, New York. 479 Pp. simultaneously co-published in Journal of Crop Improvement. 15(2).
- Delgado, A.J, A.K., Alva, **A. Fares**, S. Paramasivam, D. Mattos, Jr. and K. Sajwan. 2006. Numerical modeling to study the fate of nitrogen in cropping systems and best management case studies. *In* A. Basra and S. Goyal (ed.) Enhancing the Efficiency of Nitrogen Utilization in Crops. Haworth's Food Products Press, Binghamton, New York. 479 Pp. simultaneously co-published in Journal of Crop Improvement. 15(2).
- **Fares**, **A.**, A.K., Alva, S. Paramasivam and P. Nkedi-Kizza. 1997. Soil moisture monitoring techniques for optimizing citrus irrigation. Trends in Soil Science. Vol. 2: 153-180. Council of Scientific Integration, Trivandrum **(Invited).**
- Paramasivam, S., A.K., Alva, and A. **Fares**. 1997. Vadose zone Soil solution sampling techniques to investigate transport in soils. Trends in Soil Science. Vol 2: 115-136. Council of Scientific Integration, Trivandrum **(Invited).**
- **Fares**, **A.**, R.S. Mansell, and S.A. Bloom 1996. Hydrological/environmental impacts of tree harvesting within flatwood pine forest upon local wetlands. *In* M. Taniguchi (ed.) Subsurface Hydrological Responses to Land Cover and Land Use Changes. Kluwer Academic Publishers Co. **(Invited).**

Refereed Publications

A. Published:

- Veettil, A V, **A. Fares** and R. Awal, 2022. Winter storm Uri and temporary drought relief in the western climate divisions of Texas, Science of the Total Environment https://doi.org/10.1016/j.scitotenv.2022.155336
- Cooper, C. J.P.Troutman, R. Awal, H. Habibi and **A. Fares. 2022**. Climate change-induced variations in blue and green water usage in U.S. urban agriculture. Journal of Cleaner Production. Volume 348, 10 May 2022, 131326. https://doi.org/10.1016/j.jclepro.2022.131326
- Ahmed AA, S Al Omari, R Awal, A Fares, M Chouikha. 2021. A distributed system for supporting smart irrigation using Internet of Things technology. Engineering Reports 3 (7).

- Habibi, H., Awal, R., **Fares, A.,** and M. Temimi: Performance of Remote Sensing Technologies in Monitoring Precipitation under Extreme Rainfall Events in Harris County, Texas, *Journal of Hydrology*. Volume 598, July 2021, 126385.
- Awal, R., Elhassan, A., Abbas, F., **Fares, A.**, Farooque, A.A., Bayabil, H.K., Ray, R.L., and S. Woldesenbet. 2021. Patterns of nutrient dynamics in the root zone of collard greens grown under different organic amendment types and rates, **Sustainability 13 (12), 6857**.
- Khan AG, M Imran, Anwar-ul-Hassan1, **A Fares**, J Šimůnek, T ul-Haq, AA Alsahli, MN Alyemeni and S Ali. 2021. Performance of Spring and Summer-Sown Maize under Different Water Conservation Irrigation Strategies in Pakistan. **Sustainability 13 (5), 2757**.
- Habibi, H., Awal, R., **Fares, A.** 2020. COVID-19 and the Improvement of the Global Air Quality: The Bright Side of a Pandemic. Atmosphere 11 (12), 1279-1302.
- Ahmed, A, S Al Omari, R Awal, **A Fares**, M Chouikha. 2020. A Distributed System for Supporting Smart Irrigation using IoT Technology. Engineering Reports 2020, 1–13.
- Ray, R.L., Griffin, R.W., **Fares, A**., Elhassan, A., Awal, R., Woldesenbet, S., and Risch, E.: Soil CO_2 emissions from an experimental research farm: Effects of organic amendments, temperature, and rainfall, *Scientific Reports*. 10 (1), 1-14.
- Awal R, H Habibi, **A Fares**, and S Deb. 2020. Estimating reference crop evapotranspiration under limited climate data in West Texas. Journal of Hydrology: Regional Studies 28, 100677.
- Bayabil, H.K., **Fares, A**., Sharif, H.O., Ghebreyesus, D.T., and Moreno, H.A.. 2019. Effects of Spatial and Temporal Data Aggregation on the Performance of the Multi-Radar Multi-Sensor System. *Journal of the American Water Resources Association* 54 (4): 1492– 1504.
- Awal, R., M. Safeeq, F. Abbas, S. Fares, S. Deb, A. Ahmad and **A. Fares.** 2019. Soil Physical Properties Spatial Variability under Long-Term No-Tillage Corn. Agronomy 2019, 9(11), 750.
- Awal, R., **Fares, A**., and Habibi, H.: Optimum Turf Grass Irrigation Requirements and Corresponding Water-Energy-CO_2 Nexus across Harris County, Texas, *Sustainability* 2019, 11(5), 1440; (https://doi.org/10.3390/su11051440).
- Awal, R., Safeeq, M., Abbas, F., Fares, S., Deb, S.K., Ahmad, and **A. Fares**. Soil Physical Properties Spatial Variability under Long-term No-Tillage Corn, *Agronomy* 2019, 9(11), 750; https://doi.org/10.3390/agronomy9110750.
- Kebrom, T.H., S. Woldesenbet, H. Bayabil, M. Garcia, M. Gao, P. Ampim, R. Awal, and **A. Fares.** 2019. Evaluation of phytotoxicity of three organic amendments to collard greens using the seed germination bioassay. Environmental Science and Pollution Research. 26, pp 1–9.
- Ripendra Awal 1, **A. Fares**, and H. Bayabil 2018. Assessing Potential Climate Change Impacts on Irrigation Requirements of Major Crops in the Brazos Headwaters Basin, Texas. Water 2018, 10(11).
- **Fares A.**, H.K. Bayabil, M. Zekri, D.de Mattos, and R. Awal. 2017. Impacts of Climate Change on Citrus Water Requirements across Major Citrus Producing Areas in the World. Journal of Water and Climate Change. Doi: 10.2166/wcc.2017.182
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B. Submitted/In Review/Preparation

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- Awal, R., Habibi, H., and **Fares, A**.: Calibration and Evaluation of Empirical Methods to Estimate Reference Crop Evapotranspiration in West Texas.
- Abdelkader, M., M. Temimi, A. Colliander, M. Cosh, V. Kelly, T. Lakhankar, and **A. Fares.** Assessing the spatiotemporal variability of SMAP soil moisture accuracy in a deciduous forest region. Remote Sensing.

❖ Proceeding Publications

- Katherine Villalta, S Davila, A Veettil, R Awal, and **A Fares**. Estimation of On-Farm Carbon and Greenhouse Gas Emissions across spatially and climatically variable locations in Texas. Youth water congress. April 2022.
- Awal, R., **Fares, A.,** and Habibi, H.: Irrigation Scheduling Tools: IrrigWise and IrrigWise_PRISM for Agricultural Crops and Urban Landscapes, *6th Decennial National Irrigation Symposium*, December 6-8, 2021, San Diego, California 2020-050. (doi:10.13031/irrig.2020-050)
- Awal, R., El Hassan, A., **Fares, A.**, Woldesenbet, S., Ray, R., Bayabil, B., Ampim, P., Risch, E., Griffin, R., and Habibi, H.: Soil Moisture and Nutrient Dynamics in Root Zone of Collard Greens Produced in Different Organic Amendments and Rates, 2*018 Irrigation Show & Education Conference*, Dec. 3-7, 2018, Long Beach, CA.
- Awal, R., **Fares, A.**, Cherif, Y., Mohammad, M., Ray, R.L. and Johnson, A.B.: Potential Impact of Climate Change on Some Crops' Irrigation Water Requirements at the Brazos Headwaters Basin, Texas, 14th National Watershed Conference, May 17-20, 2015, Fort Worth, TX.
- **Fares, A**. and Awal, R.: Analysis of Potential Future Climate Data for the Brazos Headwaters Basin, TX, 14th National Watershed Conference, May 17-20, 2015, Fort Worth, TX.
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- **Fares, A.**, L.R. Parsons, J., Simunek, T.A Wheaton and K.T. Morgan. Simulated Drip Irrigation With Different Soil Types. Proceedings of the Florida Horticultural Science Society Annual Meeting. Hutchinson Island, FL June 17-19, 2001.
- **Fares, A.**, A.K. Alva, T.O. Obreza and M. Zekri. 2000. Using modern irrigation scheduling techniques to keep soil-applied chemicals in the root zone. Proceedings of the Ninth Congress of Inter. Soc. of Cit. Orlando, FL. December 3-6 2000. (Invited)
- Buss, P., **A. Fares** and M. Dalton. 2000. Diviner 2000® A New Portable Hand-Held Depth Recognizing Soil Moisture Capacitance Probe. 2000. In Proc. International Symposium on Nuclear Techniques in Integrated Plant Nutrient, Water and Soil Management. Vienna, Austria, 16-20 October 2000. International Atomic Energy, Vienna, Austria.
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Extension Bulletins

- **Fares, A**. 2009. Use of Soil Water Content Monitoring Sensors. UHM-CTAHR, Natural Resources and Environmental Management Dept. Ext. Pub. EN.
- **Fares, A**. and F. Abbas. 2009. Injection Rates and Components of a Fertigation System. UHM-CTAHR, Natural Resources and Environmental Management Dept. Ext. Pub. EN4.
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- **Fares, A.** S.K. Deb, and M. H. Ryder. 2009. Use of Filter Strips for Improved Surface Water Quality. UHM-CTAHR, Natural Resources and Environmental Management Dept. Ext. Pub. SCM24.
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1. Keynote speaker

- **Fares A. 2021**. Carbon Sequestration from the Ground up. **Council of State Governments East State Legislative Climate Alliance** Carbon Sequestration from the Ground up Conference. April 24 2021. **Victual Conference**.
- **Fares, A. 2021**. Climate Change and Extreme Events. Agriculture and Water: Management, Education and Business perspectives Organized by **River Water User Association (India) and International River Basin Foundation**. **March 21 2021.**
- **Fares A.**, H.K. Bayabil, M. Zekri, and R. Awal. 2016. Impacts of Climate Change on Citrus Water Requirements across Major Citrus Producing Areas in the World. International Citrus Congress. 18 - 23, 2016 Foz Do Iguaçu, PR – Brazil.
- **Fares, A.** 2015. The Water- Energy-Food Nexus for Small Islands: Challenges and Opportunities. The Second Conference on Water Resource Sustainability Issues on Tropical Islands, Honolulu, Hawaii. December 1-3, 2015.
- **Fares, A**. Africa Addresses Climate Change 2015. Voices of Africa: Emerging Opportunities in the 21st Century. Frist Annual Conference on Africa at Middlebury Institute of International Studies at Monterey, CA 93940. April 25, 2015.
- **Fares, A.** 2008. Efficient Water Management Based On Real-Time Soil Water Monitoring. Water Session of the Fifth Conference on Scientific Research Outlook & Technology Development in the Arab World (SRO5): Path to Innovation: Transforming Research into Value. Fez, Morocco, October 26-30 2008.

2. Invited Presentations

- **Fares, A**. COVID 19 and Climate Change: What Can We Learn? ECOP eXtension Climate Fellows Learning for Leaders; **ECOP-APLU**. Virtual June 12 2020.
- **Fares, A**. Nexus between Food, Energy, and Water (FEW) in relation to Bold Transformation 2025. **The CGA-APRM Second Annual Pan-African Development Conference** "*Creating the Africa, We Want; Creating the Sixth Region We Want*". Delaware State University. Dover, DE. Nov 12-14 2020.
- **Fares, A.** GIS-IManSys, a User-Friendly Computer Based Water Management Software Package. Proceedings of the 5th IEEE-GCC Conference, Kuwait City, Kuwait March 17-19, 2009.
- **Fares, A.** 2008. Overview of the Surface Hydrology of Hawai'i Watersheds. *In* Fisher et al. (editors) Ecology, Restoration, and Management of Hawaiian Stream and Riparian Systems Workshop; Windward Community College, Honolulu, Hawai'i, 20-22 May 2008.
- **Fares, A.** 2008. Efficiency of riparian buffers to impact sediment and pollutants transport in Hawaiian watersheds. *In* Fisher et al. (editors) Ecology, Restoration, and Management of Hawaiian Stream and Riparian Systems Workshop; Windward Community College, Honolulu, Hawai'i, 20-22 May 2008.

- **Fares, A.** 2008. Potential and Performance of Riparian Buffers as BMPs in Hawaiian Watersheds. Hawaii Water Quality Annual Conference, Honolulu, HI, March 24-25 2008.
- **Fares, A.** 2007. Soil water sensor performance and software development. W-1128 Annual Meeting; Reducing Barriers to Adoption of Microirrigation. Honolulu, HI, October 09-11 2007.
- **Fares, A.** 2007. Watershed Restoration for Flood Management. International Conference on sustainability Science for Watershed Landscapes. East-West Center, University of Hawaii-Manoa, Honolulu, HI. November 13-14 2007.
- **Fares, A.** 2007. Soil Water Monitoring. National College of Engineers. Tunis, Tunisia. December 05 2007.
- **Fares, A.** 2007. Surface water and sediment transport watershed hydrology. National College of Engineers. Tunis, Tunisia. December 12 2007.
- **Fares, A.** 2007. Soil water sensor performance and software development. W-1128 Annual Meeting; Reducing Barriers to Adoption of Microirrigation. Honolulu, HI, October 09-11 2007.
- **Fares, A.** 2007. Watershed Restoration for Flood Management. International Conference on sustainability Science for Watershed Landscapes. East-West Center, University of Hawaii-Manoa, Honolulu, HI. November 13-14 2007.
- **Fares, A. 2007.** Controlling Water contaminants at the Source, Kaiaka-Waialua Watershed. Hawaii Water Quality Annual Conference, Honolulu, HI, March 25-26 2008.
- **Fares, A.** 2006. Cover Crops in Agricultural Lands. Western Chapter International Erosion control Association, Ahupua'a Conference, Honolulu, HI, December 21-15 2006.
- **Fares, A.** 2006. Hanalei Ahupua'a: Ridge to Reef a Modeling Approach. Western Chapter International Erosion control Association, Ahupua'a Conference, Honolulu, HI, December 21-15 2006.
- **Fares, A.** 2006. Soil water sensor performance and software development. W-1128 Annual Meeting; Reducing Barriers to Adoption of Microirrigation. San Antonio, TX, November 01-03 2006.
- **Fares, A.** and D. T. Kimura. 2006. Cutting Your Water and Energy Costs. Hawaiian Agriculture Conference, October 26 2006.
- **Fares, A.** 2006. Water Quality under Deficit Conditions. The first Conference of the Arab Expatriate Scientists was held on April 24-26, 2006 in Doha, Qatar.
- **Fares, A. 2005.** Hydrological Aspects of Hawaiian Watersheds. UH Water Resource Research Center, September 01 2005.
- **Fares, A.**, A.K. Alva, T.O. Obreza and M. Zekri. 2000. Using modern irrigation scheduling techniques to keep soil-applied chemicals in the root zone. The Ninth Congress of Inter. Soc. of Cit. Orlando, FL. December 3-6 2000.
- **Fares, A.** and P. Buss. 2000. EnviroSCAN, a Corner Stone to an Integrated Approach to Evaluate Performance of Existing Effluent Disposal Sites and to Optimize Their Potential. First Winery Environmental Conference, Adelaide, South Australia October 31- November 1 2000.
- Alva, A.K and **A. Fares.** 1998. Soil water measurement as basis to optimize irrigation scheduling: A review. Symposium on Soil Water Measurement at Annual International Conference of the American Society of Horticultural. Abstract of the Annual International Conference of the American Society of Horticultural Science. Charlotte, NC. July.
- **Fares, A.**, and A.K Alva. 1998. EnviroSCAN Capacitance probe: a new technique for citrus, irrigation scheduling, evapotranspiration and water leaching calculation. Certified Crop Advisors' Continuing Education Seminar. Sebring, FL March, 1998.
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Abstracts

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Truth in Testimony Disclosure Form

In accordance with Rule XI, clause 2(g)(5)* of the *Rules of the House of Representatives*, witnesses are asked to disclose the following information. Please complete this form electronically by filling in the provided blanks.

Committee: Agriculture

Subcommittee:

Hearing Date: 06/15/2022

Hearing Title :

"The Role of Climate Research in Supporting Agricultural Resiliency"

Witness Name: Ali Fares

Position/Title: Endowed Professor of Water Security and Water Energy Food Nexus

Witness Type: ○ Governmental ● Non-governmental

Are you representing yourself or an organization? ○ Self ○ Organization

If you are representing an organization, please list what entity or entities you are representing:

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FOR WITNESSES APPEARING IN A NON-GOVERNMENTAL CAPACITY

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

Are you a fiduciary—including, but not limited to, a director, officer, advisor, or resident agent—of any organization or entity that has an interest in the subject matter of the hearing? If so, please list the name of the organization(s) or entities.

A Professor at PVAMU, a member of the 1890 Land Grant Universities

Please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you, the organization(s) you represent, or entities for which you serve as a fiduciary have received in the past thirty-six months from the date of the hearing. Include the source and amount of each grant or contract.

See attached.

Please list any contracts, grants, or payments originating with a foreign government and related to the hearing's subject that you, the organization(s) you represent, or entities for which you serve as a fiduciary have received in the past thirty-six months from the date of the hearing. Include the amount and country of origin of each contract or payment.

none

Please complete the following fields. If necessary, attach additional sheet(s) to provide more information.

☑ I have attached a written statement of proposed testimony.

☑ I have attached my curriculum vitae or biography.

* Rule XI, clause 2(g)(5), of the U.S. House of Representatives provides:

(5)(A) Each committee shall, to the greatest extent practicable, require witnesses who appear before it to submit in advance written statements of proposed testimony and to limit their initial presentations to the committee to brief summaries thereof.

(B) In the case of a witness appearing in a non-governmental capacity, a written statement of proposed testimony shall include— (i) a curriculum vitae; (ii) a disclosure of any Federal grants or contracts, or contracts, grants, or payments originating with a foreign government, received during the past 36 months by the witness or by an entity represented by the witness and related to the subject matter of the hearing; and (iii) a disclosure of whether the witness is a fiduciary (including, but not limited to, a director, officer, advisor, or resident agent) of any organization or entity that has an interest in the subject matter of the hearing.

(C) The disclosure referred to in subdivision (B)(iii) shall include— (i) the amount and source of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) related to the subject matter of the hearing; and (ii) the amount and country of origin of any payment or contract related to the subject matter of the hearing originating with a foreign government.

(D) Such statements, with appropriate redactions to protect the privacy or security of the witness, shall be made publicly available in electronic form 24 hours before the witness appears to the extent practicable, but not later than one day after the witness appears.

Please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you, the organization(s) you represent, or entities for which you serve as a fiduciary have received in the past thirty-six months from the date of the hearing. Include the source and amount of each grant or contract.

- **Fares A**, A. Ahmed, R. Awal, R. L. Ray, K. Henry, M. Chouikha. AI-based Program for Advancing Research, Education, and Extension Activities in Precision Agriculture at PVAMU. USDA-NIFA- 1890 Capacity Building Program. 2022-2025. **$750,000. Principal Investigator**
- **Fares, A**, R. Awal, A. Ahmad, R. Draw-Hood, R.L. Ray, R. Mohtar, K. Dooley, J Moore, P. Ampim. 2021. GetAgSmart: Building Capacity in Smart Agricultural Technologies for Underserved Communities. NIFA/AFRI EWD. 2021-2024. (**$750,000**). **Principal Investigator**
- Thompson, A, R Mohtar. NSF. AccelNet-Design: Soil and land management for food and water security and climate change adaptation and mitigation. **$249,960. 2022-2024.** (**Collaborator**)
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