Gaurav Jha, *Ph.D.*

Assistant Professor-Precision Agriculture

Department of Agronomy

Kansas State University

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EDUCATION

08/11/2016 – 12/11/2020	**Doctor of Philosophy (Ph.D.) in Plant and Environmental Sciences** Concentration: **Soil Science (Proximal Sensing and Geostatistics)** New Mexico State University, USA
07/11/2014 – 08/01/2016	**Masters of Science in Soil Science** Minor-**Soil Water Engineering** and **Agrometeorology** Punjab Agricultural University, India.
08/08/2010 – 06 /29/2014	**Bachelor of Science in Agriculture** Electives-**Soil Science** and **Agronomy** Visva Bharati University, Santiniketan, India

APPOINTMENTS AND RESEARCH EXPERIENCES

01/09/2023 - current	**Assistant Professor-Precision Agriculture** **Department of Agronomy, Kansas State University, Manhattan, KS**
01/31/2022 – 12/31/2022	**Assistant Research Professor-Precision Agriculture** **Department of Agricultural and Technology Education** *College of Agriculture, Montana State University, Bozeman, MT*
11/01/2020 – 12/30/2021	**Postdoctoral Research Fellow** Department of Land, Air and Water Resources, University of California, Davis, CA (with Dr. Mallika Nocco and Dr. Kate Scow)
05/26/2020 – 10/31/2020	**Agronomist** Glorieta Geosciences Inc. (GGI), Santa Fe, NM
08/19/2019 – 05/15/2020	**Graduate Teaching Assistant** Department of Plant and Environmental Sciences New Mexico State University, Las Cruces, NM
08/16/2016 – 08/18/2019	**Graduate Research Assistant** Department of Plant and Environmental Sciences New Mexico State University, Las Cruces, NM

RESEARCH INTERESTS

- *Precision Agriculture*: UAVs, NDVI, Remote Sensing, Thermal Imaging, and Wireless sensor networks
- *Climate Resilient Agriculture*: Agroecosystem and Natural Resource Management
- *Decision Support System*: Aerial Reflectance, Wireless Sensor Network and Telemetry

- *Regenerative Agriculture:* Permaculture, Yield and prescription mapping for vegetable and orchard crops
- *Hydrologic Modeling*: High Resolution Mapping of Evapotranspiration
- *Geostatistics*: Spatiotemporal variability, Variable Rate Irrigation

PUBLICATIONS

Ghatrehsamani, S., **Jha, G.**, Dutta, W., Molaei, F., Nazrul, F., Fortin, M., Bansal, S., Debangshi, U., & Neupane, J. (2023). Artificial Intelligence Tools and Techniques to Combat Herbicide Resistant Weeds—A Review. Sustainability, 15(3), 1843.

Misra, D., Dutta, W., **Jha, G.**, & Ray, P. (2023). Interactions and Regulatory Functions of Phenolics in Soil-Plant-Climate Nexus. Agronomy, 13(2), 280.

Jha, G., Floyid, N., Schmidt, R., Suvočarev, K., Diaz, D. Kisekka, I., Scow, K., & Nocco, M. (2022). Irrigation Decision Support Systems for California's Water (USA). Water–Nutrient–Energy Nexus. *Agronomy* 12, x. *https://doi.org/10.3390/agronomy1828112*

Sihi, D., Dari, B., Kuruvila, A.P., **Jha, G.**, & Basu, K. (2022). Explainable Machine Learning Approach Quantified the Long-term (1981-2015) Impact of Climate and Soil Properties on Yields of Major Agricultural Crops across CONUS. *Frontiers in Sustainable Food Systems. https://www.frontiersin.org/articles/10.3389/fsufs.2022.847892/*

Jha, G., Kankarla, V., McLennon, E., Pal, S., Sihi, D., Dari, B., Diaz, D., & Nocco, M. (2021). Environmental Fate of Per- and polyfluoroalkyl substances (PFAS) in Integrated Dairy System and its Impact on Human Health. *International Journal of Environmental Research and Public Health* 18(23):12550. *https://doi.org/10.3390/ijerph182312550*

Jha, G., Sihi, D., Dari, B., Kaur, H., Nocco, M., Ulery, A. L. & Lombard, K. (2021). Rapid and Inexpensive Assessment of Soil Total Iron Using NixPro Color Sensor. *Agricultural and Environmental Letters. https://doi.org/10.1002/ael2.20050*

Jha, G., Ulery, A. L., Lombard, K., VanLeeuwen, D., Brungard, C., Dari, B., & Sihi, D. (2021). Portable X-ray Fluorescence (PXRF) Analysis of Total Metal (loid) s and Sequential Extraction of Bioavailable Arsenic in Agricultural Soils of Animas Watershed. *Water, Air, & Soil Pollution*, 232(7), 1-14. *https://doi.org/10.1007/s11270-021-05249-2*

McLennon, E., Dari, B., **Jha, G.**, Sihi, D., & Kankarla, V. (2021). Regenerative Agriculture and Integrative Permaculture for Sustainable and Technology Driven Global Food Production and Security. *Agronomy Journal*. *https://doi.org/10.1002/agj2.20814*

Jha, G., Mukhopadhyay, S., Ulery, A. L., Lombard, K., Chakraborty, S., Weindorf, D. C., VanLeeuwen, D, & Brungard, C. (2021). Agricultural soils of the Animas river watershed after the Gold King Mine spill: an elemental spatiotemporal analysis via portable x-ray fluorescence spectroscopy. *Journal of Environmental Quality*. *https://doi.org/10.1002/jeq2.20209*

Matthews A**.,** Rogus S., **Jha G**., Ulery A., Delgado E., Lombard K., Hunter B., and Francis B. (2020). Heavy metal content of produce grown in San Juan County (New Mexico, USA). *Journal of Environmental Science and Health, Part B*. *https://doi.org/10.1080/03601234.2020.1794220*

Jha, G., Choudhary, O. P., & Sharda, R. (2017). Comparative effects of saline water on yield and quality of potato under drip and furrow irrigation. *Cogent Food & Agriculture*, *3*(1), 1369345. *https://doi.org/10.1080/23311932.2017.1369345*

Jha, G. (2016). A Review on Drip Irrigation using Saline Irrigation Water in Potato (Solanum tuberosum L.). *Journal of Agroecology and Natural Resource Management, 3*(1), 43–46.

Garg, S., **Jha, G.**, Kim, S., Miller, Z., Kuo, W. (2023) The need and development for a value-added toolkit - A case study with Montana specialty fruit growers. *Frontiers in Sustainable Food Systems (under review)*

RESEARCH GRANTS

- **USDA-NRCS Conservation Innovation Grants On-Farm Conservation Innovation Trials for Federal fiscal year (FY) 2021**
  Climate-smart irrigation for drought, soil fertility, & structural resilience in almond systems
  Primary Investigators-Dr. Mallika Nocco
  Co-primary Investigator-**Dr. Gaurav Jha**, Dr. Dilruba Yeasmin, Dr. John Bushoven, Dr. Cristina Lazcano, Dr. Sam Sandoval, Dr. Sat Darshan Khalsa
  Grant amount- $1,849,558

- **USDA-Specialty Crop Block Grant 2022**
  Building Specialty Crops Water Management Network (SCWM) for Drought Resiliency in Montana
  Primary Investigator- **Dr. Gaurav Jha**, Dr. Jasmine Neupane
  Co-primary Investigator- Dr. Zach Miller, Dr. Nina Zidack, Dr. Oscar Perez-Hernandez
  Grant amount- $423,881

- **2022 Montana Fertilizer Advisory Committee (MFAC) Research Grant**
  Combatting soil acidification to avoid large economic losses to Montana farmers
  Primary Investigators- Dr. Manbir Rakkar
  Co-primary Investigator-**Dr. Gaurav Jha**, Dr. Clain Jones, Dr. Scott Powell
  Grant amount- $54,465

- **2021 California League of Food Producers Research Grant**
  Deficit irrigation and salinity impacts on processing tomato nutrition and quality
  Primary Investigator-Dr. Mallika Nocco
  Co-primary Investigator-**Dr. Gaurav Jha**
  Grant amount- $34,760

- **NM Water Resources Research Institute Student Water Research Grant 2019-2020**
  Monitoring Toxic Metal Uptake by Corn Grown in Agricultural Fields Across Animas and San Juan Rivers
  Primary Investigator-**Gaurav Jha**
  Grant amount- $6490.11

- **NM Water Resources Research Institute Student Water Research Grant 2017-2018**
  Sequential Extraction of metal(loids) in agricultural field soils impacted by Animas/San Juan River after the 2015 Gold King Mine Spill
  Primary Investigator-**Gaurav Jha**
  Grant amount- $5604.94

- **USEPA The Water Infrastructure Improvements for the Nation Act (WIIN Act) Grant 2017-2018**
  Analyze Effects of Contaminants in the Animas and San Juan River Water Attainment of Livestock Watering and Crop Irrigation Uses
  (Unlisted collaborator) Cowritten with project PI-Dr. Kevin Lombard and Dr. April Ulery
  Grant amount- $124,193

- **NSF Established Program to Stimulate Competitive Research (EPSCoR) Research Infrastructure Improvement Program: Track-2 Focused EPSCoR Collaborations**

  Supporting rural livelihoods in the water-stressed Central High Plains: Microbial innovations for climate-resilient agriculture (MICRA)

  Primary Investigator- Dr. Melanie Derby (Kansas State University)

  Co-primary Investigator- **Dr. Gaurav Jha (Kansas State University)**, Dr. Gabe Sampson (Kansas State University), Franklin Fondjo-Fotou (Langston University), Seunghee Kim (University of Nebraska)

  Grant amount- $ 2,896,478 (Pending decision)

- **USDA-NIFA Artificial Intelligence Institute**

  Multi-domain Artificial Intelligence for Climate-smart Agriculture (MAICA)

  Primary Investigator- Dr. Bingbing Li (CSU-Northridge)

  Institutional-primary Investigator- Dr. Richard Donovan (UC-Irvine), **Dr. Gaurav Jha (MSU)**, Dr. Nhut Ho (NASA MIRO), Dr. Thomas Lu (NASA JPL), Dr. Lous Santiago (UC-Riverside), Mr**.** Zachary Hoylman (UMT), Dr. Yingnian Wu (VCLA), Mr. Andrew Berger (Piikani Lodge Health Institute, Blackfeet Nation)

  Grant amount- $20,185,374 (Pending decision)

- **United States-India Science and Technology Endowment Fund 2022, Department of Science and Technology, Government of India-Ignition Grants**

  Enhancing Carbon Sequestration in Soils and Bioconversion to Industrial Useful Plant Products under Precision Agriculture

  Primary Investigator- **Dr. Gaurav Jha (United States-Lead PI)** and Dr. Raman Kumar (India-Lead PI)

  Co-primary Investigator- Dr. Mahiti Gupta, Dr. Vanaja Kankarla, Dr. Paavan Singhal, Dr. Emmanuel Kudjo

  Grant amount- $69,445 (Pending decision)

- **USDA-Specialty Crop Block Grant 2022**

  Rapid, In-situ and On-combine Measurement of Pulse (Lentil) Protein

  Primary Investigator- **Dr. Gaurav Jha**

  Co-primary Investigator- Dr. Bruce Maxwell, Dr. Paul Nugent, Dr. Shirin Ghatrehsamani

  Grant amount- $370,071 (Pending decision)

RESEARCH OUTREACH AND EXTENSION

- Designed and Conducting statewide survey on *"Adoption of Wireless Sensors and Decision Support Tools by California Specialty Crop Growers*" funded by California Energy Commission (April 2022-February, 2023).
- Leading and organizing Wireless Sensor Networks in Agriculture Field Day at Winters, CA Processing Tomatoes Field (July 6, 2022).
- Planned and Organized "Sustainable Opportunities in Precision Agriculture Bootcamp" at Montana State University for students and stakeholders (June 6-10, 2022).
- Organized workshop on "Decision Support System for Land Resource Management" at MSU Agricultural and Natural Resources Update, Bozeman 2022 (May 10-12, 2022).
- Led and organized 'California Irrigation Decision Support Systems Field Day' Field Day Demonstration for Government, Industry, Growers, and Extension Advisors. (November 8, 2021).
- Provide nitrogen application and recommendations to dairy farmers across Rio Grande and Rio Pecos River in New Mexico (Cropping season 2019-2020).

- Prepare abatement plans and corrective actions for NM dairies as per NMED and NPDES compliance for dairies.
- Post Conference Community Teach-in presentation on Gold King Mine Exposure to Navajo Nation: Long term monitoring of soil, plants and water in the Animas and San Juan watershed organized by New Mexico Water Resources Research Institute for farmers and buyers in Navajo Nation (June 21, 2019).
- Shiprock Agricultural Days Teach-in presentation on Gold King Mine Exposure to Navajo Nation: Long term monitoring of soil, plants and water in the Animas and San Juan watershed (March 20, 2019).
- Radio Forum in Navajo Nation on Gold King Mine Spill Updates on KNDN 960 AM (March 18, 2019) and KTNN 660 AM (March 19, 2019).
- Monthly Teach-in presentations in collaboration with University of Arizona and Navajo EPA in Shiprock, Upper Fruitland and Aneth Chapterhouses in 2017-2018 to update on the results of contaminants concentrations after the Gold King Mine Spill (2015)
- Shiprock ag-days presentations on March 28, 2017, October 6, 2017 and March 21, 2018.
- Radio Talk on Gold King Mine Impacts with KTNN Radio Forum (local radio station in Navajo nation) on March 21, 2018.
- Factsheets presented to local farmers in Aztec, Farmington, and Navajo Nation in 2017 updating on the safety of agricultural system after the Gold King Mine Spill.
- Collaboration on learning proximal sensing techniques (VisNIR and PXRF) to monitor contaminated sediments in Indian river with Indian Institute of Technology, Kharagpur.

AWARDS, & SCHOLARSHIPS

Academic Awards

- Dean's Award of Academic Excellence in Plant and Environmental Sciences (2020) by College of Agricultural, Consumer, and Environmental Sciences, New Mexico State University.
- Outstanding Teaching Assistant Award by Department of Plant and Environmental Sciences, New Mexico State University (Monetary award of $500; Spring 2020).
- Recognition by Soil Science Society of America for scholarly excellence and academic achievement as a finalist in the 2019 Soil Science Society of America Society-Wide Student Competition to represent Soil Education and Outreach division in San Antonio, TX.
- Merit Enhancement Award for academic year 2019-2020 from the Graduate School of New Mexico State University. This award is given to outstanding graduate assistant for engagement in teaching and research missions of the University. Fellowship of $4000 was awarded for an academic year 2019 -2020.
- Recognition by Soil Science Society of America for scholarly excellence and academic achievement as a finalist in the 2019 Soil Science Society of America Society-Wide Student Competition to represent Soil Environment and Quality division in San Diego, CA.
- Monetary award of $500 for first place in the 2019 Graduate student poster presentation in the Soils and Environmental Quality division of SSSA 2018-2019 International Soils Meeting.
- Monetary award of $250 for first place in the 2017 Graduate student poster presentation in the Soils and Environmental Quality division of SSSA 2017 Annual Meeting.
- Junior Research Fellowship by Indian Council of Agricultural Research awarded (2014-2016) selected on all India basis
- Merit Certificate awarded by Punjab Agriculture University (India) for academic excellence and maintaining overall GPA of 8.0/10.0 throughout the master's program (2014-2016).
- National Talent Scholarship awarded by Indian Council Agricultural Research selected on all India basis (2010-2014).

Travel Awards

- University of California-Travel Award (Fall 2021) ($400) for research presentation at 2021 ASA-SSSA-CSSA Annual Meeting at Salt Lake City, Utah (November 7-11, 2021).
- Travel award for research presentation at the 2019 Annual meeting of Soil Water Conservation Society in Pittsburgh, Pennsylvania
- Travel award for research presentation at the Joint Annual Meeting of the International Society of Exposure Science and the International Society for Environmental Epidemiology (ISES-ISEE 2018) in Ottawa, Canada
- Travel award for research presentation at the 2018 Annual meeting of Soil Water Conservation Society in Albuquerque, New Mexico
- Graduate Student travel award ($400) by Graduate Student Council, NMSU (2019)

Scholarships and Fellowships

- Arden and Elsie Baltensperger Endowed Scholarship (2019-2020).
- Associated Students of New Mexico State University Leader Scholarship (2018-2019).
- LE Sparks and Lucile Denton Funkhouser Tatreault Endowed Scholarship (2017-2018).
- Junior Research Fellowship by the Indian Council of Agricultural Research under the Ministry of Agriculture and Farmers Welfare (India) (2014-2016).
- National Talent Scholarship by the Indian Council of Agricultural Research under the Ministry of Agriculture and Farmers Welfare (India) (2010 to 2014).

RESEARCH RELATED SKILLS

- High Resolution Mapping of Evapotranspiration (HRMET) model
- Photogrammetry in Pix4D, Agisoft Metashape and ArcGIS for Multispectral and Thermal Imagery
- Hydrus 1D (modeling software used for analysis of water, heat and solute transport in variably saturated porous media)
- Geostatistical analysis and time series analysis using R statistical software.
- Spatial variability/mapping in ArcGIS.
- Expertise on Analytical instrumentation- Soil, Canopy and aerial reflectance sesnors for soil characteristics, precision moisture and nutrient management, Portable X-Ray Fluorescence Spectrometry, Inductively Coupled Plasma Mass Spectrometry and Optical Emission Spectrophotometry, Atomic Absorption Spectrophotometer.
- Installation and managing drip irrigation system in field crops, crop canopy and soil moisture sensors.
- Expertise on field laboratory instrumentation- EM38 MK2 Geonics Ground Conductivity Meter, Soil moisture probe Sdi12, Neutron Moisture Meter, LiCOR, Pressure Plate Apparatus, pH and EC meters, Microwave digestor.
- Analytical techniques- Acid digestion and total metal analysis of soils, plants and produce, sequential extraction of metal(loid)s, organic carbon, physio-chemical properties of soil.
- Statistical softwares-R, SAS, SPSS (Intermediate skills and knowledge of analytical techniques).

CONFERENCE PRESENTATIONS AND INVITED TALKS

Oral Presentations

Sihi, D., Dari, B., Kuruvila, A.P., **Jha, G.,** & Basu, K. (2022). Explainable Machine Learning Approach Quantified the Long-term (1981-2015) Impact of Climate and Soil Properties on Yields of Major Agricultural Crops across CONUS. Presenting at American society of Agronomy 2022 International Annual Meeting, Baltimore, MD.

Nazrul, F., & **Jha, G.,** (2022) *Determining Daily Evapotranspiration By Integrating Process Based and Machine Learning Models Using Multiband Spectrometric Sensors, Aerial Reflectance and Thermal Imagery.* Presenting at

American society of Agronomy 2022 International Annual Meeting, Baltimore, MD.

Jha, G., Floyid, N., Schmidt, R., Suvočarev, K., Kisekka, I., Scow, K., & Nocco, M. (2021). *Irrigation Decision Support System (IDSS) for the Food-Water-Energy Nexus in California.* Presented at American society of Agronomy 2021 International Annual Meeting, Salt Lake City, UT

McLennon, E., Dari, B., **Jha, G.**, Sihi, D., & Kankarla, V. (2021). *Targeting Regenerative Agriculture and Integrative Permaculture for Sustainable and Technology Driven Global Food Production and Security.* Presented at American society of Agronomy 2021 International Annual Meeting, Salt Lake City, UT

Jha G., & Nocco, M. (2021). *Rapid and Inexpensive Assessment of Soil Total Iron Using NixPro Color Sensor.* UC Davis Postdoctoral Research Symposium 2021 (PRS 2021) (Online).

Jha, G., Ulery, A. L., & Lombard, K.A., (2020*). Monitoring the Contaminations in the Agricultural Systems across the Animas Watershed*. Presented at Soil Science Society of America 2020 International Annual Meeting (Online).

Jha, G., Ulery, A. L., & Lombard, K.A., (2020*). Monitoring of metal(loid) contamination in Animas watershed agriculture.* Presented at 5TH Annual Conference Animas and San Juan Watersheds Week: Managing and Improving Water Quality in a Multijurisdictional Watersheds (Online).

Whiting, M., **Jha, G.**, Ulery, A. L., & Lombard, K.A., (2020*). Monitoring toxic metal uptake by corn grown in agricultural fields across Animas and San Juan Rivers.* Presented at 5TH Annual Conference Animas and San Juan Watersheds Week: Managing and Improving Water Quality in a Multijurisdictional Watersheds (Online).

Jha, G., Ulery, A. L., Lombard, K.A., & Weindorf, D.C., (2019*). Geospatial Analysis and Bioavailability of Exceeded Metal(loid)s Contaminants in Agricultural Fields across Animas Watershed Exposed to Metal Contaminants from Abandoned Mine Sites.* Presented at Soil Science Society of America 2019 International Annual Meeting**,** San Antonio, TX.

Jha, G., Ulery, A. L., & Lombard, K.A., (2019*). Outreach through Visual and Spatial Representations of the Nature and Extent of Impact on Agricultural System in Navajo Nation after the 2015 Gold King Mine Spill.* Presented at Soil Science Society of America 2019 International Annual Meeting**,** San Antonio, TX.

Jha, G., Ulery, A. L., & Lombard, K.A., (2019*). Monitoring Irrigation Ditch Sediment and Agricultural Crops to Characterize the Nature and Extent of Impact from the August 2015 Gold King Mine.* Presented at 74th International Annual Conference of Soil Water Conservation Society in Pittsburgh, PA.

Jha, G., Ulery, A. L., & Lombard, K.A., (2019). *Sampling of Irrigation Ditch Sediment and Agricultural Crops to Characterize the Nature and Extent of Impact from the Gold King Mine Spill.* Presented at New Mexico Water Resources Research Institute's 2019 Annual Conference on Animas and San Juan Watersheds Conference: Successes and Challenges from Headwaters to Lake Powell, Farmington, NM.

Jha, G., Ulery, A. L., & Lombard, K.A., (2019*) "Metal Contaminants in the Animas and San Juan Watershed after the Gold King Mine Spill (2015)".* Presented Data blitz talk at NMSU 6th Annual Graduate Research and Arts Symposium.

Jha G. (2019*) "When the river turned Orange! Impacts on the agricultural system across Animas watershed after the Gold King Mine Spill (2015)"* Presented at International Conference on Science for all: Role towards Development of Modern World organized by NeSA, NMSU.

Jha, G., Ulery, A. L., Lombard, K.A., & Weindorf, D.W., (2019). *Metal Contaminants in the Animas and San Juan Watershed after the Gold King Mine Spill (2015)*. Presented at Soil Science Society of America 2019 International Soils Meeting "Soils Across Latitudes", San Diego, CA.

Jha, G., Ulery, A. L., & Lombard, K.A., (2019*). Rapid and in-Situ Analysis of Metal Concentrations after the Gold King Mine Spill Using Portable X-Ray Fluorescence (PXRF)*. Presented at Soil Science Society of America 2019 International Soils Meeting "Soils Across Latitudes", San Diego, CA.

Jha, G., Ulery, A. L., & Lombard, K.A., (2018*). Spatial and Temporal Variability of Metal Concentration in Agricultural Fields Downstream from the 2015 Gold King Mine Spill.* Presented at 73rd International Annual Conference of Soil Water Conservation Society, Albuquerque, NM.

Jha, G., Ulery, A. L., & Lombard, K.A., (2018). *Rapid and in-situ analysis of metal concentrations in agricultural fields in San Juan County using Portable X-Ray Fluoresence.* Presented at New Mexico Water Resources Research Institute's 2018 Annual Conference on Environmental Conditions of the Animas and San Juan Watersheds, Farmington, NM.

Mathews, A., **Jha, G**., Ulery, A. L., Lombard, K.A., & Francis, B., (2018*). Metal Contaminants in the Animas and San Juan Watershed.* Presented at New Mexico Water Resources Research Institute's 2018 Annual Conference on Environmental Conditions of the Animas and San Juan Watersheds, Farmington, NM.

Jha, G., Ulery, A. L., Lombard, K.A., Hunter, B., Francis, B., (2017). *Metal Concentrations in Soil and Sediments after Gold King Mine Spill.* Presented at New Mexico Water Resources Research Institute's 2017 Annual Conference on Environmental Conditions of the Animas and San Juan Watersheds, Farmington, NM.

Poster Presentations

Jha, G., Sihi, D., Dari, B., Kaur, H., Nocco, M., Ulery, A. L. & Lombard, K. (2021). *Rapid and Inexpensive Assessment of Soil Total Iron Using NixPro Color Sensor.* Presented at Soil Science Society of America 2021 International Annual Meeting, Salt Lake City, UT

Gal, A.J., Ebert, L., Turini, T., Scow, K., Lazcano, C., Gaudin, A., **Jha, G.**, Emerson, C. & Nocco, M. (2021). *High-Resolution Evapotranspiration Modeling for Deficit Irrigation of Processing Tomatoes*. Presented at American society of Agronomy 2021 International Annual Meeting, Salt Lake City, UT

Jha, G., Ulery, A. L., & Lombard, K.A., (2019*). Outreach through Visual and Spatial Representations of the Nature and Extent of Impact on Agricultural System in Navajo Nation after the 2015 Gold King Mine Spill.* Presented at Soil Science Society of America 2019 International Annual Meeting**,** San Antonio, TX.

Jha, G., Ulery, A. L., Lombard, K.A., & Weindorf, D.W., (2019). *Metal Contaminants in the Animas and San Juan Watershed after the Gold King Mine Spill (2015)*. Presented at Soil Science Society of America 2019 International Soils Meeting "Soils Across Latitudes", San Diego, CA.

Jha, G., Ulery, A. L., & Lombard, K.A., (2018*). Spatial and Temporal Variability of Metal Contaminants in the Animas and San Juan Watershed Downstream from Legacy Mining..* Presented at Joint Annual Meeting of the International Society of Exposure Science and the International Society for Environmental Epidemiology (ISES-ISEE 2018), Ottawa, Canada.

Fullen, S., **Jha, G.**, Lombard, K.A., Ulery, A. L., Stanford, L. & Vanleeuwen, D. (2018*). Total Sediment Lead (Pb) Concentrations in a Northwestern New Mexico Irrigation Ditch following the Gold King Mine Spill.* Presented at 73rd International Annual Conference of Soil Water Conservation Society, Albuquerque, NM.

Jha, G.., Ulery, A. L., Lombard, K.A., & Holguin, O. (2018*). Speciation of metal(loids) in agricultural field soils impacted by Animas/San Juan River after the 2015 Gold King Mine Spill.* Presented at 63rd Annual New Mexico water Conference by New Mexico Water resources research Institute, Las Cruces, NM.

Jha, G., Ulery, A. L., Lombard, K.A., Weindorf, D.C., Fullen, S., Francis, B.,(2018*).Metal Concentration in Agricultural Fields Downstream from the Gold King Mine Spill (2015).* Presented at The College of Agricultural, Consumer, and Environmental Sciences (ACES) Open House 2018.

Jha, G., Ulery, A. L., Lombard, K.A., Weindorf, D.C., Fullen, S., Francis, B.,(2017*).Metal Concentration in Agricultural Fields Downstream from the Gold King Mine Spill (2015).*
Presented at Soil Science Society of America 2017 Annual Meeting**,** Tampa, FL.

Francis, B., Weindorf, D.C., Lombard, K.A., Pearson, D., & **Jha, G.** (2017). *Monitoring plan of Soil Heavy Metal Concentrations in Irrigated Fields Along the Animas River in New Mexico.* Presented at New Mexico Water Resources Research Institute's 2017 Annual Conference on Environmental Conditions of the Animas and San Juan Watersheds, Farmington, NM.

Invited talks, seminars and lectures

'Precision Farming for Resiliency and Agricultural Stewardship in Kansas' Kansas Agricultural Technologies Conference, Junction City, KS (January 19-20, 2023); invited by Kansas Ag Research & Technology Association (KARTA).

'Managing Soil Ecosystems for Food Security' invited lecture and webinar on World Soil Day by the University of Delhi, virtual (December, 5, 2022).

'Changing Paradigm of Proximal and Remote Sensing for Soil Characterization and Precision Input Management' American society of Agronomy 2022 International Annual Meeting, Baltimore, MD. (November 8, 2022) Invited talk for *Symposium--Nutrient Management and Innovations in Sensor Technology.*

'**Precision Agriculture Research, Teaching and Extension for Montana's Grain Production'** Montana Grain Grower Association's Summer Conference, Great Falls, MT (June 14, 2022).

'**Precision Agriculture for Northern Great Plains**' Montana Farm Bureau Association-Speaker at Summer Conference, Fairmonts, MT (June 2, 2022).

'**Precision Agriculture: Data and Technology Driven Farming Practices for Montana's Sustainable Food Production and Security**' MSU Extension AgUpdate 2022, Bozeman (May 10, 2022).

'**Fate of contaminants in Agricultural Soil**' Department of Environmental Sciences, College of Arts and Sciences, Emory University (April 19, 2022).

'**Participatory Research and Outreach in Environmental Science**' Department of Environmental Sciences, College of Arts and Sciences, Emory University (November 18, 2021).

'**Proximal Sensors and Decision Support Tools in Nutrient and Water Stewardship**' Department of Soil and Crop Sciences, Texas A&M University (October 25, 2021).

'**Impacts of Legacy Mining on Indigenous growers of Navajo Nation**' Hydrology Graduate Group Seminar, University of California, Davis (April 22, 2021).

'**Experiential Designs for Learning**' Teaching Academy, New Mexico State University (March 12, 2020).

TEACHING AND MENTORING EXPERIENCE

Spring 2023	Teaching **AGRON 655: Site Specific Agriculture** at **Kansas State University** and developing a graduate course in precision agriculture.

Fall 2022	Taught **AGTE 491: Sensors, Robotics and Variable Rate Systems** at **Montana State University**
Spring 2022	Designed **four** new courses in precision agriculture and leading the development of **Precision Agriculture and Land Management Systems Minor** for College of Agriculture and College of Engineering students at Montana State University– **1. Concepts in Precision Agriculture (AGSC 491)** **2. Sensors, Robotics and Variable Rate Systems (AGTE 491)** **3. Internet of Things (IoT) in Precision Agriculture (AGTE 492)** **4. Data analysis for Digital Agriculture (AGSC 492)**
	Invited (by Dr. Debjani Sihi) Guest Lectures for Course: Soil Science at Emory University. Topic: *Fate of Contaminants in Agricultural Soils* *Case Study: Impacts of the Gold King Mine Spill in Navajo Nation*
	Current student: Farshina Nazrul (Montana State University) Mentees: Mathieu P. Fortin (Laval University, Canada) Dawson Diaz (University of California, Davis)
Fall 2021	1. Invited (by Dr. Debjani Sihi) Guest Lectures for Course: Biochemistry and Environmental Health at Emory University. Topic: *Participatory Research and Outreach in Environmental Science*
	2. Invited (by Dr. Vanaja Kankarla) Guest Lectures for Course: Soil Fertility and Nutrient management at Texas A & M University. Topic: *Proximal Sensors and Decision Support Tools in Nutrient and Water Stewardship*.
Spring 2020	Teaching Assistant (Lead TA) for Soils 252 Lab: Introduction to Soils Laboratory (Hybrid Online + In Class) (Designed syllabus, lab sheets, presentations, quiz, arranged field trips, delivered lectures, demonstrated and facilitated lab exercises, guided and mentored two other teaching assistants) (at New Mexico State University)
Fall 2019	Teaching Assistant (Lead TA) for Soils 252 Lab: Introduction to Soils Laboratory Teaching Assistant (Lead TA) for Soils 500 Lab: Introduction to Soils Laboratory (Graduate Level) (Designed syllabus, lab sheets, presentations, quiz, arranged field trips, delivered lectures, demonstrated and facilitated lab exercises, guided and mentored other teaching assistants)
	Guest Lectures for SOILS 252: Introduction to Soils
Fall 2019	Invited (by Rachel Gionnani) Lecture on Metal Contaminations and Acid Mine Drainage in HORT 302V: Forestry and Society
Fall 2017	Guest Lectures for SOILS 505: Soil Chemistry

- Mentoring undergraduate and graduate students at Conservation Irrigation Laboratory at University of California, Davis.
- Mentored 2 Masters students (Alyce Matthews and Michael Whiting) by establishing grant proposals and guiding through the field work, data analysis and thesis writing at New Mexico State University.

- Certification in developing online courses by NMSU Online Course Improvement Program (OCIP) (20 hours)

NMSU Teaching Academy

- Attended over 60 hours of workshops and training on teaching, writing, leadership, and mentoring
- Distinguished Graduate Student Member Award of NMSU Teaching Academy (2019-2020).

MEDIA PRESENCE

Mountains and Minds (annual magazine of Montana State University)

- https://www.montana.edu/news/mountainsandminds/22121/the-future-of-farming (The future of Farming; Cover page feature)

CSA News (official magazine for members of American Society of Agronomy, Crop Science Society of America and Soil Science Society of America)

- https://acsess.onlinelibrary.wiley.com/doi/full/10.1002/csan.20683 (Inexpensive Color Sensor Quantifies Soil Total Iron)
- https://acsess.onlinelibrary.wiley.com/doi/10.1002/csan.20693 (Cover page highlight)

Farmington Daily Times

- https://www.daily-times.com/story/news/local/2020/06/19/produced-water-could-help-strained-resources-new-mexico-challenges-remain/3222962001/

NM-Water Resources Research Institute Articles

- https://nmwrri.nmsu.edu/nmsu-graduate-student-studying-metal-contaminated-sediment-in-irrigation-ditches-and-agriculture-fields-along-the-animas-and-san-juan-rivers/
- https://nmwrri.nmsu.edu/nm-wrri-announces-student-water-research-grants-continued/

Soil Science Society of America Articles

- https://www.acsmeetings.org/files/students/grad-students/sssa-2019-csa-news-article.pdf
  https://profile.soils.org/posts/blog/sssa-holds-inaugural-society-wide-student-competition

CERTIFICATIONS

- Western Region Certified Crop Advisor (CCA) (American Society of Agronomy)
- Certified Data Scientist (online learning by Harvard Extension) (*in progress*)
- Online Course Improvement Program (OCIP) Certification (NMSU)

TECHNICAL REPORTS

Jha, G., A.L. Ulery, K.A. Lombard, B. Francis, M.Whiting, and B. Hunter (2020). *Analyze Effects of Contaminants in Animas and San Juan River on Livestock Watering and Crop Irrigation Uses* – Final Report submitted to US Environmental Protection Agency (EPA) through New Mexico Environment Department (NMED).

Jha, G., and A.L. Ulery (2019) *Sequential extraction of metal(loids) in agricultural field soils impacted by Animas/ San Juan River after the 2015 Gold King Mine Spill* -Final Report submitted to New Mexico Water Resources Research Institute

Jha, G., A.L. Ulery, K.A. Lombard, B. Francis, T. Charley, and B. Hunter (2018). *Sampling of Stream and Irrigation Ditch Sediment and Agricultural Crops to Characterize the Nature and Extent of Impact from the*

August 2015 Gold King Mine Spill – Final Report submitted to US Environmental Protection Agency (EPA) through New Mexico Environment Department (NMED).

INTERNATIONAL RESEARCH EXPERIENCES

- Participated and represented the New Mexico State University at the *Healthy Border Healthy Water Educational Curriculum Development Workshop* for developing US-Mexico transboundary water sustainable curriculum for high school. This was an initiative of National Science Foundation- Border Alliance Partnership of 5 Universities from USA and Mexico (*at Centro de Geosciencias, Universidad Nacional Autónoma de México, Queretaro, Mexico from August 8-9, 2019).*
- Presented research and demonstrated hands-on experience to the researchers and teachers from all across Mexico at the *Education Beyond Borders: Tearing Down Walls Professional Development* workshop organized by College of Education, New Mexico State University on April 6, 2019.
- Collaboration with Texas Tech University and Institute of Technology, India on learning proximal sensing techniques (VisNIR and PXRF) to monitor contaminated sediments in Ganges river, West Bengal (India)-. (*IIT Kharagpur (India) from January 1-8, 2018*).

PROFESSIONAL DEVELOPMENT

Drone Camp 2022-CSU Monterey Bay (University of California)	2022
Irrigation and Nutrient Management Workshop (University of California)	2022
Indian Education for All (Montana State University)	2022
Supervisor and Mentorship Training program (Montana State University)	2022
Drone Camp 2021 (University of California)	2021

Online Courses and Certificates

- Precision Agriculture and Soil Health (American Society of Agronomy) 2022
- Navigating Carbon Market Opportunities and Risks: Insights from In-field Advisers (American Society of Agronomy) 2022
- Data Science: Probability (edX Online Course by Harvard Extension) 2019
- Data Science: Visualization (edX Online Course by Harvard Extension) 2019
- Data Science: R basics (edX Online Course by Harvard Extension) 2019
- ESRI (international supplier of GIS and Geodatabase management) certificate courses-
  - Earth imagery at work 2017
  - Do-it-yourself geo apps 2017

NMSU's Teaching Academy Workshops

Organized a workshop at teaching academy for NMSU faculty and teaching assistants on *Experiential Designs for Learning* 03/12/2020

Participated in following workshops:

Creating an Environment of Nonviolence in the Classroom	10/24/2019
Introduction to Private Funding	10/22/2019
Integrating Essential Skills Instruction into General Education	10/17/2019
How Learning Works: Book Discussion Group	10/15/2019-12/19/2019
Getting the edge in Academe: A Ph.D. is Not Enough	09/25/2019-11/20/2019
Active Learning Studio: A Collaborative Problem-Solving Session	09/24/2019
OCIP: Let's Talk Online Teaching - Delivery Standards: Making a Difference for Students	09/19/2019

Ten Easy Ways to Engage Your Students	09/17/2019
Active Learning: What is it, how do you implement it and why would you want to?	09/10/2019
Improv Theater Activities for the Classroom	09/09/2019
Teachers as Speakers: A Refresher on Public Speaking	09/03/2019
Demystifying Accessible Video	08/20/2019
Funding Opportunities for Graduate Students and Postdoctoral Scholars	08/29/2019
Audio and Video in Canvas	08/27/2019
Lesson Planning: Creating Daily Classes with Purpose, Structure, and Flexibility	08/21/2019
Teaching a Creative, Interactive First Day	08/21/2019
The Quiz Tool in Canvas	08/20/2019
Canvas Assignments/Rubrics	08/27/2019
OCIP: Let's Talk Online Teaching - Course Developer's Guide	08/14/2019
Canvas Home Pages	08/13/2019
Intro to iClicker	08/12/2019
Student Groups & Collaborations in Canvas	07/24/2019
Scholarly Writing Retreat: Summer 2019	07/15/2019-07/19/2019
OCIP: Strategies for Teaching Online (Certification)	06/23/2019-03/30/2019
Drafting Your Scholarly Manuscript Quickly and Well	05/21/2019
Designing an Inclusive and Universal Classroom: Remote Workshop	05/16/2019
Turnitin for Canvas: Originality Checker Software Demo	05/15/2019
PowerPoint as an Engaging Learning Tool	04/11/2019
Making Learning Stick at NMSU	03/14/2019

AFFILIATIONS & MEMBERSHIPS

American Society of Agricultural and Biological Engineers	2022-Present
International Society of Precision Agriculture	2022-Present
Soil Science Society of America	2017-Present
American Society of Agronomy	2017-Present
Crop Science Society of America	2017-2022
American Geophysical Union	2018-2022
International Society of Exposure Sciences	2017-2022
New Mexico Geographic Information System	2017-2019
Soil Water Conservation Society	2017-2019
American Chemical Society	2017-2019
Association of Agricultural Scientists of Indian Origin (AASIO)	2017-2020
American Association for the Advancement of Science	2017-2018
Indian Society of Soil Science	2014-2016
Indian Science Congress	2012-2013

PROFESSIONAL SERVICE

Peer Reviewed articles for following journals

- Agronomy
- Agronomy Journal
- PLOS ONE
- Natural Sciences Education
- Agriculture and Environmental Letters
- International Journal of Environmental Research and Public Health
- Transactions of the ASABE
- Agricultural and Forest Meteorology

- Environmental Advances
- Environmental Assessment and Monitoring
- Cogent Environmental Science
- Soil Science Society of America Journal
- Sustainable Water Resources Management
- Journal of Development and Agriculture Economics
- Potato Research
- Statistical Mechanics and its Applications
- Computer and Electrical Engineering

Conference symposia, judging and session moderators

- Symposia and session organizer at American Society of Agronomy-Soil Science Society of America 2022 in following divisions and communities-
  1. Soil Chemistry- Optical and Colorimetric Sensors in Soil Chemistry and Environmental Monitoring Research
  2. Agronomy: Education and Outreach- Symposium—(1) Bridging Gaps between Data-Driven Agricultural Research and Extension: Opportunities and Challenges; (2) The Future of Food and Agriculture Oral: Strengthening the Involvement of Small to Medium Scale, Limited Resources or Minority Growers in Agricultural Production
  3. Soil Health- Symposium--Special Session--Complex Science of Soil Health, Food and Nutritional Security, and Climate Change
- Judge for Diversity Poster Contest at American Society of Agronomy-Soil Science Society of America 2021 International Annual Meeting, Salt Lake City, UT
- Moderator for Soil Fertility and Plant Nutrition (Oral) Session at at Soil Science Society of America 2021 International Annual Meeting, Salt Lake City, UT
- Organized and hosted "Intellectual Property Primer and Career in Intellectual Property Law for STEM Students" for Indian Embassy in the USA on August 25, 2021 (https://t.co/wFL5VeR5q6).
- Organized and assisted as Abstract Reviewer in the 6th UC Davis Postdoctoral Research Symposium (March 2021)
- Symposia session co-organizer at SSSA 2019- Soil Chemistry in the face of Climate Change: Trace Element and Nutrient Dynamics in Soils and Sediments alongside (November 2019)
- Organized Ideas Café on Science and Arts Research discussion at NMSU Research and Creativity week (November 2019)
- Organized workshop for Graduate Students and Post-Docs in College of ACES on "Funding Opportunities for Graduate students and Post-docs". (September 2019)
- Moderator for sessions at Soil Water Conservation Society meeting in 2018 (Albuquerque, NM) and 2019 (Pittsburgh, PA)

LEADERSHIP EXPERIENCES

- **2022-2024-Leadership Group Member** for **Soil Science Society of America Inclusivity Committee**
- **2022-2023 Chair** of **American Society of Agronomy-Education and Outreach Community**
- **2021-2022 Vice Chair** of **American Society of Agronomy-Education and Outreach Community**
- **2021-2022 Chair, University of California, Davis- Postdoctoral Scholars Association**
- **2019 ASA-CSSA-SSSA Leadership Certification**
  Invited participant for Graduate Student Leadership Conference
- **Associated Students of New Mexico State University**
  (Student Government of NMSU)
  Served as a Graduate Senator (2018-2020)

-Presented and received a favorable recommendation on compost resolution "*Adoption of Composting organic and biodegradables wastes on NMSU campus"*
-Authored and received a pass on bill proposal for 70 percent reimbursement for journal publications.
-Helped the graduate students by passing bills for travel grants over $100,000
-Presented sustainability bills to the student government and the faculty senate
-Served as a Student representative on Faculty Senate and Faculty Senate Library Advisory Committee
-Serve as an ombudsman and liaison for graduate student issues
-Served as a member of Sustainability Council of NMSU

- Served as **President of Environmental and Plant Sciences Graduate Student Organization** (EPS-GSO) (2019-2020)
- Served as **Vice-President of Environmental and Plant Sciences Graduate Student Organization** (EPS-GSO) (2018-2019)
- **NMSU Graduate Student Council**
  Vice-President (2018)
  -Represent the graduate student body in committees and at the state level
  -Serve on Graduate Council and Diversity Board
  -Serve as an ombudsman and liaison for graduate student issues
  Served as finance committee member (2016-2019)
  -Evaluated and approved bills for funding graduate student research and travel expenses to present research
- Served as **Vice-President of International Student Organization** of NMSU (2018).
- Served as **President of Indian Students Association** of NMSU (2016-2017).