Manoj K. Shukla, PhD

Professor of Soil Physics
Director ACES Global Initiatives Program and Aggies Go Global
Plant and Environmental Sciences
New Mexico State University, Las Cruces, NM, USA
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EDUCATION

1995-1998 University of Natural Resources and Applied Life Sciences Vienna, Ph.D., Agricultural Engineering (Major: Soil Physics; Minor: Hydraulics) (Collaborative program with UC Davis)

Title of Ph.D. Thesis: Solute transport in porous media with diffusion controlled and surface reaction rate laws

1986-1988 J. N. Agriculture University, India, M.Tech., Soil and Water Engineering

Title of Master's Thesis: Seepage and waterlogging problems in command areas- A case study

1982-1986 J. N. Agriculture University, B.Tech., Agricultural Engineering

Title of Bachelor's Thesis: Evaluation of head losses due to foot-valves

PROFESSIONAL EXPERIENCE

2005-date DEPARTMENT OF PLANT AND ENVIRONMENTAL SCIENCES, NEW MEXICO STATE UNIVERSITY, Las Cruces, New Mexico.

Assistant and Associate Professor of Soil Physics (2005-14): Graduate and undergraduate advising, teaching undergraduate and graduate classes, grant proposal writing, writing refereed Journal articles, serving on departmental, college, university, and society committees

Nakayama Research Excellence Professor and Professor Soil Physics (2014-present): Lead and manage the soil physics program consisting of undergraduate, graduate students, and Postdocs. Currently supervise two postdocs, three Ph.D. students, one from CAU China and one from UACJ Mexico; 2 MS and 1 UG student. Mentor three junior faculty and several UG students. Teach undergraduate and graduate classes regularly and occasionally abroad. Serve on department, college, university, national and international committees.

2018-date COLLEGE OF AGRICULTURAL, CONSUMER AND ENVIRONMENTAL SCIENCES, NEW MEXICO STATE UNIVERSITY, Las Cruces, New Mexico.

Director ACES Global Initiatives Program: Lead and manage ACES Global Initiatives for student and faculty, serve on International Working Group of the Provost, Mexico Strategy of Associate VC, explore new opportunities including MOUs, Grants with foreign Universities to facilitate research, teaching, extension, and training collaborations. Develop new global priorities collaboratively for the university, serve on ACES strategic plan, LEADs 2025

Director Aggies Go Global: Lead and manage AGG activities, allocate funds for students' international travel, approve budget and awards, supervise staff, and seek funding

IALC Executive Board Member (2018-2022): Lead and manage International Arid Lands Consortium initiatives, Lead Representative from NMSU, participate in executive meetings, set up agenda, conferences, and direction

2001-2005 SCHOOL OF NATURAL RESOURCES, THE OHIO STATE UNIVERSITY, Columbus, Ohio

Research Scientist: Co-Leader of a large grant on Soil C Sequestration from Department of Energy, supervised staff hired through the grant, budget management, report writing, grant proposal writing, and publishing. Taught advanced soil physics class and soil physics lab

2000-2001 SCHOOL OF NATURAL RESOURCES, UNIVERSITY OF ILLINOIS, Urbana-Champaign, Illinois

Post-doc Research Associate: conduct research, attend classes, write grant proposal and journal articles

1995-2000 DEPARMENT OF HYDRAULICS, UNIVERSITY OF AGRICULTURAL SCIENCES, Vienna, Austria

Research Scientist (1999-2000): conduct research on solute transport, teach irrigation management class, write grant proposal, and journal articles

Graduate Research Assistant/ Teaching Assistant: conduct research on solute transport, TA a class on statistical analysis

1990-1995 NATIONAL INSTITUTE OF HYDROLOGY, INDIA

Scientist: conduct research work on soil water and drainage, report and journal article writing, organize and teach during training programs for state engineers, manage and work with ILRI the Netherlands; Served as Executive Editor

1989-1990 WATER AND LAND MANAGEMENT INSTITUTE, INDIA

Pool Officer: organize training workshop on water distribution, organize and teach during training programs for state engineers and farmers

ADMINISTRATIVE LEADERSHIP AND SERVICE

August 2018-date Director ACES Global Initiatives Program and Aggies Go Global

August 2018-date Executive Board Member of International Arid Lands Consortium

August 2018-date Member Association of Public Land Grant Universities (Commission on International Initiatives)

2022- date ACES Dean's representative on NMSU Mexico Strategy

2020-present Chair Inventory Committee, Provost Initiative on Globalization

2019-2020 Search Committee member for ACES, Associate Dean of Research

2018- date Attend department heads meeting and present progress report

June 2018 Member Expert Review Panel for China Agricultural University's Agricultural Engineering Program

December 2018 Developed a program "Extension Education" for senior undergraduate students and training the trainers of agriculture for India

2014-2019 Member BHR Expert Panel: U.S. -México Border Health Commission

2014-2020 Member CHIWAWA group on desalination

2015-2019 Steering committee member for the NMSU Advancing Leaders Program

2016-2017 Member Review Committee for Renewal of John Clark Professorship and Foreman Chair in College of Engineering

2015-2017 University Research Council College of ACES Representative

2016-2017 Chair College of ACES P & T Committee

2015-2017 Member College of ACES P&T Committee

2014-date Member PES promotion and tenure committee

2017 Mentor (rep for Assoc. Dean Academics) Teaching Academy Workshop on P&T portfolio

2016 External Reviewer Plant and Soil Science Graduate Program, Texas Tech Univ., Lubbock

2015-2016 Chair multistate project group 3188

2014-2015 Chair Search Committee for Environmental Soil Microbiology

2012-2013 Chair multistate project group 3128

2009-2012 Chair Awards Committee

2007 Task force 4 coordinator for RGBI meeting

1992-1995 Executive Secretary of Indian Association of Hydrologists

RESEARCH LEADERSHIP AND SERVICE

2017-Present Visiting Professor to China Agricultural University, Beijing, China

2022- date Consulting Editor, Vadose Zone Journal

2021- date Technical Editor, Soil Science Society America Journal

2022 Organizer and session Chair Soil Science Society America (SSSA) meeting Baltimore

2022 Chair of mentoring committee and Luxmore Travel Award committee of SSSA

2022 Member Executive committee Soil Physics $ Hydrology & Campbell Committee SSSA

2022 Organizer and panel member Wiley Workshop and Networking Session: 2022 World Congress of Soil Science, Scotland July 31- Aug 5

2022 Organizer and Moderator virtual symposium NMSU-UAEU and NMSU-SQU

2022 Keynote speaker Agronomy week, Durango, Mexico, Sept 7-9

2022 Invited speaker, Mandel University In Brno, Czech Republic, October

2022 Organizer and Co- Chair International Meeting with IICA Costa Rica

2022 Scientific committee member and session Chair WSM2020, UAEU, Dubai

2021-2022 Editor in Chief Soil Health Journal

2020-2021 Chair ASA-CSA-SSA Presentation contest committee

2016-18 Visiting Professor Northwest A& F University, Yangling, China

2015-date Executive Committee member, Vadose Zone Journal

2015-2022 Book Review Editor, Vadoze Zone Journal

2016-2020 Associate Editor, Soil Science Society America Journal

2015-date Member Unsaturated Zone technical committee, American Geophysical Union

2014-2017 Editor in Chief Journal of Environmental and Analytical Toxicology

2013-2015 Member L.R. Ahuja modeling awards committee of Soil Science Society America

2013-2016 Editorial Board member for NACTA Journal

2014-2015 Lead PI on EPSCoR Track II proposal

2015-2016 Lead PI on USDA-AFRI proposal

2011 Panel member for AFRI-USDA program in Washington DC

2010-2012 Organizer and Presiding Officer, Soil Science Society America International Meeting

2016-2008 External reviewer for DOE-NETL and NSF proposals

2010-date NMSU Representative Multistate Research Group on environment physics (W4188)

2010-date New Mexico State Representative Multistate Research Group on microirrigation (W3128)

2010 Co-Convener of WCSS Symposium: Optimizing water use with soil physics for 19th World Congress of Soil Science, Brisbane, Australia

2005-date Member of Curriculum, Graduate studies committee of the PES Department

2010-date External reviewer for International doctoral dissertation and for promotion and tenure

2005-date Mentored AMP students and MARC program

INTERNATIONAL ACTIVITIES

International activities have resulted in several MOUs, collaborations between NMSU and foreign universities, and provided opportunities for NMSU faculty to travel and teach at foreign institutions. Several grants were secured, international faculty and scientists trained and through research collaborations several students graduated, and refereed Journal articles published. In addition, about 100 students (each year) got an international travel opportunity for a non-credit program. The number of international student applications as well as visits from foreign scientists and administrators also increased. The program has made significant contributions to the social mobility of diverse population of NMSU students and faculty, set up study abroad, organized joint workshop/ conferences, brought new foreign companies to the state with product donations and joint research, and contributed to the economic development of the state.

- Austria (1995-2000)
  - Co-Instructor for the Irrigation Management course (545.009) at University of Agricultural Sciences Vienna
  - Co-Instructor for the Indirect Methods in Soil Physics (545.002) at University of Agricultural Sciences Vienna
- Australia (2010)
  - Co-Convener WCSS Symposium at 19th World Congress, Brisbane, Aug1-6, 2010
  - Served as External Reviewer of PhD dissertation from University of Western Australia

- Collaborations with CQ University for faculty, student exchange and workshops

- China (2013-continue)
  - Hosted several faculty from CAU, Beijing and NWAFU Yangling
  - Invited speaker for the workshop on "Water and food security under changing environment", June 1 to 7, 2015, China Agriculture University, Beijing
  - Guest lectures during summer school during June 2016-18 at CAU, Beijing and NWA&F
  - Organized a workshop at NMSU main campus with visiting CAU faculty (2015)
  - Invited speaker during 2016 Yangling International Agri-Science Forum, Nov. 5-7 at Northwest A&F University, Yangling
  - Invited speaker at the College of Resources and Environment, Northwest A&F Univ.
  - Advised three faculty members from College of Urban and Rural Construction, Agricultural University of Hebei as visiting scholar during 2016-17
  - Organizing summer research training for undergraduate and graduate students from Northwest A& F University, China (2017-18)
  - Taught a class on Natural Resources at NWA&F University summer 2017 and 2018
  - Visited China Agricultural University, Beijing in June (2018; 19), taught in summer school
  - Served as a Visiting Professor and advised grad students (31 hours/year)
- Costa Rica (2018- Continue)
  - MOU with IICA (2019)
  - Participated in discussion and workshops on Digital Agriculture, livestock, C sequestration
  - Organizing a undergraduate student trip through Aggies Go Global (2022)
  - Collaborative workshop with IICA, Costa Rica for identifying priorities for LAC region, San Jose (2022)
- Colombia
  - MOU with University of La Salle, Bogota, Colombia
  - Taught a course on Digital Ag during winter academy 2021
  - Visited Utopia campus and established collaborations including study abroad program in 2022 and exchange visit of to NMSU and La Salle campus
- Czech Republic
  - Visited Mendel University Brno in Oct 2022 and gave two lectures
  - Meetings with Deans, Global program Directors, department heads to set up study abroad program, and student and faculty exchange through the Mobility Grant
- Egypt (2008-2009)
  - Served as an external advisor to a graduate student at Desert Research Council
  - Served as a co-advisor of a student from Desert Research Institute
  - Organized undergraduate students trip to Egypt through Aggies Go Global
- Ethiopia
  - Submitted a grant proposal with Jigjiga and Semera Universities on Capacity building sponsored US Consulate in Addis Ababa (2022)
- Ghana

- MOU signed with University of Energy and Natural Resources, Ghana
- Proposal on MS and PhD programs is under development

- Greece (2000-continue)
  - MOU with Parrotis College was done
  - Study abroad program was developed with Parrotis College
- India (1989-continue)
  - Visited Agricultural University in India as part of recruiting activities in 2011
  - Attended conferences on Water Management in Surat 2014 and in Kolkata in Dec. 2017
  - MOU with IIT Kharagpur and other Universities was signed
  - Jointly organized (in 2018, 19 and 20) and attended leadership conference in New Delhi
  - Developed an extension training program for agriculture graduates of Andhra Pradesh
  - Visited several Engineering and Agriculture Colleges in AP and Telangana India, talks, interactions with faculty, administrators, and students Feb-March 2019
  - A new collaboration is initiated with ICAR and IARI, Delhi (2022)
  - Keynote on empowering young scientists of India during workshop organized by Scientific Advisor to PM office, January 2023
- Iran (2009)
  - Grant proposal to Iranian National Science Foundation
- Israel (2012)
  - Grant proposal with Ben Gurion University (2014)
  - Visited Israel, Arava, Technion, and Volcani Center with JNF Faculty fellowship program (2017). Gave a talk at Volcani Center
  - Grant proposal with BIRD and Tel Aviv University (2019)
  - Collaborations with Ndrip and Tal-Ya on Water use efficiency (2020-continue)
- Jordan (2019-continue)
  - Developing collaborations with The University of Jordon, MOU under discussion
  - Developing collaborations with Jordan University of Science and Technology and others through two USAID project proposals submitted in 2021
- Kuwait (2021-continue)
  - Setting up collaborations with Kuwait University
  - Served as extremal reviewer for P&T to associate and full professors
- Latin America (2018-continue): Uruguay, Paraguay, Argentina, Brazil (with ACES Alumni)
  - Developing collaborations with IICA and TEC and countries of Latin America
  - Several webinars were jointed organized with IICA
  - Visited several Institutes and Universities in Argentina, Uruguay, Paraguay
  - Building collaborations with ministries, Universities, and farmer organizations
  - Several MOUs signed, grant proposals submitted
  - Joint Congress on Agribusiness was organized with Paraguay and Uruguay (2021)
- Mexico (2006-continue)
  - Joint degree with UACH on Food Science (2020)
  - 100K Strong proposal writing with UACH 2021

- Collaboration with University of Guadalajara and MOU with the City of Chihuahua and Foundation Produce in Chihuahua City Aug 16, 2019.
- Serve on the PhD committee of Gabriela Mendoza´s from University of Juarez, Mexico
- Visited Foundation Produce headquarter and met with the President and Secretary.
- US-Mexico Border Health Commission meeting in Monterrey, Mexico, Oct. 19-22, 2015
- Key-note speaker during Agronomy Week at University of Durango, Sept. 2015
- Invited speaker at International Organic farming Conference at University of Durango, Venecia, Mexico, 2015
- Member of organizing committee (Research tour to NMSU) for Mexican Soil Science Society meeting in Juarez, Mexico during 2014
- Invited speaker during Agronomy Week at University of Durango, Venecia, Mexico, Sept. 3-5, 2012
- Invited speaker during 37th International Soil Science Conference, Mexican Soil Science Society, Zacatecas, Mexico, 11-16 Nov., 2012
- Invited speaker during International Conference at University of Juarez, 15 March, 2013 Collaborated on projects funded by SCERP, EPA and NMDOH
- Served as co-advisor for four Masters/PhD students at University of Juarez
- Proposals to EPA Border programs and Ciencia Básica
- Hosted a faculty from University of Juarez, Mexico at NMSU during 2011-12

- Oman (2012-continue)
  - Meeting with Sultan Kaboos University, faculty and Deans (2022)
  - A roadmap for carbon management, soil physics, water, and energy research
  - Virtual symposium on soil hydropedology on Dec 13, 2022
- Saudi Arabia (2019-continue)
  - Developing collaborations with King Abdulaziz University, MOU is under development
  - External reviewer for tenure and promotion to full professor for King Saud University
- UAE (2021-continue)
  - Served on the scientific committee of WSM2020 and chaired a session in Dubai (2022)
  - Faculty and student exchange with UAEU meetings for identifying a roadmap for water and energy research (2022)
- Turkey (2012-continue)
  - Hosted students and scholars from Turkey
  - MOU with Kocaeli university

AWARDS RECEIVED

- Fellow Soil Science Society of America (2020)
- Award for outstanding service as 2022 Chair of the mentoring committee of SP&H
- Award of Excellence for Soil Physics multistate project (Team; W4188) (2021)
- Award “Leaders of Excellence” at the Annual WEF (2018)
- Award of Appreciation by Soil Science Society of America for serving as Book Review Editor for Vadose Zone Journal (2014-2017)

- National Water and Energy Conservation (Team) award (2017)
- Received Israel Faculty Fellowship (2017)
- Nakayama Research Excellence Professor (2014)
- Team Award for outstanding wastewater management integrated program (2014)
- Award of Excellence for Microirrigation multistate project (Team; W2128) (2014)
- Graduate Research Award of NMSU AES (2014)
- Key-note speaker Agronomy week in Durango, Mexico (2015)
- Nominated to Mahatma Gandhi Pravasi Samman London NRI Welfare Society of India (2013)
- Invited speaker at Mexican Soil Science Society meeting in Zacatecas, MX (2012)
- Award of Excellence for outstanding contribution to Western Regional Multistate Research (W-2188, 2011)
- Patricia Christmore Faculty Teaching Award (2009)
- North American Colleges and Teachers of Agriculture (NACTA) and ACES College Teaching Award (2009)
- Certificate of appreciation from NM Alliance for Minority Participation (2009)
- Water Resources Team Award for outstanding integrated program (2007)
- Soil Science Society America Journal Appreciation Award for serving as Associate Editor (2006)
- Nominated for Distinguished College Teaching Award (2008)
- Nominated for Distinguished College Research Award (2011)
- Nominated *to Gamma Sigma Delta*, Honor Society of Agriculture, NMSU Chapter (2005)
- Received *Certificate of Appreciation* for mentoring program at OSU (2005)
- Received *Certificate of Appreciation* for BAYOU mentoring program at OSU (2002)
- Invited Speaker *Soil and Water Resource Field Night* for farmers, Piketon, the Ohio State University (2003) and several conferences and meetings

LEADERSHIP WORKSHOP AND SERVICE

- Completed Aggies Leadership Training Academy (ALTA) year round course 2020
- Attended Administrators meeting with delegates from Costa Rico (Dec) 2018
- Completed Advancing Leadership Program (ALP) at NMSU during 2014-2015 (one year)
- Executive Committee member of Advancing Leadership Program during 2015-18
- Participated in other leadership workshops and invited lectures (2018-date)
- Leadership talks on “Dunning Kruger effect” (2016-17)
- Leadership talk on “how to start a talk” (2017-18)
- Served on several panels (forums) on a wide ranging leadership issues (2015-date)
- Leadership talk “Career readiness through Colleges: opportunity & challenges” (2018)

MEMBERSHIP OF PROFESSIONAL SOCIETIES

- American Geophysical Union
- Soil Science Society of America
- American Society of Horticulture Science
- American Society of Agricultural and Biological Engineering
- Gamma Sigma Delta: the Honor Society of Agriculture
- Indian Association of Hydrologists

TEACHING

International Teaching

- 2018-2017: Northwest A&F University, China: Natural Resources (July-August)
- 2018: China Agricultural University, summer school (June)
- 1998: Irrigation Management- 545.009 at Univ. of Agricultural Sciences Vienna (co-Instructor)
- 1998: Indirect Methods in Soil Physics-545.002 Univ. of Agric. Sciences Vienna (co-Instructor)
- 1999: Project Work on Irrigation- 545.001 Univ. of Agric. Sciences Vienna (Teaching Assistant)

At NMSU:

Teaching appointment averaged between 30% and 40% since 2005. Designed and taught three new classes. Teaching evaluations for most attributes ranged from 88-100%.SOILS 477- Environmental Soil Physics (3 Cr, Every Fall)

- SOILS 477+L- Environmental Soil Physics (3 Cr) +Lab (1 Cr) (Every Fall)
- SOILS 652- Advanced Soil Physics (3 Cr, Every Spring)
- SOIL 655- Contaminant Transport Modeling (3 Cr, Spring)
- SOIL 650- Spatial Variability Analysis (3 Cr, On Occasion)
- SOIL 598- Soil Physics Calculus (3 Cr, Spring 2011)
- ES/SOIL 370- Environmental Soil Science (3 Cr, Every Spring)
- ES 391- Internship (3 Cr, Fall, Spring)
- SOILS 252- Introductory Soils (3 +1 Cr, On Occasion)

At Ohio State University (2004-05):

- Soil Science- 871-Advanced Soil Physics at the Ohio State University (Instructor)
- Soil Science- 671- Soil Physics Lab at the Ohio State University (Instructor)

TEACHING PUBLICATION

Shukla M.K. and T. Sammis. 2012. Advanced soil physics class develops research and teaching skills. NACTA Journal. 56 (1): 2-7.

TEACHING PRESENTATIONS

Shukla M.K. 2016. Agriculture water management. Summer School, China Agriculture University, Beijing. June 5.
Shukla M.K. 2016. Agriculture water management. Northwest A&F University, Yangling, Nov. 8.
Shukla M.K. 2016. Soil erosion. Northwest A&F University, Yangling, Nov. 10.
Shukla M.K. 2018. How to prepare a manuscript. China Agricultural University

TEACHING SERVICE

Editorial Board member for NACTA Journal (2013-2016)

ADVISING:

- **Postdoc**: Dr. Amir Gonzalez, Postdoctoral Research Associate (2013-2016)
  Dr. Sanjit Deb, Postdoctoral Research Associate (2009- 2013)
  Dr. Akram Benali, Research faculty (2021-present)
  Dr. Hui Yang, Postdoc Research Scientist (2021-Present)
- **Research Associate**: Vanaja Kankarla (2020- 2021); Adam Gonzalez (2020-present)
- **Scholar**: Dr. Yanbing Qi, Northwest A&F University, China (2013-2014)
  Dr. Juan Pedro Flores Margez, University of Juarez, Mexico (2011-12)
  Dr. Hui Xia, Agriculture University of Hebei, China (03/2016-09/2016)
  Dr. Lili Sheng, Agriculture University of Hebei, China (03/2016-09/2016)
  Dr. Gao Huiyan, Agriculture University of Hebei, China (11/2016-04/2017)
  Dr. Li Peiling, Jiangxi Agriculture University, China (12/01/2017-11/30/2018)
- **Student**: Mr. Joel Hernandez, University of C. Juarez (9/01/16-11/30/16)
  Ms. Hui Yang, China Agricultural University, China (10/01/2017-10/30/2018)
  Mr. V. Bedirhanoglu, Ataturk University, Turkey (12/27/2017-06/05/2018)
  Mr. Xingwang Wang, China Agricultural University (10/01/2018-10/30/2019)
  Mr. Changian Ma, China Agricultural University (12/01/2018-12/31/2019)
  Ms. Yin Zhou, China Agricultural University (10/05/2019-12/31/2020)
  Mr. Chang Liu, China Agricultural University (12/30/2020-01/15/2021)
- **Faculty**: Blair Stringam, K.C. Carroll, Colby Brungard, Rajan Ghimire, PES
  Nick Webb, PES/USDA; Hatim Geli, ANRS
- **Undergraduate Students**: More than 40 undergraduate students of Environmental Science and Soil Science programs
- **Graduate Students**: Advised following students as the chair/co-chair of their graduate committees. Also, served on the committees of more than 28 more graduate students

	Name of Student	Degree	Year Completed	Advising as
1	Mike Babcock	M.Sc.	2007	Chair
2	Guillermo Ortiz	M.Sc.	2007	Chair
3	Tran Tri Dung (Civil Engg.)	M.Sc.	2007	Co-Chair
4	Parmodh Sharma	M.Sc.	2008	Chair
5	Pradip Adhikari	M.Sc.	2008	Chair
6	Amir Samani	M.Sc.	2010	Co-Chair

7	Bernice Hernandez (Univ. of Juarez)	UG Thesis	2010	Co-Chair
8	Ashraf El Sadek	Ph.D.	2011	Co-Chair
9	Amir Gonzalez	Ph.D.	2011	Chair
10	Parmodh Sharma	Ph.D.	2011	Chair
11	Pradip Adhikari	Ph.D.	2013	Chair
12	Ankit Bansal	M.Sc.	2011	Chair
13	Harmandeep Sharma	M.Sc.	2014	Chair
14	Joel Hernandez	M.Sc.	2014	Co-Chair
15	Mireya Rios, Mexico	M.Sc.	2014	Co-Chair
16	Janet Moncada, Mexico	UG Thesis	2014	Co-Chair
17	Nadia Rodriguez M, Mx	M.Sc.	2015	Co-Chair
18	Savitoz S. Sidhu	Ph.D.	2014	Co-Chair
19	Alison Flores	M.Sc.	2015	Chair
20	Darby Kellum	M.Sc.	2016	Chair
21	Gurjinder Singh	M.Sc.	2016	Chair
22	Omer F Ozturk	M.Sc.	2016	Chair
23	J. Fernandez	M.Sc.	2017	Chair
24	Saman Mostafazadeh	M.Sc.	2018	Co-Chair
25	Joel Hernandez	Ph.D.	2018	Co-Chair
26	Vanaja Kankarla	Ph.D.	2019	Chair
27	Akram Ben-Ali	Ph.D.	2021	Chair
28	Bauldwin Monie	M.Sc.	2018	Co-Chair
29	Sarah Cerra	Ph.D.	On-going	Chair
30	Darby Kellum	Ph.D.	On-going	Chair
31	Gabriela Mendoza UACJ, Mexico	Ph.D.	On-going	Co-Chair
32	Hana Hernandez	MS	On-going	Chair
33	Sumeet Sharma	MS	On-going	Chair

RESEARCH

Research appointment has averaged between 35% and 55% from 2005. Following are the areas of research interest

- Use of unconventional waters (brackish groundwater, produced water and RO concentrate) for sustainable agriculture (Pecan, chile peppers, tomato, and halophytes), mechanisms and impacts on evapotranspiration, groundwater, soil contamination, yields, and quality
- Measurement and modeling of water and energy (heat) transport in unsaturated porous media for horticulture and tree crops, improving water use efficiency
- Transport of solutes including herbicide, and irrigation efficiencies through unsaturated field and greenhouse soils under chile, onion, cotton, and pecan

RESEARCH FUNDING

Total funding share to my program to date is more than $4 million

- Carbon sequestration in reclaimed mined soils of Ohio; Department of Energy-NETL; 2003-2006; (co-PI with Lal) $756,000
- Interactions of vadose zone properties at multiple scales in arid land soils, by USDA- HATCH Grant (PI) ($50,000 for five years)
- Mapping of airborne particulate matter under agriculture and unpaved road, Southwest Consortium for Environmental Research and Policy (SCERP) (PI) (2007-2009 $140,000)
- Killed Mulch Cover Crop Systems and Water Management in Southern NM: Irrigation Water Management for Monitoring and Modeling on Farm Soil Salinity- Rio Grande basin Initiative (RGBI) (PI) ($62,500)
- Land application of industrial effluent on a Chihuahuan Desert ecosystem: Impact on soil physical and hydraulic properties. NMWRRI 2006 Seed Money Research Program Award (PI) ($67,000)
- Self-Sealing Liners for Desalination Evaporation Ponds. Sandia University Research Partnership (SURP) (PI) 2006 ($40,000)
- Modeling the transport of DU particles by saltation mechanism, Physical Science Laboratory (PI) 2007 ($5000)
- Evaluation of the 'Pecanigator' as an aide to irrigation scheduling for pecans in the Mesilla Valley and west Texas. White, Heerema, Sammis, Shukla, Mexal, Iglesias 2007 ($8000)
- Soil Salinity Management and Onion Cultivar Screening for Salt Tolerance. Shukla and Cramer. NMDOC, March 2007 ($22,500 for two years)
- Effect of salinity and crusting on hydraulic conductivity of soil. AES, February 2008, Equipment ($5000)
- Advanced sensing and control technologies to optimize resource management in specialty crops. 2008. USDA-CSREES (NMSU, TAMU, UCDAVIS total about $5 million) ~ (PI) 2M for NMSU; $633K Shukla, Mexal) (2009-12)
- Soil Water Extraction and Rooting Patterns in Pecan Orchards. 2008. Shukla, Mexal, Heerema, USDA-ARS ($29,000)
- Winter Production of Leafy Greens in the Southwestern USA using High Tunnels. Guldan, Uchanski, Falk, Shukla, Western SARE Competitive Grant (2009-13) ($194,000)
- Land application of industrial effluent on a Chihuahuan Desert ecosystem: Impact on soil physical and hydraulic properties. Shukla, Mexal, WRRI, (PI) $30,000 for 1 year (2009-10)
- Land-based Sources of Air Quality Contamination in the Binational Border Region of Southwestern New Mexico, Northwestern Chihuahua and West Texas. New Mexico Department of Health. Dubois, Wang, Shukla, Sammis, et al. 2010 ($800K).
- Comparison of Graminaceous crops for control of Verticillium in Chile. New Mexico Chile Commission. Sanogo, Idowu and Shukla 2010-11 ($7500)
- Interactions of vadose zone properties at multiple scales in arid land soils, by USDA- HATCH Grant 2010-15 ($50,000 for five years) (PI)
- VPR Research Grant and GREG Award Shukla Lambis, Bawazir (PI) 2011-12 ($35K)
- Compensated Root Water Uptake and Transpiration in Pecans: Measurements and Modeling for Sustainable Irrigation, , Shukla, 2011-13 (PI) ($22K)
- Soil properties at BRGNDRF, Bureau of Reclamation, 2013 (Co PI) ($2500)

- Land-based sources of air quality contaminants in the Binational Border Region of Southwestern New Mexico, Northwestern Chihuahua and West Texas", NM Department of Health, (Co PI) 2013-14 ($69,450.00) Total award: $231,500.00.
- Desalination concentrate management for sustainable agriculture: a preliminary study on transport behavior and plant viability at BGNDRF, Bureau of Reclamation, Shukla, Ulery, Picchioni, Schutte, Rastegary 2013-14 (PI) ($50K)
- Graduate Research Award. Effects of water and salinity stresses and yield and quality of New Mexico specialty crops. AES. 2014-16 (PI) ($40K)
- Growth and Yield Responses to Irrigation Water Salinity for Drip Irrigated Chile. AES 2015-17 ($16000).
- Leaching of Indaziflam in Sandy Loam Soil: Quantification and Management. Bayer CropScience, 2013-17 ($180K)
- Assessment of water table and water quality variations with respect to river flow along Rio Grande River between Garfield NM and Fabens TX, NM WRRI Faculty Water Research Grant Program. 2014-15 (Co-PI) ($48K)
- Soil Geomorphic Institute. USDA- NRCS workshop 2016-17 ($40K)
- Determining Impacts of Long Term Use of RO Concentrate on *Atriplex* Species, Soil characteristics and Microbial Habitats. US Depart. Of Interior, Bureau of Reclamation, Hosler, Shukla, Cerra, 2017-19 ($150K)
- Irrigation with brackish groundwater and concentrate: effect on soil microbial properties, plant uptake, and ion deposition, Shukla, Schutte, Picchioni, WRRI-BOR, 2017-18 ($74K)
- Commodity Exchange Market, Cochran Fellowship Program for Malawi, USDA FAS, Shukla (PI), Acharya, Townsend (AEAB), 2018 ($75K).
- NMSU Mexico F2F Agriculture Volunteer Opportunity Project (AVOP) Small Grants Program, Gutierrez and Shukla, 2018 ($720K)
- Shukla M.K. (Principal), W. Pedio, N. Flores, E. Delgardo (FACS), R Acharya. 2018. Capacity Building of Risk-based SPS Systems and Trade Facilitation in Colombia. USDA-FAS, PI, $286,000
- Acharya (PI), Shukla, Ghimire, Djaman 2018. Tunisia Market Reform within the Wheat Value Chain, Cochran Fellowship Program, USDA FAS, $60K
- NMSU Costa Rica F2F Agriculture Volunteer Opportunity Project (AVOP) Small Grants Program, Gutierrez and Shukla, 2018 ($720K)
- Shukla M.K. (PI), A. King, R. Ghimire 2021. Soil Health Principles and Fallowed Land Management. NMDA ($10K).
- Shukla M.K (2021). Produced water for agriculture. HPOC Company ($12700)
- Picchioni G.A. (Principal), Schutte, B. J. (Co-Principal), Shukla, M. K. (Co-Principal), Guzman, I. (Co-Principal). Exploring the Benefits of Brackish Water and Halophytes for Human Health. USDA/NIFA/AFRI. Research Credit (PI): $76,000. Total Award: $190,000. Current Status: Funded**.** (January 15, 2021 – January 14, 2023).
- Shukla M.K. (PI), R. Ghimire (Co-PI). 2021. Can we increase soil organic C sequestration by efficient rangeland management? NGL, Energy Partners LP, ($132K)
- Shukla M.K. (PI).2021. Lower Rio Grande Land Management Practices for Uncultivated Agricultural Fields. NMDA and ISC ($135K) and additional $65K in 2022

Major Interdisciplinary/ Multi-institutional Grants Lead as PI

- Hydrology in Arid Regions: An Assessment of the Potential of GPS Surface Reflection to Detect Soil Moisture at Landscape Scale (PI)- NASA ($98,000) Shukla, Bleiweiss, Schmugge, NMSU and Katzberg, NASA (2009)
- Shukla, M. K. (Principal), NMSU, KSU, TSU Sponsored Research, "Developing Decision Support Tools for Improving Nitrogen and Water Use Efficiency to Reduce Nitrous Oxide Gas Emissions in Cereal Crops", Sponsoring Organization: USDA/NIFA/ Agriculture and Food Research Initiative, Sponsoring Organization Is: Federal, Research Credit: $1,977,738.36, PI Total Award: $4,944,345.89.
- Shukla, M. K. (Principal), Sammis, T. W. (Principal), UCD, TAMU. Sponsored Research, "Advanced Sensing and Control Technologies to Optimize Resource Management in Specialty Crops: Studies of Water and Nitrogen Management in Deciduous Crops under Normal and Resource-Limited Conditions", Sponsoring Organization: University of California, Davis, Sponsoring Organization, Research Credit: $381,465.20, PI Total Award: $1,907,326.00.
- Shukla, M. K. (Principal), NMSU, TTU, UW, OSU. "RII Track-2 FEC: Infrastructure Development for Enhancing Arid and Semi-Arid Systems (IDEAS) for Food and Water Security", Sponsoring Organization: National Science Foundation, Sponsoring Organization, Research Credit: $1,189,244.60, PI Total Award: $5,946,223.00.
- Shukla, M. K. (Principal), NMSU, TTU, UCR, UW. Sponsored Research, "Use of nontraditional water resources for sustainable food security", Sponsoring Organization: USDA/NIFA/ Agriculture and Food Research Initiative, Sponsoring Organization Is: Other, Research Credit: $1,495,130.80, PI Total Award: $4,986,088.00.
- Shukla M.K. (PI), Xu P. (Co-PI), Epel J., O. Distel, others from USA and Israel. U.S. - Israel Center of Excellence in Energy, Engineering and Water Technology. 2019. Total Award $20M.
- Shukla M.K. (PI). 2020. Jordan Water Governance. USAID project with Deloitte (Total $25M; NMSU- $1M).
- Shukla M.K. (PI). 2022. WADI II project. USAID project with Deloitte (Total $25M)
- Shukla M.K. (Co-PI), A. Fernald (PI), et al. 2022. Collaboratively Developed Precision Fallowing Strategies for Thriving Agriculture in Regions Facing Water Scarcity. $1M, FFAR (funded)
- Shukla M.K. (PI; lead Education), S Norris, UC Davis (Lead), U of A, and Fresno. 2021 Sustainability of Groundwater and Irrigated Agriculture in the Western United States under a Changing Climate. USDA/AFRI. $10M

Consultancy

- Hydraulic conductivity of evaporation ponds. Sapphire Inc.
- Strategies for closure of Wingate evaporation pond, Animas Environmental Services
- Herbicide transport, Bayer Crop Sciences
- Saltation modeling project, through PSL for the DOE
- Meter Group sensor testing
- Local Pecan growers
- Zeigler Geologic Consulting LLC on soil hydraulic properties
- NGL Energy Partners LP on Produced water for agriculture and C sequestration
- HPOC LLC an oil and gas company on use of produced water for agriculture

PUBLICATIONS: (H index: 34; I-10 index: 90)

Journal articles with a postdoc, graduate or undergraduate student as a co-author > 120
Abstracts with a postdoc, graduate or undergraduate student as a co-author……> 70

BOOKS:

1. Lal R. and M.K. Shukla. 2004. Principles of Soil Physics. Marcel Dekker Inc. New York, NY, USA, p716.
2. Shukla M.K. (Ed.) 2011. Soil Hydrology, Land Use and Agriculture: Measurement and Modeling. CAB International, UK 13:978 1 845937973, p434.
3. Shukla M.K. 2014. Soil Physics An Introduction. CRC Press, Boca Raton, FL, USA. ISBN 9781439888421, p478.
4. Shukla M.K. 2022. Soil Physics An Introduction, 2nd edition. CRC Press, Boca Raton, FL, USA (on-going)

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1. *Xianbo Z., H. Yang, M. K. Shukla, and T. Du. 2023. Proposing a crop-water-salt production function based on plant response to stem water potential. Ag Water Management. 278- https://doi.org/10.1016/j.agwat.2023.108162.
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6. Shi R., J. Wang, L. Tong, T. Du, M.K. Shukla, X. Jiang, D. Li, Y. Qia, L. He, X. Bai, X. Guo. 2022. Optimizing planting density and irrigation depth of hydrid maize seed production under limited water availability. Ag Water Mana. Journal. https://doi.org/10.1016/j.agwat.2022.107759.
7. Bedirhanoglu V., H. Yang, and M. K. Shukla. 2022. Reducing water salinity at flowering stage decreases days to flowering and promotes plant growth and yield in chile pepper. Hort Science. 575(9) 1128-1134.
8. *Gonzalez-Delgado A., P. A. Jacinthe, and M.K. Shukla. 2022. Effect of indaziflam on microbial diversity and nitrogen cycling processes in orchard soils. Pedosphere.32(6) 803-811, doi: 10.1016/j.pedsph.2022.06.019
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12. *Zhao Y., X. Mao, M. K. Shukla, et al. 2021. How does film mulching modify available energy, evapotranspiration, and crop coefficient during the seed–maize growing season in northwest China? Ag Water management. 245. https://doi.org/10.1016/j.agwat.2020.106666.
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- Shukla, M.K. 2007. Variability of vadose zone hydrological properties: assessment and modeling: NM tech, January 29. Socorro.
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- Shukla M.K., T.R. Ellsworth, R.J. Hudson and D.R. Nielsen. 2001. Dependence of dispersivity on average pore water velocity. 65th Annual SSSA meeting in Charlotte, North Carolina, Oct. 21-25.
- Shukla, M.K. 1998. Recent research with soil erosion models. International Conference on Experiences with Soil Erosion Models. Prague. 5-8 May.
- Shukla M.K. 1996. Estimation of saturated hydraulic conductivity. Preceding 6th ICID.CIID international workshop on Drainage and Environment. Ljubljana, Slovenia April 21-29.

- Shukla, M.K. and G.C. Mishra. 1994. Canal discharge and seepage relationships. Preceding of VI National Symposium on Hydrology at Shillong, Meghalaya, April 10 - 24, p. 263-279.

CONFERENCE PAPERS (INCLUDING ABSTRACT)

More than 80 (can be made available upon request)

RESEARCH REPORTS and MANUALS:

1. Cerra, S., Shukla, M. K., O'Meara, S. (2021). *Determining Impacts of Long-Term Use of Reverse Osmosis Concentrate as Drip Irrigation Water Source on Atriplex species, Soil Characteristics and Microbial Communities*. Bureau of Reclamation U.S. Department of the Interior. Final Report
2. Shukla, M. K., Ben Ali, A., Cerra, S., Schutte, B. J., Picchioni, G., Gard, C. (2021). *Irrigation with Brackish Groundwater and Desalination Concentrate: Effect on Soil Microbial Properties, Plant Uptake, and Ion Deposition in Soil* (vol. Techn. Compl. Rept. TR397). Las Cruces, NM: New Mexico Water Resources Research Institute. https://cduaws.nmwrri.nmsu.edu/wp-content/uploads/PDF/tr397.pdf.
3. Shukla M.K. and A. Flores. 2015. Desalination Concentrate Management for Sustainable Agriculture: A Preliminary Study on Transport behavior and Plant Viability at BGNDRF, BOR DOI. Project Completion report
4. Stringam B., M. K. Shukla and B. N. Kuffour. 2015. Assessment of Water Table and Water Quality Variations with Respect to River Flow along Rio Grande between Garfield NM and Fabens TX. WRRI, NMSU. Project Completion Report.
5. Shukla M.K. and J. P. Margez. 2013. Final report for Particulate matter emission due to various land uses to SCERP.
6. Gonzalez, A. and M.K. Shukla. 2011. Final report for Sandia University Partner Project on Developing low cost self-healing liners for evaporation pond
7. Shukla M.K. 2007. Interactions of Vadose Zone Properties at Multiple Scales under Organic Farming in Arid Land Soils. CRIS report for 2005-13.
8. Shukla M.K. 2007. Interactions of Vadose Zone Properties at Multiple Scales under Organic Farming in Arid Land Soils. CRIS report for RCC W2128 2009.
9. Shukla M.K., J. Pedro-Margez. 2008. Pre-final SCERP report.
10. Shukla M.K. 2009. Mapping of airborne particle from two land uses. Final SCERP report.
11. Shukla M.K., J. Mexal, T. Sammis, M. Babcock and P., Adhikari. 2009. Effect of treated wastewater on soil properties. Final report to New Mexico WRRI.
12. Shukla M.K. 2005. Soil Physics- Laboratory manual for soil 477L.
13. O'Neil M., *K. Lombard, B. Onken, A. Ulery, M.K. Shukla. 2006. Power Plant Combustion Byproducts for Improved Crop Productivity of Agricultural Soils- Final report- June 2006. U.S. Department of Energy National Energy Technology Laboratory, The Combustion Byproducts Recycling Consortium.
14. Lab manual for SS-671 at Ohio State University.
15. Estimation of hydrological soil properties for design of drainage system for Bulandshahar (CS-94).
16. Effect of Urbanization on runoff (TN-93).

17. Status report on Urban Hydrology (SR-15).
18. Inter-comparison of Urban Watershed Model (TR-144).
19. Design of Surface Drainage for a command in Bulandshahr.
20. Soil salinization and reclamation in command areas.
21. Urban watershed modeling- A comparative study (CS/AR-140).
22. Estimation of soil hydrological properties of a doab in Narsingpur M.P. of Narmada river basin.
23. Effect of Urbanization on runoff hydrograph.
24. User's manual for design of sub-surface drainage system under unsteady and steady state conditions of recharge.
25. Interim report on Sub surface drainage investigations in stage II of IGNP at RD 838.

OTHER SPEECHES AND TALKS

1. Shukla M.K. 2018. ACES Global initiatives program. NTU, Crownpoint, Oct 17.
2. Shukla, M.K. 2006. Variability of soil properties and processes at multiple. . scales: assessment and modeling: Mars Technical committee, October3-4. Wooten Hall.
3. Soil Physics Group, 2006. Soil physics and environmental quality. Poster presented at University Research Council (URC) Fair in Corbett Center.
4. Shukla M.K. 2006. Modeling the transport of DU particles by saltation mechanism. Semi-annual review meeting, Picatinny Arsenal, Annual Review Meeting. 29-30 Nov.
5. Shukla, M.K. 2007. Variability of vadose zone hydrological properties: assessment and modeling: NM tech, January 29. Socorro.
6. Shukla M.K. 2007. Assessment and modeling of vadose zone properties at multiple scales. UTEP, March 23, El Paso.
7. Shukla M.K. 2007. Task 4: On farm irrigation system management. 2007 Annual conference, Joint Rio Grande basin Initiative. South Padre Island; May 14-17.
8. Shukla M.K. 2007. Salinity management in onion research. Onion Field Day. May 23.
9. Shukla M.K. 2008. Soil salinity management and onion cultivar screening for salt tolerance. Annual Review Meeting of NM Onion Commission. March 04, 2008.
10. Shukla M.K. 2009-date. W-3128 meeting annual report presentation (every year Oct./Nov.).
11. Shukla M.K. 2010-date. W-3188 meeting annual report presentation (every year in January).

OUTREACH (EXTENSION) PUBLICATIONS/PRESENTATIONS

- Kankarla V., M.K. Shukla and L. M. Lauriault. 2021. A preliminary report on the influence of various saline irrigation waters on nutritive value upon establishment of alfalfa and triticale as representative forages. East African Scholars Journal of Agricultural and Life Sciences. DOI:10.36349/easjals.2021.v04i09.001.
- Sammis T., M.K. Shukla, J. Mexal, J. Wang and D. Miller. 2013. Pecan Research and Outreach in New Mexico: Logic Model Development and Change in Communication Paradigms. Journal of Higher Education Outreach and Engagement. 17(1) 27-41.
- Sammis T., M.K. Shukla, J. Mexal, P. Bosland and L. A. Daugherty. 2008. Case study on Improving Chile Industry of New Mexico through Industry, Agriculture Experiment Station and Cooperative Extension Services Collaboration. Journal of Extension. 47:1-7.

- Allegri M. and M.K. Shukla. 2022. Summit with IICA at NMSU. Co-organized Oct 13.
- Shukla M.K. 2020-2022. IoT system for improving water use efficiency. Virtual conference organized by IICA for Latin America and Caribbean audiences.
- Shukla M.K. 2022. IoT system for digital agriculture at Leyendecker Science Center. Conference organized at IICA headquarters, San Jose, Costa Rica. April 2022.
- Shukla M.K. 2020. Participated in a Facebook live event on Oct 15, 2020 with La Salle and U.S. Embassy Bogotá.
- Shukla M.K. 2017. Pecan research at ACES-NMSU. University-Grower conference.
- Deb S.K., M.K. Shukla and J. Mexal. 2012. A peak at the other half of your orchard: The roots. 46th Annual Western Pecan Growers Association Conference. March 4-6, 2012 Hotel Encanto de Las Cruces, Las Cruces, NM.
- Sharma P. and M.K. Shukla. 2007. Monitoring soil moisture and soil salinity in agriculture fields under furrow and drip irrigation systems. October 15-18, Water Quality Conference, Fayetteville, Arkansas.
- Sharma, P., M. K. Shukla and T. Sammis. 2007. Predicting Soil Temperature from Air Temperature for Chile Crop. 2007 New Mexico Chile conference.
- Ikemura Y. and M.K. Shukla. 2006. Soil quality in a minimum tilled field in southern New Mexico. Southern Conservation Tillage Systems Conference. Bushland (Amarillo), Texas. June 26-28, 2006.

OUTREACH

- Participate regularly in Field days organized by ACES in Las Cruces Plant Science and Fabien Garcia Center
- Gave presentations during several chile growers association conference and some pecan grower conferences
- Installed an outreach, demonstration and research site in Leyendecker for water use efficiency innovation using Ndrip micro gravity drip system
- Organized several field visits to the Ndrip farm for local growers as well as for Pecan growers from Mexico
- Organized several virtual meeting on water use efficiency, micro-gravity drip system, IOT system, soil health and carbon sequestration with IICA and various other organizations
- Provided tours, presentations on-site as well as virtually to stakeholders and visitors from local, national and foreign visitors.
- Several 100K strong proposals were submitted with Colombia, Mexico, Paraguay and Uruguay.
- Several Cochran proposals were developed and faculty and Administrator from Malawi were trained at Las Cruces, Campus.
- Extension training program was Co-organized with CES for Extension Specialists from Costa Rica.

VIRTUAL MEETINGS

Zoom meeting with NDrip and local Pecan growers followed by visit to the farm in August 2020.

Several others related to proposal writing, collaborations set-up, symposia, and MOU development are also organized throughout the year.

RADIO TALK

Gave a talk on National Public Radio, KTEP 88.5 FM, in El Paso on Sunday, March 25 at 7:00 PM on Soil Physics. The talk was also streamed at www.ktep.org

Interviewed on KRQE NEWS 13 about Water Conservation on June 16, 2022

Interviewed for USA Today on Water Problems July 27, 2022

YOUTUBE VIDEO

NMSU professor experiments with desalination concentrate, disposal.
https://www.youtube.com/watch?v=BNmUAowyTxY
Novel technologies for efficient water use
https://www.youtube.com/watch?v=cDF5Ys02OqE

NEWSPAPER ARTICLES

- NMSU researchers want to use satellites to help pecan groups. 2009. Las Cruces Sun News
- Regional project works on Microirrigation. 2014. Las Cruces Sun News
- Professor experiments with desalination concentrate disposal: 2015. Las Cruces Sun News
- Ag uses for highly saline water researched: 2015. Albuquerque Journal
- Is saline water an answer to drought: 2015. Las Cruces Bulletin
- Viable farming and water: 2015. Deming Headlight
- NMSU professor working to expand water use efficiency in southern New Mexico, Las Cruces Sun News, June 2022.

LANGUAGES: English, German, and Hindi (speak and read all three well; write English)