

Manoj K. Shukla, PhD
ACES Global Initiatives Program Coordinator
Professor of Soil Physics
Plant and Environmental Sciences
New Mexico State University
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EDUCATION

1996-1998 University of Agricultural Sciences Vienna, Austria, Ph.D., Soil Physics
(Collaborative program with University of California Davis)

Title of Ph.D. Thesis: Solute transport in porous media with diffusion controlled and surface reaction rate laws: Worked on transport behaviors of solutes through different displacement lengths, optimized global estimates of transport parameters, developed relationship between pore water velocity and coupled diffusion-dispersion

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

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

ACES Global Initiatives Program Coordinator: Lead and manage ACES Global Initiatives for student and faculty, create a database of existing efforts, explore new opportunities including MOU with foreign Universities

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

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

Nakayama Chair and Professor of Soil Physics: Lead and manage the soil physics program consisting of undergraduate, graduate students, and Postdocs. Currently supervising eight Ph.D. students, one each from CAU China, Turkey, and Mexico; 1 MS and 1 UG student; and a visiting Faculty from JAU, China. Mentoring five junior faculty and several UG students. Teaching undergraduate and graduate classes regularly. Serving on department, college, university, national and international committees.

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

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 a technician hired through the grant, budget management, report writing, grant proposal writing, publishing, teaching 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 DEPARTMENT 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

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 ACES Global Initiatives Program Coordinator

August 2018 Executive Committee Member of International Arid Lands Consortium

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

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

December 2018 Developing a program "Extension Education" for senior undergraduate students of agriculture in India

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

2014-date Member CHIWA group on desalination

2015-date 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 Academic Program) Teaching Academy Workshop on Promotion and Tenure 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

2015-date Executive Committee member, Vadose Zone Journal
2015-date Book Review Editor, Vadose Zone Journal
2016-date 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 systems 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 New Mexico State Representative Multistate Research Group on soil, water and environment physics at different scales 3188
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

- Australia (2010)
 - Co-Convener WCSS Symposium at 19th World Congress, Brisbane, Australia, Aug1-6, 2010
 - Served as External Reviewer of a PhD dissertation from the University of Western Australia
- China (2013-continue)
 - Dr. Yanbing Qi Northwest Agriculture and Forestry University, Yangling, Shaanxi is currently working on desertification and soil property interaction
 - Invited speaker at workshop on “Water and food security under changing environment”, June 1 to 7, 2015, China Agriculture University, Beijing
 - Guest lecture during summer school during June 2016 at CAU, Beijing
 - Hosted CAU scientists and organized a workshop at NMSU main campus in 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.
 - Guest lecture (two) to undergraduate students of Natural Resources class, 2016
 - 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
 - Visiting China Agriculture University, Beijing in June (2018), taught in summer school
- Mexico (2006-continue)
 - 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
- Iran (2009)

- Grant proposal to Iranian National Science Foundation
- 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
- 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
- India (1989-continue)
 - Served as executive secretary of Indian Association of Hydrologist
 - Served as Associate editor of Jal Vigyan Samachar (1993-1994)
 - Organized and gave lectures during training workshops for engineers and growers on water management
 - Visited Agricultural University in India as part of recruiting activities in 2011
 - Attended a conference in Surat on Water Management 2014
 - Attended ISSS conference in Kolkata in Dec. 2017
 - MOU with IIT Kharagpur was signed and working on with other Universities
 - Organized and attended leadership Conference in New Delhi during 26 April- May 1, 2018 for eight ACES students
 - Developing a extension training program for agriculture graduates of Andhra Pradesh

AWARDS RECEIVED

- 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 and Chair (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 in London UK by the 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

- Attended Administrators meeting with delegates from Costa Rico (Dec) 2018
- Attended Advancing Leadership Program (ALP) at NMSU during 2014-2015 (one year)
- 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 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)
- **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 Agriculture University, China (10/01/2017-10/30/2018)
Mr. V. Bedirhanoglu, Ataturk University, Turkey (12/27/2017-06/05/2018)
Mr. Xingwang Wang, China Agriculture University (10/01/2017-10/30/2018)
 - **Faculty:** Blair Stringam, K.C. Carroll, Colby Brungard, Rajan Ghimire, PES
Dr. Nick Webb, PES/USDA
Dr. Hatim M.E. Geli, Animal and Range Science
 - **Undergraduate Students:** Several 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	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	Sarah Cerra	Ph.D.	On-going	Chair
27	Vanaja Kankarla	Ph.D.	On-going	Chair
28	Akram Ben-Ali	Ph.D.	On-going	Chair
29	Bauldwin Monie	M.Sc.	2018	Co-Chair

30	Darby Kellum	Ph.D.	On-going	Chair
31	Esmail Mokari	Ph.D.	On-going	Chair

RESEARCH

Research appointment has averaged between 60% and 70% from 2005. Following are the areas of research interest

- Use of unconventional waters (brackish groundwater and RO concentrate) for sustainable agriculture (Pecan, chile peppers, tomato, and halophytes), mechanisms and impacts on evapotranspiration, groundwater, soil contamination, and yields
- Measurement and modeling of isothermal and thermal water (liquid water, water vapor) and energy (heat) transport in unsaturated porous media for horticulture and tree crops
- Nitrate, chloride, herbicide transport, and irrigation efficiencies through unsaturated porous media under chile, onion, cotton, and pecan fields as well as in the greenhouse

RESEARCH FUNDING

Total funding received to date is more than \$3 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, WRI, (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 Gramineous 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 WRI 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, WRI-BOR, 2017-18 (\$74K)
- Commodity Exchange Market, Cochran Fellowship Program for Malawi, USDA FAS, Shukla (PI), Acharya, Townsend (AEAB), 2018 (\$75K).
- NMSU Mexico F2FAgriculture Volunteer Opportunity Project (AVOP) Small Grants Program, Gutierrez and Shukla, 2018 (\$720K)
- Shukla M.K. (Principal), W. Pedio, N. Flores, E. Delgado (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

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, Schmutge, 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. .

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

PUBLICATIONS: (H index: 24; i10 index: 52)

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

REFEREED JOURNAL ARTICLES (114) *is a postdoc, graduate or undergraduate student
Published in Year 2018

1. *Yang H., T. Du, X. Mao, R. Ding, and M.K. Shukla. 2019. A comprehensive method of evaluating the impact of drought and salt stress on tomato growth and fruit quality. *Ag Water Manage.* 213: 116-127. (In Press)
2. Shukla M.K. 2018. Review of Field Hydrology: The Geological Field Guide Handbook. *Vadose Zone Journal.* doi:10.2136/vzj2018.05.0001br.
3. *Hooks T.N., G. A. Pichionni, B. J. Schutte, M.K. Shukla, and D. Daniel. 2018. Sodium chloride effects on seed germination, growth, and evapotranspiration of *Lepidium alyssoides*, *L. draba*, and *L. latifolium*: traits of resistance and implications for invasiveness on saline soils. *Rangeland Ecology & Management.* 71:433-442.
4. *Kellum D.S., M.K. Shukla, J. Mexal and S. Deb. 2018. Greenhouse gas emissions from pecan orchards in semi-arid southern New Mexico. *Hort Sci.* 53:704-709.
5. *O. Ozturk, M.K. Shukla, B. Stringam and C. Gard. 2018. Irrigation water salinity induced changes in the evaporation, growth and ion uptake of two halophytes. *J Ag. Water Manag.* 195: 142-153.
6. Rahamati M et al., 2018. Development and analysis of the Soil Water Infiltration Global database. *Earth System Science Data.* 10:1237-1263. <https://doi.org/10.5194/essd-10-1237-2018>
7. Qi, Y., J. Pu, F. Yang, M. K. Shukla, and Q. Chang. 2018. Response of soil physical, chemical and microbial biomass properties to land use changes in fixed desertified land. *Catena.* 160: 339-344.
8. *Triston N. Hooks, Geno A. Picchioni, Brian J. Schutte, Manoj K. Shukla, David L. Daniel, and Jamshid Ashigh. 2018. Salinity an Environmental “Filter” Selecting for Plant Invasiveness? Evidence from the Indigenous *Lepidium alyssoides* on Chihuahuan Desert Shrublands. *Rangeland Ecology and Management.* 71: 106-114.

Published in Year 2017

9. *Gonzalez A., M.K. Shukla, D. Dubois, J. Margez, J. Hernandez and E Olivas. 2017. Microbial and size characterization of airborne particulate matter collected on sticky tapes along US-Mexico border. *J. Environmental Science.* 53: 207-216. DOI:[10.1016/j.jes.2015.10.037](https://doi.org/10.1016/j.jes.2015.10.037).
10. *Pinon-Villarreal, A., A. Bawazir, M.K. Shukla, A. Samani, and J.P. King. 2017. Modeling capillary rise in Clinoptilolite zeolite and riparian soils to sustain vegetation in water scarce areas. *J. Irrigation and Drainage ASCE.* 143 (11): DOI: [10.1061/\(ASCE\)IR.1943-4774.0001235](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001235).
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- *Deb S.K., *P. Sharma, M. K. Shukla, J. G. Mexal, T. W. Sammis, and R. St. Hilaire. 2010. Patterns of soil moisture depletion in mature pecan orchards on the Rio Grande Plains, Las Cruces. American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting, June 20–23, 2010, Pittsburgh, PA. (Accepted).
- Maier B., M.P. Bleiweiss, D. W. DuBois, and M.K. Shukla. 2012. Wireless sensor technology for enhanced spatial and temporal knowledge of crop growing conditions. USCID Water Management Conference Proceedings. P105-114, Nov 13-16, Reno NV.
- Adhikari P., M. K. Shukla, and J. G. Mexal. 2012. Impact of wastewater application uniformity on spatial variability of hydraulic conductivity. USCID Water Management Conference Proceedings. P449-462, Nov 13-16, Reno Nevada.
- Deb S.K., M.K. Shukla, M.E. Uchanski, and P.W. Bosland. 2012. Evaluation of compensated root water uptake pattern of greenhouse drip irrigated chile. 2012 Irrigation Show & Education Conference, Agriculture Track-1, Nov. 2-6, Orlando, Florida.
- Schutte, B. J., N. Klypina, Shukla, M. K. 2013. Soil moisture effects on viability of physically dormant weed seeds (vol. 66). Proceedings of the Western Society of Weed Sci.
- *Sharma H., *S.K. *Deb, M.K. Shukla, P Bosland, B. Stringam and M. Uchanski. 2013. Chile root water uptake under partial root drying: a greenhouse drip irrigated study. 2013 Irrigation Show & Education Conference, Nov. 4-8, Austin, TX.

- *Sharma H., M.K. Shukla and *S.K. Deb. 2013. Water conservation using partial root drying for drip irrigated Chile. USCID Conference, October 22-25, Denver, Colorado.
- Shukla M.K. 2015. Water resource management for semi-arid areas: status, problems and opportunities. 27th International Agronomy Week, Sept. 7-11, Durango, Mexico.
- Stringam, B., D. Berg, M. Shukla, K. Grover. 2015. Using the TI 84 for irrigation scheduling training. Emerging Issues in Water Management Governance. *USCID Water Management Conference*. Albuquerque, New Mexico November 17-20, p. 69-76.

INVITED PRESENTATIONS

- Shukla M.K. 2018. ACES Global initiatives program. NTU, Crownpoint, Oct 2018.
- Shukla M.K. 2018. Sustainable management of soil water. China Agriculture University, June 2018.
- Shukla M.K. 2018. Sustainable management of soil salinity. China Agriculture University, June 2018
- Shukla M.K. 2017. Irrigation water management for water scarce New Mexico. Volcani Center, Israel, June 14.
- Shukla M.K. 2016. Managing our salt. Wells, Pumps, etc... Civil Engg. Department, March 11, 2017.
- Shukla M.K. 2016. Soil organic carbon under different land uses. Yangling International Agri-Science Forum, Northwest A&F University, Yangling, Nov. 5-7.
- Shukla M.K. 2016. Irrigation water management for semi-arid areas: opportunities for augmenting water resources and improving water use efficiency. College of Natural Resources and Environment, Northwest A&F University, Yangling, Nov. 8.
- Shukla M.K. 2016. Water management for semi-arid areas: opportunities for augmenting water resources. Using brackish water and RO concentrate. China Agricultural University, Beijing, June 5.
- Shukla M.K. 2015. Water resource management for semi-arid areas: status, problems and opportunities. 27th International Agronomy Week, Sept. 7-11, Durango, Mexico. (Key-note Address)
- Shukla M.K. 2015. Irrigation water management for water scarce semi-arid areas: opportunities for augmenting water resources and improving water use efficiency. Water and Food Security under Changing Environments. China Agricultural University, Beijing, China, June, 1-7.
- Shukla, M.K. 2015. Water balance in the rootzone of soil under contrasting texture. International Conference on organic farming. Torreon, Mexico, April 29-20.
- Shukla M.K. and J. P. Margez. 2012. Organic farming in New Mexico-sustainability based on soil properties. Organic Agriculture, Mexican Soil Science Society, November, 12-16, 2012.
- Shukla M.K. 2012. Sustainability of organic farming in New Mexico. 24th International Agronomy Week, University of Durango, Venecia, Mexico. Sept 4-6, 2012.
- Shukla, M.K. 2006. Variability of soil properties and processes at multiple scales: assessment and modeling: Mars Technical committee, October3-4. Wooten Hall.
- Soil Physics Group, 2006. Soil physics and environmental quality. Poster presented at University Research Council (URC) Fair in Corbett Center.

- Shukla M.K. 2006. Modeling the transport of DU particles by saltation mechanism. Semi-annual review meeting, Picatinny Arsenal, Annual Review Meeting. 29-30 November.
- Shukla, M.K. 2007. Variability of vadose zone hydrological properties: assessment and modeling: NM tech, January 29. Socorro.
- Shukla M.K. 2007. Assessment and modeling of vadose zone properties at multiple scales. UTEP, March 23, El Paso.
- 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 75 (can be made available upon request)

RESEARCH REPORTS and MANUALS:

1. 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
2. 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.
3. Shukla M.K. and J. P. Margez. 2013. Final report for Particulate matter emission due to various land uses to SCERP.
4. Gonzalez, A. and M.K. Shukla. 2011. Final report for Sandia University Partner Project on Developing low cost self-healing liners for evaporation pond
5. Shukla M.K. 2007. Interactions of Vadose Zone Properties at Multiple Scales under Organic Farming in Arid Land Soils. CRIS report for 2005-13.
6. 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.
7. Shukla M.K., J. Pedro-Margez. 2008. Pre-final SCERP report.
8. Shukla M.K. 2009. Mapping of airborne particle from two land uses. Final SCERP report.
9. 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.
10. Shukla M.K. 2005. Soil Physics- Laboratory manual for soil 477L.
11. 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.

12. Lab manual for SS-671 at Ohio State University.
13. Estimation of hydrological soil properties for design of drainage system for Bulandshahar (CS-94).
14. Effect of Urbanization on runoff (TN-93).
15. Status report on Urban Hydrology (SR-15).
16. Inter-comparison of Urban Watershed Model (TR-144).
17. Design of Surface Drainage for a command in Bulandshahr.
18. Soil salinization and reclamation in command areas.
19. Urban watershed modeling- A comparative study (CS/AR-140).
20. Estimation of soil hydrological properties of a doab in Narsingpur M.P. of Narmada river basin.
21. Effect of Urbanization on runoff hydrograph.
22. User's manual for design of sub-surface drainage system under unsteady and steady state conditions of recharge.
23. 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).

EXTENSION/ OUTREACH PUBLICATIONS

- 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.

- 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.
- Participates regularly in Field days organized by ACES in Las Cruces

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

YOUTUBE VIDEO

NMSU professor experiments with desalination concentrate, disposal.

<https://www.youtube.com/watch?v=BNmUAowyTxY>

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

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