Sandeep Kumar

Assistant Professor, Soil Biophysics and Soil Management
Department of Agronomy, Horticulture and Plant Science

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Education

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| 2009 | Ph.D. Soil Physics | University of Missouri-Columbia, Missouri |
| 2005 | M.S. Soil Physics | Himachal Pradesh Agriculture University-Palampur, India |
| 2003 | B.S. Agriculture | Himachal Pradesh Agriculture University-Palampur, India |

Academic Employment

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| 11-2012-present | Assistant Professor, Soil Biophysics and Soil Management Department of Agronomy, Horticulture and Plant ScienceSouth Dakota State University (SDSU), Brookings, SD |
| 04-2012 to 10-2012 | Research ScientistCarbon Management and Sequestration Center, The Ohio State University, Columbus, OH |
| 01-2010 to 03-2012 | Post Doctoral ResearcherCarbon Management and Sequestration Center, The Ohio State University, Columbus, OH |

Awards and Recognition

* 2016 Young Scholar Award of the Soil Science Society of America (SSSA)-Soil and Water Conservation and Management Division.
* Early Career Researcher recognition received in a workshop organized by New Phytologist next generation scientists. Research paper was selected and invited with full funding for presentation at John Innes Centre, Norwich, UK, 29-30 July 2014.
* Geographical Information Systems (GIS)-Graduate Certificate received in 2009 from University of Missouri-Columbia

Teaching Responsibilities

* Environmental Soil Management (PS-362 and PS-362L)-*every spring semester*
* Environmental Soil Physics (PS 743 and PS743L)-*odd spring semester*
* Hydrologic Modeling (PS 723 and PS723L)-*even spring semester*
* Soils and Plant Analysis(PS785 and PS785L)*-offers as per the need*
* Soils and Environmental Quality (PS791)- *offers as per the need*
* Ecosystem Modeling (PS 794)*- offers as per the need*

Research Foci

* Sustainable Management Systems for Soil and Water Conservation, C sequestration
* Integrated Crop-Livestock Systems for enhancing ecosystem services and food security
* Soil Surface Greenhouse Gas (GHG) Flux Monitoring and Modeling (DAYCENT and PEST)
* Spatial Statistics (SOC scaling approaches)
* Hydrologic Modeling (APEX and SWAT)

Research Grants

*Principal Investigator*

* Back to the Future: Enhancing food security and farm production with integrated crop-livestock production systems. USDA-CAP Grant ($3,985,000). Project Duration: 03-01-2016 through 02-29-2020.
* Demonstrating the Impacts of Crop Diversification on Soil Health and Farm Profitability in South Dakota. NRCS-CIG ($75,000). Project Duration: 09-2016 through 12-2018.
* Agronomic, economic, and environmental performance of non-food oilseed crops in South Dakota. South Dakota Oilseed Initiative Project ($174,500). 2013-2018.
* Integrated plan for drought preparedness and mitigation, and water conservation at the watershed scale. USDA-NIFA ($227,135). Project Duration: 09-01-2014 through 08-31-2018.
* Testing the performance of humic substances on soil physical environment and corn yield ($180,000). Helena Chemicals. 2013-2017.
* Demonstrating the Impacts of No-Till and Cover Crops on Soil Moisture and Economics. NRCS-CIG ($75,000). Project Duration: 2017-2020.
* Impacts of Cattle Manure and Inorganic Fertilizer on Soil Fertility, Water Quality, and Crop Yield in South Dakota. Nutrient Research Education Council, SD ($74,998). Project Duration: 2017-2020.

*Completed Projects as PI*

* Demonstrating the short-term impacts of grazing cover crops on soil health. NRCS-CIG ($74,895). Project Duration: 2014-2017.
* Evaluation of biomass and bioenergy production, environmental performance and life cycle analysis of Prairie Cordgrass. US. DOT-RITA-Earmark ($240,000). Project Duration: 10-01-2014 through 06-30-2017.

*Co-Principal Investigator*

* Soil Health Economics in South Dakota. NRCS/USGS. ($970,983: PI-Tong Wang, SDSU: $507,779, Dr. Kumar’s share). Project Duration: September 20, 2017 through December 31, 2020.
* Learning about the benefits of integrated crop-livestock systems on soil health. SARE Professional Development Program ($74000: PI-Julie Walker, SDSU). Project Duration: October 1, 2015 through April 30, 2018.
* Evaluating Nutrient Best Management Practices to Conserve Water Quality (PI: Dr. L. Ahiablame; March 1, 2014 through December, 2016: SDWRI USGS 104b-$32,305).

*Collaborator (grant developed during postdoc)*

* Quantifying the spatial location of small-scale land management changes in large watershed using hydrological modeling. USDA-NIFA ($482,000: PI-Dr. Rattan Lal; *Subcontract to Dr. Kumar, SDSU*: $60,000). Project Duration: 2011-2014.

Graduate Students (*as* *major advisor including past and current students*)

MS Students

1. Sagar Gautam (Graduated-December 2014)
2. Brianna Wegner (Graduated-May 2015)
3. Saroop Sandhu (Graduated-Spring 2016)
4. Colin Tobin (Graduated-Fall 2016)
5. Ekrem Ozlu (Graduated-Fall 2016)
6. Shikha Singh (Graduated-Fall 2016)
7. Kopila Subedi (Graduated-Spring 2017)
8. Hanxiao Feng (Graduated-Fall 2017)
9. Brant Douville (Graduated-Fall 2017)
10. Vishal Seth (Fall 2016-present)
11. Jasdeep Singh (Spring 2017-present)
12. Atilla Polat (Spring 2017-present)

PhD Students

1. Abdullah Alhameid (Graduated-Spring 2017)
2. Liming Lai (Graduated-Spring 2017)
3. Navdeep Singh (Spring 2017-present)
4. Hanxiao Feng (Spring 2018)

Undergraduate Students and Lab Assistants (*includes past and current*)

* Shaun Ludwig, Seth Owens, Archana Wagle, ASM Shariar Kabir Khan, Brandon Splinter, Pukar Duwadi, Yashira Valentin (REU Student), Moraita Bryan (REU Student), and Danielle Platt (REU Student), Hunter Pulsche, Jordan Reiss, Blake Widvey, Cody Hall, Hameed Atia, Andrew Schnabel

Research Assistants, Postdoctoral Researchers and Visiting Scholars

* Liming Lai, Research Assistant-I (2013-2017), and USDA-CAP (IPICL) Project Manager and Research Associate I (June 2017-present)
* Bishal Kasu, Postdoctoral Researcher (August 2017-present)
* Juan Perez, Postdoctoral Researcher (June 2017-present)
* Gandura Abagandura, Temporary Researcher (July 2017-present)
* Lacey Julson, Lab Assistant (February 2017-present)
* Udayakumar Sekaran, Postdoctoral Researcher (December-present)
* Kunal Sood, Research Assistant-I and USDA-CAP (IPICL) Project Manager (May 2016-December 2016)
* David Ussiri, Postdoctoral Researcher (January 2016-Dececember 2016)

### Ruhollah Taghizadeh, Research Assistant-I (May 2016-August 2016)

* Ram Neupane, Postdoctoral Researcher (2014-2016)
* Amadou Maiga, Fulbright Scholar (2015-2016)
* Mostafa Ibrahim, Visiting Scholar (2014-2015)
* Eric Mbonimpa, Postdoctoral Researcher (2013-2014)

Professional Trainings

* DAYCENT Training at National Resource Ecology Laboratory (NREL) at Colorado State University; June 17-21, 2013.
* DSSAT Training at University of Georgia, Athens; May 19-24, 2014.

Reviewer Activities

* Peer-reviewed Journals*.*
* Agroforestry Systems, Agronomy Journal, Catena, Geoderma, Global Change Biology-Bioenergy, Hydrological Processes, Journal of Soil Science and Plant Nutrition, Journal of Soil and Water Conservation, Journal of Asian Earth Sciences, Pedosphere, PLOS ONE, Plant Root, Soil Science, Soil and Tillage Research, Soil Science Society of America Journal.
* Grant Proposals and other activities
	+ Served as Review Panel for NSF Food-Energy-Water nexus Track3 -2017
	+ Served as Review Panel for USDA-NIFA (Water for Agriculture) 2015
	+ California Department of Food and Agriculture
	+ Reviewer for Graduate Students’ Presentation for Sigma Xi
	+ Judge for the 2013 Undergraduate Research Scholarship and Creative Activity Day, SDSU
	+ Judge for the 2014 and 2015 Graduate Presentation competition organized by ASA-CSA-SSSA at Long Beach, California (2014), and Minneapolis, MN (2015)

Service to Professional Organizations

* Associate Editor for Soil Science Society of America Journal, Division S-1 (Soil Physics and Hydrology) (2017-2019)
* Member of Soil Science Society of America
* Member of Association of Agricultural Scientists of Indian Origin
* Member of Sigma XI The Scientific Research Society.

Publications (†Graduate student, ‡Postdoctoral Researcher)

1. †‡Lai, L., C. Oh, S. Kumar, S. Osborne, M. Lehman, and V. Owens. 2017. Soil nitrogen dynamics in switchgrass seeded to a marginally yielding cropland of South Dakota. GCB Bioenergy. doi:10.1111/gcbb.12475.
2. Faust, D.R., S. Kumar, D.W. Archer, J.R. Hendrickson, S.L. Kronberg, and M.A. Liebig. 2017. Integrated Crop-Livestock Systems and Water Quality in the Northern Great Plains: Review of Current Practices and Future Research Needs. JEQ. doi:10.2134/jeq2017.08.0306.
3. †‡Lai, L., S. Kumar, S.M. Folle, and V. Owens. 2017. Predicting soils and environmental impacts associated with switchgrass for bioenergy production: a DAYCENT modeling approach. GCB Bioenergy (*In* *Press*).
4. †Singh, S., N. Brandenburg, L. Ahiablame, A. Gonzalez, J. Kjaersgaard, T.P. Trooien, and S. Kumar. 2017. Response of Winter Manure Application on Surface Water Quantity and Quality from Small Watersheds in South Dakota. Water, Air and Soil Pollution (*In* *Press*).
5. ‡Neupane, R.P., J.F. Adamowski, J.D. White, and S. Kumar. 2017. Future streamflow simulation in a snow-dominated Rocky Mountain headwater catchment. Hydrology Research (*In Press*).
6. ‡Neupane, R., †S. Mehan, and S. Kumar. 2017. Use of geochemical tracers for estimating groundwater influxes to discharge of the Big Sioux River, eastern South Dakota. Hydrogeology Journal. 25(6):1647-1660.
7. Chakan, A., ‡R. Taghizadeh-Mehrjardi, R. Kerry, S. Kumar, S. Khordehbin, and S. Yusefi Khanghah. 2017. Spatial 3D distribution of soil organic carbon under different land use types. Environmental Monitoring and Assessment. 189(3):131.
8. †Sandhu, S., ‡D. Ussiri, S. Kumar, S. Papiernik, ‡R. Chintala, D. Malo and T. Schumacher. 2017. Analyzing the impacts of three types of biochar on soil carbon fractions and physiochemical properties in a corn-soybean rotation. Chemosphere 184:473-481.
9. ‡Taghizadeh-Mehrjardi, R., ‡R. Neupane, ‡K. Sood and S. Kumar. 2017. Artificial bee colony feature selection algorithm combined with machine learning algorithms to predict vertical and lateral distribution of soil organic matter in South Dakota, USA. Carbon Management 8(3):1-15.
10. †Sandhu, S., and S. Kumar. 2017. Impact of Three Types of Biochar on Hydrological Properties of Eroded and Depositional Landscape Positions. Soil Science Society of Am. J. doi:10.2136/sssaj2016.07.0230.
11. ‡Ibrahim, M., C. Oh, †S. Singh, S. Kumar, S. Osborne, and V. Owens. 2017. Switchgrass biomass quality as affected by nitrogen rates, harvest time, and storage. Agronomy Journal 109 (1):1-11.
12. †Alhameid, A., ‡M. Ibrahim, S. Kumar, P. Sexton and T. Schumacher. 2017. Soil Organic Carbon Changes Impacted by Crop Rotational Diversity under No-Till Farming in South Dakota, USA. Soil Science Society of Am. J. DOI: 10.2136/sssaj2016.04.0121.
13. †Mehan S, R.P., ‡Neupane, and S. Kumar. 2017. Coupling of SUFI 2 and SWAT for Improving the Simulation of Streamflow in an Agricultural Watershed of South Dakota. Hydrology Current Research.8(3). doi: 10.4172/2157-7587.1000280.
14. †Mehan, S., N. Kanan, ‡R. Neupane, R. McDaniel, and S. Kumar. 2016. Climate Change Impacts on the Hydrological Processes of a Small Agricultural Watershed. Climate. 4, 56:1-22.
15. Adhikari, P., S.H. Anderson, R.P. Udawatta, and S. Kumar. 2016. Analysis of CT-Measured Pore Characteristics of Porous Media Relative to Physical Properties. Procedia Computer Science 95:442-449.
16. Nagaraja, M.S., A.K. Bhardwaj, G.V.P. Reddy, C.A. Srinivasamurthy, S. Kumar. 2016. Estimations of soil fertility in physically degraded agricultural soils through selective accounting of fine earth and gravel fractions. Solid Earth.7:897-903.
17. †Lai, L., S. Kumar, ‡E. Mbonimpa, C. Oh, V. Owens, and ‡R. Neupane. 2016. Evaluating the impacts of landscape positions and nitrogen rates on dissolved organic carbon under switchgrass land seeded on marginally yielding cropland. Journal of Environmental Management.171:113-120.
18. †Lai, L., S. Kumar, R. Chintala, V. Owens, R. Rafique, D. Clay, A. Nizami, S.S. Lee, and J. Schumacher. 2016. Modeling the impacts of temperature and precipitation changes on soil CO2 fluxes from a switchgrass stand recently converted from cropland. Journal of Environmental Science.43:15-25.
19. ‡Mbonimpa, E., S. Kumar, V. Owens, R. Chintala, H. Sieverding, and J. Stone. 2016. Nitrogen rate and landscape impacts on life cycle energy use and emissions from switchgrass-derived ethanol. Global Change Biology Bioenergy. 8:750-763.
20. Nizami, A.S., O.K.M. Oud, M. Rehan, A.M.O. El-Maghraby, J. Gardy, A. Hassanpour, and S. Kumar, I.M.I. Ismail. 2016. The potential of Saudi Arabian natural zeolites in energy recovery Technologies. Energy.108:162-171.
21. ‡Neupane, R., and S. Kumar. 2015. Estimating the effects of potential climate and land use changes on hydrologic processes of a large-scale agriculture dominated watershed. Journal of Hydrology.529:418-429.
22. ‡Ibrahim, M.A., †A.H. Alhameid, S. Kumar, R. Chintala, P. Sexton, D.D. Malo, and T.E. Schumacher. 2015. Long-term tillage and crop rotation impacts on a northern Great Plains mollisol. Advances in Crop Science and Technology.3(3):1-6.
23. ‡Mbonimpa, E., †S. Gautam, †L. Lai, S. Kumar, J. Bonta, and S. Wang. 2015. Combined PEST and Trial–Error approach to improve APEX calibration. Computers and Electronics in Agriculture.114:296-303.
24. †Wegner, B., S. Kumar, S.L. Osborne, T.E. Schumacher, I.E. Vahyala, and A. Eynard. 2015. Soil response to corn residue removal and cover crops in eastern South Dakota. Soil Science Society of America Journal.79(4):1179-1187.
25. Kumar, S., 2015. Estimating spatial distribution of soil organic carbon for Midwestern USA using historical database. Chemosphere.127:49-57.
26. Lee, S.S., H. S. Shah, Y. M. Awad, S. Kumar, and Y. S. Ok. 2015. Synergy effects of biochar and polyacrylamide on plants growth and soil erosion control. Environmental Earth Sciences. 74:2463-2473.
27. Rafique, R., S. Kumar, Y. Lou, G. Kiely, and G. Asrar. 2015. An algorithmic calibration approach to identify globally optimal parameters for constraining the DayCent model. Ecological Modelling.297:196-200.
28. ‡Mbonimpa, E., C.O. Hong, V. Owens, R.M. Lehman, S.L. Osborne, T.E. Schumacher, D.E. Clay, and S. Kumar. 2015. Nitrogen fertilizer and landscape position impacts on CO2 and CH4 fluxes from a landscape seeded to switchgrass. Global Change Biology Bioenergy.7:836-849.
29. †Gautam, S., ‡E. Mbonimpa, S. Kumar, R. Lal, and J. Bonta. 2014. Agricultural Policy Environmental eXtender model simulation of climate change impacts on runoff from a small no-till watershed. Journal of Soil and Water Conservation.70:101-109.
30. Kumar, S., T. Nakajima, A. Kadono, R. Lal, and N. Fausey. 2014. Long-term tillage and drainage influences on greenhouse gas fluxes from a poorly-drained soil of central Ohio. Journal of Soil and Water Conservation.69(6):553-563.
31. ‡Chintala, R., T.E. Schumacher, S. Kumar, D.D. Malo, J. Rice, B. Bleakley, G. Chilom, S. Papiernik, J.L. Julson, D. Clay, and Z.R. Gu. 2014. Molecular characterization of biochar materials and their influence on microbiological properties of soil. Journal of Hazardous Materials.279:244-256.
32. Rafique, R., S. Kumar, Y. Luo, X. Xu, D. Li, W. Zhang, and Z. Asam. 2014. Estimation of greenhouse gases (N2O, CH4 and CO2) from no-till cropland under increased temperature and altered precipitation regime: A DAYCENT model approach. Global and Planetary Change.118:106-114.
33. ‡Chintala, R., G. Djira, M. Devkota, R. Prasad, and S. Kumar. 2014. Modeling the effect of temperature and precipitation on crop residue potential for the North Central Region of the United States. Agricultural Research.3(2):148-154.
34. Kumar, S., T. Nakajima, E. Mbonimpa, U.R. Somireddy, A. Kadono, R. Lal, R. Chintala, R. Rafique, and N. Fausey. 2014. Long-term tillage and drainage influences on soil organic carbon dynamics, aggregate stability, and corn yield. Journal of Soil and Plant Nutrition.60:108-118.
35. ‡Chintala, R., R.K. Owen, T.E. Schumacher, K.A. Spokas, L.M. McDonald, S. Kumar, D.E. Clay, D.D. Malo, and B. Bleakley. 2014. Denitrification kinetics in biomass and biochar amended soils of different landscape positions. Environment Science Pollution Research:22(7):5152-5163.
36. Kumar, S. Soil organic carbon mapping at field and regional scales using GIS and remote sensing applications. 2013. Advances of Crop and Science Technology1:1-2.
37. Kumar, S., R. Lal, D. Liu, and R. Rafique. 2013. Mapping the spatial distribution of organic carbon density for the soils of Ohio, USA. Journal of Geographical Sciences. 23(2):280-296.
38. Lewis, C., R. Rafique, N. Foley, P. Leahy, G. Morgan, J. Albertson, S. Kumar, and G. Kiely. 2013. Seasonal exports of phosphorus from intensively fertilized nested grassland catchment. Journal of Environmental Sciences.25:1847-1857.
39. Chintala, R., J. Mollinedo, T.E. Schumacher, D.D. Malo, S. Papiernik, D.E. Clay, S. Kumar, and D.W. Gulbrandson. 2013. Nitrate sorption and desorption by biochars produced from microwave pyrolysis. Microporous and Mesoporous Materials.179:250-257.
40. Kumar, S., A. Kadono, R. Lal, and W. Dick. 2013. Responses to “Comments on ‘long-term no-till impacts on organic carbon and properties of two contrasting soils and corn yields in Ohio”’. Soil Science Society of America Journal.77:694–695
41. Kumar, S., R. Lal, and D. Liu. 2012. A geographically weighted regression kriging approach for mapping soil organic carbon stock. Geoderma.189-190:627–634.
42. Kumar, S., A. Kadono, R. Lal, and W. Dick. 2012. Long-term no-till impacts on organic carbon and properties of two contrasting soils and corn yields in Ohio. Soil Science Society of America Journal.76:1798–1809.
43. Kumar, S., R. Lal, and C.D. Lloyd. 2012. Assessing spatial variability in soil characteristics with geographically weighted principal components analysis. Computational Geosciences.16:827-835.
44. Kumar, S., A. Kadono, R. Lal, and W. Dick. 2012. Long-Term tillage and crop rotations for 47– 49 years influences hydrological properties of two soils in Ohio. Soil Science Society of America Journal.76:2195-2207.
45. Kumar, S., P.K. Sharma, S.H. Anderson, and K. Saroch. 2012. Tillage and rice-wheat cropping sequence influences on some soil physical properties and wheat yield under water deficit conditions. Open Journal of Soil Science*.*2:71-81.
46. Kumar, S., S.H. Anderson, R.P. Udawatta, and R.L. Kallenbach. 2012. Water infiltration influenced by agroforestry and grass buffers for a grazed pasture system. Agroforestry Systems*.*84:325-335.
47. Kumar, S., and R. Lal. 2011. Mapping the organic carbon stocks of surface soils using local spatial interpolator. Journal of Environmental Monitoring.13(11):3128-3135.
48. Kumar, S., R.P. Udawatta, S.H. Anderson, A. Mudgal. 2011. APEX model simulation of runoff and sediment losses for grazed pasture watersheds with agroforestry buffers. Agroforestry Systems*.*83:51-62.
49. Kumar, S., S.H. Anderson, and R.P. Udawatta. 2010. Agroforestry and grass buffer influences on macropores measured by computed tomography under grazed pasture systems. 2010. Soil Science Society of America Journal.74:203-212.
50. Kumar, S., S.H. Anderson, R.P. Udawatta, and C.J. Gantzer. 2010. CT-measured macropores as affected by agroforestry and grass buffers for grazed pasture systems. Agroforest Systems.79:59-65.
51. Kumar, S., R.P. Udawatta and S.H. Anderson. 2010. Root length density and carbon content influenced by agroforestry and grass buffers under grazed pasture systems in a Hapludalf. Agroforestry Systems80:85-96.
52. Kumar, S., S.H. Anderson, L.G. Bricknell, R.P. Udawatta, and C.J. Gantzer. 2008. Soil hydraulic properties influenced by agroforestry and grass buffers for grazed pasture systems. Journal of Soil and Water Conservation63:224-232*.*

Book Chapters

1. Alhameid, A., C. Tobin, A. Maiga, S. Kumar, S. Osborne, and T. Schumacher. 2016. Intensified agroecosystem and change (sources and sinks) in soil carbon dynamics, Chapter 9 “Soil Health and Intensification of Agroecosystems”. Elsevier (*In Press*)
2. Kumar, S., R. Chintala, T. Schumacher, J. Rohila, and A. Goyal. Sustainable management systems for improving soils and environmental quality. 2014. (Book Chapter for Springer Publisher).

Conference Proceedings and Other Publications

1. Kumar, S., S.H. Anderson, R.P. Udawatta, and R.L. Kallenbach. Agroforestry and grass buffer influences on water infiltration for a grazed pasture system. *In* M.A. Gold and M.M. Hall (eds.). 2009. Agroforestry Comes of Age: Putting Science into Practice. Proceedings, 11th North American Agroforestry Conference. 191-200.
2. Kumar, S., S.H. Anderson, and R.P. Udawatta. CT-measured macropores as affected by agroforestry and grass buffers for grazed pasture systems. *In* M.A. Gold and M.M. Hall (eds.). 2009. Agroforestry Comes of Age: Putting Science into Practice. Proceedings, 11th North American Agroforestry Conference. 163-172.
3. Kumar, S., S.H. Anderson, L.G. Bricknell, R.P. Udawatta, and C.J. Gantzer. 2008. Benefits of agroforestry and grass buffers in grazed pasture systems. Journal of Soil and Water Conservation:63:135A.

Presentations at National and International Professional Meetings

1. Kumar, S. 2017. Benefits of Integrating Crop-Livestock Systems on Soil Health and Farm Profitability. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL, October, 22-25, 2017.
2. Pérez-Gutiérrez, J.D., Liming, L., and Kumar, S. 2017. Diurnal Pattern of Soil Moisture and Temperature under Corn and Soybean Fields in South Dakota. Oral Presentation at the ASA-CSSA-SSSA. Annual International Meeting at Tampa, FL, October 22-25, 2017.
3. Sandhu, S.S., S. Kumar, N. Hoilett, E. Ozlu, and K.S. Chalise. 2017. Effect of biochar and manure on soil carbon fractions and microbial activity of eroded and depositional landscape positions. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL, October, 22-25, 2017.
4. Sandhu, S.S., S. Kumar, E. Ozlu, C.T. Tobin, and A.H. Alhameid. 2017. Influence of biochar and manure on the hydrological properties of eroded and depositional landscape positions. Poster Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL, October, 22-25, 2017.
Lai L., Kumar, S., Sexton, P. 2017. Soil Surface Greenhouse Gases in an Integrated Crop-Livestock System in South Dakota, USA. Oral Presentation at the ASA-CSSA-SSSA International Annual Meeting at Tampa, FL, October, 22-25, 2017.
5. Seth, V. M. Lehman, and Sandeep Kumar. 2017. Impacts of Cover Crop Management Under No-Tillage on Soil Microbial Parameters. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL, October, 22-25, 2017.
6. Seth, V., S. Osborne, and S. Kumar. 2017. Impacts of Cover Crop Management Under No-Tillage on Soil Quality. Poster Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL, October, 22-25, 2017.
7. Polat, A. Osborne, S., and Kumar, S. 2017. Impacts of Crop Diversity Under No-Till System on Soil Quality Parameters. Poster Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL, October, 22-25, 2017
8. Lai L, Kumar S, Willoughby G, 2017. Evaluating the Impacts of Humic Acid Applied with Nitrogen Fertilizer on Corn Growth and Soil Quality in South Dakota. Poster Presentation at the ASA-CSSA-SSSA International Annual Meeting at Tampa, FL, October, 22-25, 2017.
9. Lai L, Singh N, Feng H, Landblom D, Senturklu S, Ringwall K, Kumar S, 2017. Effects of Crop Rotation and Grazing in an ICLS on Greenhouse Gas Emissions in Northern Great Plains. Poster Presentation at the ASA-CSSA-SSSA International Annual Meeting at Tampa, FL, October, 22-25, 2017.
10. Alhameid A., J. Singh, E. Ozlu and S. Kumar 2017. SOC Changes and Other Soil Properties as Impacted by Crop Rotational Diversity Under No-Till Farming in NGP. Oral Presentation at the 72nd Soil Water Conservation Society. International Annual Conference at Wisconsin-Madison, July 30 – August 02, 2017.
11. Singh J., S. Kumar and P. Sexton 2017. Impacts of Diverse Crop Rotations and Cover Crops Under different Tillage Systems on Soil Health in South Dakota. Poster Presentation at the ASA-CSSA-SSSA. International Annual Meeting in Tampa, FL, October 22-25, 2017.
12. Singh N, Lai L, Perez-Gutierrez J, Kumar S. 2017. Impacts of Integrated Crop-Livestock System on soil surface greenhouse gases in South Dakota. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL, October, 22-25, 2017.
13. Ozlu, E., A.H. Alhameid, S. Kumar, P. Sexton, and E. Cortus. 2016. Impact of Manure and Mineral Fertilizer Application on Soil Quality under a Corn-Soybean Rotation in South Dakota. Oral presentation at the ASA-CSSA-SSSA International Annual Meeting, Nov. 6-9, Phoenix, AZ.
14. Singh N, Lai L, Perez-Gutierrez J, Kumar S. 2017. Impacts of Integrated Crop-Livestock System on soil surface greenhouse gases in South Dakota. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL, October, 22-25, 2017.
15. Ozlu, E., S. Sandhu, S. Kumar, A.H. Alhameid, C. Tobin, and P. Sexton. 2016. Impact of Manure Application on Greenhouse Gas Emissions and Soil Microbial Activity under a Long-term Corn-Soybean Rotation in South Dakota. Oral Presentation at the 5th EUROSOIL International Congress, Oct. 16-21, Istanbul, Turkey.
16. Ozlu, E., C. Tobin, S. Kumar, S. Sandhu, and P. Sexton. 2016. Impacts of Grazing Cover Crops on Soil Health Parameters and Corn Yield. Oral Presentation at the 5th EUROSOIL International Congress, Oct. 16-21, Istanbul, Turkey.
17. Kumar, S., S. Gautam, E. Mbonimpa, L. Lai, J. Bonta, X. Wang, and R. Rafique. 2015. A new methodology for calibrating Apex model using combined PEST and Trial-Error approach for simulating surface runoff from small watersheds. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
18. Neupane, R., and S. Kumar. 2015. Assessing the effects of potential climate and land use changes on annual and seasonal hydrologic processes of a large-scale agriculture dominated watershed. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
19. Ozlu, E., S. Kumar, S. Berg, A. Bly, P. Sexton, and R. Gelderman. 2015. Impact of manure application on soil health and crop yield under corn-soybean rotation in South Dakota. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
20. Lai, L., S. Kumar, C.O. Hong, V.N. Owens. 2015. Evaluating effects of landscape position and N rates on dissolved organic carbon in switchgrass land in South Dakota. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
21. Lai, L., S. Kumar, V.N. Owens, D. Clay, D. Rastogi, M. Ashfaq, and J. Schumacher. 2015. Investigating impacts of multiple parameters on CO2 Fluxes from a continuous corn field in South Dakota. Poster Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
22. Sandhu S., R. Chintala, S. Kumar, T. Schumacher, S.K. Papiernik, D. Malo, and D. Clay. 2015. Biochar impacts the physical properties of soils under corn-soybean rotation. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
23. Sandhu, S., M. Ibrahim, S. Kumar, and S. Sehgal. 2015. Impact of silicon fertilizer on the yield of spring wheat under drought conditions. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
24. Chintala, R., S. Sandhu, T.E. Schumacher, J. Rice, S. Kumar, D. E. Clay, and D. Malo. 2015. Modification of surface functionality of biochars and their impacts on greenhouse gas emissions from eroded landscape. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN, November 15-18, 2015.
25. Chintala, R., T.E. Schumacher, R. Gelderman, S. Sandhu, S. Kumar, D. E. Clay, and D. Malo. 2015. Influence of biochars on nutrient uptake and yields of corn and soybean at two different landscape positions. Poster Presentation at the ASA-CSSA-SSSA International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
26. Chalise, K., B. Wegner, S. Sandhu, E. Ozlu, S. Kumar and S.L. Osborne. 2015. [Evaluating the impacts of crop residue removal and cover crops on soil organic carbon and water infiltration.](https://scisoc.confex.com/scisoc/2015am/webprogram/Paper95179.html) Poster Presentation at the ASA-CSSA-SSSA International Annual Meeting at Minneapolis, MN, November 15-18, 2015.
27. Alhameid, A.H., M.A. Ibrahim, S. Sandhu, E. Ozlu, S. Kumar, S.L. Osborne, P. Sexton, T.E. Schumacher, and S. Ali. 2015. Long-term tillage and diverse crop rotation systems impacts on organic carbon and selected soil properties. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
28. Singh, S., N. Brandenburg, A. Gonzalez, J. Kjaersgaard, T. Trooien, L. Ahiablame and S. Kumar. 2015. Response of winter manure application to surface water quantity and quality from small watersheds. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
29. Mehan, S., R.P. Neupane, and S. Kumar. Projecting climate change scenarios on surface hydrology of a small agriculture-dominated watershed. 2015. SWAT Conference at Purdue University, West Lafayette, October 15, 2015.
30. Tobin, C., S. Kumar, E. Grings, D.D. Malo, P. Sexton, S. Ali. 2015. Impacts of integrated crop-livestock system on soil health parameters. Poster Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
31. Kumar, S., S. Mehan, R. Neupane, E. Mbonimpa, J. Kjaersgaard, A. Bly, J. Jacquet, and S. Scott. Integrated plan for drought preparedness and mitigation, and water conservation at the watershed scale. Poster Presentation at USDA PD meeting at Gainsborough, NC. July 26-28, 2015.
32. Kumar, S., B. Wegner, S. Singh, and T. E. Schumacher. 2015. Biofuel crops and their impacts on soils and environmental quality. Oral Presentation at NC1178 Meeting held at The Ohio State University, Columbus on June 23, 2015.
33. Kumar, S. 2015. Sustainable management systems for improving soils and water quality. Oral Presentation at 4th International Conference on “Applied Sciences, Environmental Engineering and Clean Energy Technologies for Sustainable Development” (ASECET-2015) to be held at Jawaharlal Nehru University, New Delhi, on 1st August, 2015.
34. Schumacher, T.E., R. Chintala, S. Sandhu, S. Kumar, D. Clay, R. Gelderman, S. Papiernik, D. Malo, S. Clay, and J. Julson. 2015. Differential effects of biochar on soils within an eroded field. Oral Presentation at European Geosciences Union General Assembly 2015, Vienna, Austria, 12-17 April 2015.
35. Kumar, S., B. Wegner, I.E. Ahyala, S. Osborne, T. Schumacher, and M. Lehman. 2015. Cover crops and crop residue management under no-till systems improve soils and environmental quality. Oral Presentation at European Geosciences Union General Assembly 2015, Vienna, Austria, 12-17 April 2015.
36. Kumar, S., E. G. Mbonimpa, C.O. Hong, V. Owens, and S. Osborne. 2014. Nitrogen fertilization rate and landscape positions impacts on root growth parameters of switchgrass. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Long Beach, CA. November 2-5, 2014.
37. Kumar, S., E.G. Mbonimpa, C.O. Hong, V. Owens, and S. Osborne. 2014. Switchgrass root growth parameters impacted by nitrogen fertilization rate and landscape positions. Poster Presentation at New Philologist next generation scientists workshop held from 29–30 July 2014 at the John Innes Conference Centre in Norwich, UK.
38. Kumar, S., C.O. Hong, E.G. Mbonimpa, V. Owens, M. Lehman, S. Osborne, T. Schumacher, D. Clay and R. Chintala. 2014. Switchgrass root growth parameters impacted by nitrogen fertilization rate and landscape positions. Poster Presentation at Presentation at 20th World Congress Conference 2014, South Korea.
39. Gautam, S., S. Kumar, E.G. Mbonimpa and J. Bonta. 2014. A new methodology for calibrating APEX model using PEST to simulate agricultural runoff. Poster Presentation at ASABE/CSBE North Central Intersectional Meeting at South Dakota State University, Brookings, SD March 28-29, 2014.
40. Mbonimpa, E.G., S. Kumar, V. Owens, R. Chintala, and J. Stone. 2014. Assessing fertilization and landscape impacts on the overall life cycle of switchgrass used to produce cellulosic ethanol. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Long Beach, CA. November 2-5, 2014.
41. Mbonimpa E. G., S. Gautam, L. Lai, S. Kumar, J. Bonta. 2014. Improved calibration of Apex model for a small watershed managed with no-till system. ASA, CSSA and SSSA International Annual Meetings, Long Beach, CA, Nov 2014.
42. Mbonimpa, E.G, S. Kumar, L. Lai, R. Chintala, R. Rafique, and A. Glenn. 2014. Simulating climate change impacts on N2O fluxes in corn grown under a poorly drained soil. American Society of Agricultural and Biological Engineers (ASABE) Conference at SDSU, Brookings on March 28-29, 2014.
43. Gautam, S., S. Kumar, E.G. Mbonimpa, J. Bonta, R. Lal, J. H. Kjaersgaard, S.K. Papiernik, and J.R. Williams. 2014. Simulating runoff from small grazed pasture watersheds located at North Appalachian experimental watershed, Poster Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Long Beach, CA. November 2-5, 2014.
44. Gautam, S., E.G. Mbonimpa, S. Kumar, J. Witter, and J. Bonta. 2014. Extending field-scale information to the watershed scale using the Apex and SWAT models. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Long Beach, CA. November 2-5, 2014
45. Lai, L., S. Kumar, E.G. Mbonimpa, R. Chintala, V. Owens and J. Schumacher. 2014. Quantifying current and future CO2 fluxes using DayCent and PEST models from a marginal land seeded to switchgrass production in South Dakota. Oral Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Long Beach, CA. November 2-5, 2014.
46. Lai, L., E.G. Mbonimpa, C.H. Hong, S. Kumar, V. Owens, S. Osborne, and M. Lehman. 2014. DayCent Application to model greenhouse gas fluxes from switchgrass land managed with nitrogen fertilizer levels under different landscape positions. Poster Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Long Beach, CA. November 2-5, 2014.
47. Kumar S., C.H. Hong, V.N. Owens, D.E. Clay, M. Lehman, S.L. Osborne, T.E. Schumacher, and E.G. Mbonimpa. 2013. Soil carbon dioxide fluxes from switchgrass land under nitrogen fertility management in South Dakota. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL. November 03-06, 2013.
48. Gautam, S., S. Kumar, R. Lal, J. Bonta, J. Witter, Y. Xie, R. Moore, E. Mbonimpa, and S. Jiang. 2013. APEX model simulation of runoff and non-point source pollutants from watersheds managed with no-till management. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tampa, FL. November 03-06, 2013.
49. Gautam, S., S. Kumar, R. Lal, J. Bonta, J. Witter, Y. Xie, R. Moore, E.G. Mbonimpa, and S. Jiang. 2013. APEX model simulation of runoff and non-point source pollutants from watersheds managed with long-term no-till management, Poster Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Tempa, FL. November 3-6, 2013.
50. Gautam, S., S. Kumar, E. G. Mbonimpa, and J. Bonta. 2013. APEX model to assess no-till management effects on runoff and nutrient losses from a small agricultural watershed in Ohio. Oral Presentation at 2013 Eastern South Dakota Water Conference. October 30, 2013.
51. Cihacek, L., K. Olson, M. Al-Kaisi, F. Arriaga, H. Blanco, J. Jifon, S. Kumar, R. Lal, B. Lowery, R. Miles, D. Presley, M. Ruark, T. Schumacher, D. Stott, and K. Thelen. 2013. History of the NC-1178 regional research committee. Presentation at the International Union of Soil Scientists at Madison, WI, USA. June 3-6, 2013.
52. Kumar, S., A. Kadono, T. Nakajima, and R. Lal. 2012. Greenhouse gas emissions influenced by no-tillage and chisel tillage under drainage and non-drainage systems. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Cincinnati, OH. October 21-October 24, 2012.
53. Kumar, S., A. Kadono, R. Lal, and W. Dick. 2012. Influences of long-term tillage and cropping systems on corn yield and soil properties in two ecoregions of Ohio. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Cincinnati, OH. October 21-October 24, 2012.
54. Kumar, S., T. Nakajima, and R. Lal. 2012. Effects of no-tillage and diverse cropping systems on soil organic carbon sequestration. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Cincinnati, OH. October 21-October 24, 2012.
55. Kumar, S., J. Witter, R. Lal, R. Moore, J. Bonta, and Y. Xie. 2012. Simulation of runoff losses from watersheds managed under diverse land management. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Cincinnati, OH. October 21-October 24, 2012.
56. Nakajima, T., S. Kumar, A.B. Andrade, and R. Lal. 2012. Comparison of Green House gas fluxes monitored with photoacoustic spectroscopy and gas chromatograph. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Cincinnati, OH. October 21-October 24, 2012.
57. Lal, R., 2011. Agricultural mitigation of climate change: potential and challenges. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at San Antonio, TX. October 16-October 19, 2011 (*presented on behalf of Dr. Rattan Lal*).
58. Lal, R., 2011. Soil carbon sequestration and ecosystem services. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at San Antonio, TX. October 16-October 19, 2011 (*presented on behalf of Dr. Rattan Lal*).
59. Kumar, S., and R. Lal. 2011. Estimating soil organic carbon in major land resource areas and land uses of midwestern region of USA. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at San Antonio, TX. October 16-October 19, 2011.
60. Kumar, S., R. Lal, and D. Liu. 2010. Predicting spatial distribution of organic carbon pool in soils of Ohio using four statistical approaches. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Long Beach, CA. October 31-November 4, 2010.
61. Kumar, S., S.H. Anderson, R.P. Udawatta, and A. Mudgal. 2010. APEX model simulation of runoff and sediment losses from agroforestry buffers for watersheds under pasture management. Presentation at the ASA-CSSA-SSSA. International Annual Meeting at Long Beach, CA. October 31-November 4, 2010.
62. Anderson, S.H., R.P. Udawatta, S. Kumar\*, C.J. Gantzer, and A. Rachman. 2010. CT-measured macropore parameters for estimating saturated hydraulic conductivity at four study sites.  The Physics of Soil Pore Structure Dynamics Symposium, pp. 13-16. *In* R.J. Gilkes and N. Prakongkep (eds.) Proceedings 19th World Congress of Soil Science, Soil Solutions for a Changing World. August 1-6, 2010, Brisbane, Australia.
63. Kumar, S., R.P. Udawatta, and S.H. Anderson. 2009. Root length density and carbon content influenced by agroforestry and grass buffers under grazed pasture systems in a Hapludalf. Poster presented at the ASA-CSSA-SSSA. International Annual Meeting at Pittsburgh, PA. November 1-5, 2009.
64. Kumar, S., S.H. Anderson, and R.P. Udawatta. 2009. CT-measured macropores as affected by agroforestry and grass buffers for grazed pasture systems. Presentation presented at 11th North American Agroforestry Conference, Columbia, MO June 2009.
65. Kumar, S., S.H. Anderson, R.P. Udawatta, and R.L. Kallenbach. 2009. Agroforestry and grass buffer influences on water infiltration under grazed pasture system. Poster presented at 11th North American Agroforestry Conference, Columbia, MO June 2009.
66. Kumar, S., S.H. Anderson, and R.P. Udawatta. 2008. Computed tomographic analysis of soil pore characteristics for agroforestry and grass buffers in a grazed pasture system. Oran Presentation at GSA-ASA-SSSA. Joint Annual Meeting October 5-9, 2008, Houston, TX.
67. Kumar, S., S.H. Anderson, and R.P. Udawatta. 2008. Influence of agroforestry and grass buffers on infiltration for a grazed pasture system. Poster presented at GSA-ASA-SSSA. Joint Annual Meeting October 5-9, 2008, Houston, TX.
68. Kumar, S., S.H. Anderson, L.G. Bricknell, R.P. Udawatta, and C.J. Gantzer. 2007. Soil hydraulic properties influenced by agroforestry and grass buffers for grazed pasture systems. Poster presented at the ASA-CSSA-SSSA 2007 International Annual Meeting at New Orleans, Louisiana.
69. Bricknell, L., S.H. Anderson, S. Kumar\*, and R.P. Udawatta.  2007. Animal traffic effects on soil hydraulic properties relative to agroforestry and grass buffers.  Missouri Natural Resources Conference Abstracts, 31 January - 2 February, Osage Beach, Missouri.

Extension and Outreach Activities

* Collaborating with SD producers and sharing the information about drought, integrated crop-livestock systems, sustainable systems, recovering marginal and degraded lands using perennial grasses and biochar, and others.
* Tobin, C., W. Tong, and S. Kumar. 2016. Enhancing economic profit and soil health through integrated crop livestock systems. IGrow. <http://igrow.org/agronomy/other-crops/integrated-crop-livestock-systems-enhancing-economic-profit-soil-health/>
* Organizing focus groups in collaboration with Social Scientists to learn producers’ response about using cover crops and integrated crop-livestock system
* Delivered presentations on demonstrating the benefits of integrated crop-livestock systems on soil health. Oral Presentation at the South East Farm of South Dakota State University located at Beresford and Winner, South Dakota. 2015 and 2016.

Conferences Attended

* American Society of Agronomy (ASA-CSSA-SSSA). International Annual Meeting at Minneapolis, MN. November 15-18, 2015.
* 4th International Conference on “Applied Sciences, Environmental Engineering and Clean Energy Technologies for Sustainable Development” (ASECET-2015) at Jawaharlal Nehru University, New Delhi. August 1-2, 2015.
* European Geosciences Union (EGU) General Assembly 2015, Vienna, Austria, 12-17 April 2015.
* 20th World Congress of Soil Science. June 8-13, 2014, Jeju, South Korea.
* American Society of Agronomy (ASA-CSSA-SSSA). International Annual Meeting at Cincinnati, OH. October 21-October 24, 2012.
* International Union of Soil Scientists (IUSS). IUSS Global Soil Carbon Conference, 3-6 June 2013 at Madison, Wisconsin, USA.
* American Society of Agronomy (ASA-CSSA-SSSA). International Annual Meeting at San Antonio, TX. October 16-October 19, 2011.
* American Society of Agronomy (ASA-CSSA-SSSA). International Annual Meeting at Long Beach, CA. October 31-November 4, 2010.
* Association for Temperate Agroforestry (AFTA). 11th North American Agroforestry Conference, Columbia, MO June 2009.
* American Society of Agronomy (ASA-CSSA-SSSA). International Annual Meetings at Pittsburgh, PA, November 1-5, 2009.
* Geological Society of America (GSA-ASA-SSSA). Joint Annual Meeting, Houston, TX October 2008.
* American Society of Agronomy (ASA-CSSA-SSSA). International Annual Meeting at New Orleans, Louisiana, November 4-8, 2007.

Professional Service

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| 2012-present | Member of Regional Research Committee NC-1178  |
| 2015-2016 | Member of Emil Truog Soil Science Award Committee (2015-2016) |
| 2013 | Serve as a Judge for Sigma Xi Student Research Showcase |
| 2013 | Sigma Xi Graduate Competition held at SDSU on April 19. |
| 2013 | Undergraduate Research Scholarship and Creative Activity Day, SDSU |