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Professional Experience

- Water quantity and quality management
- Strong research and planning skills
- Watershed modelling for hydrologic and point and non-point source pollution simulations
- Monitoring surface and shallow groundwater quantity and quality data
- Installing gauging stations for stream flow and water quality
- Monitoring and mapping variable source area using wireless sensor devices
- Vegetative filter strip effectiveness in filtering sediments, nutrients, and bacteria
- Best management practices, nutrient management, climate change, and hydrologic modelling for Ontario catchments
- Data management and statistical analysis
- Experience in project organization, implementation, and management
- Strong communication skills in report writing, presentations, and technical articles
- Technology transfer of water resources solutions to stakeholders
- Experience in preparing progress reports related to environmental engineering projects

Profile

School of Engineering, University of Guelph, Guelph, Canada.

2/05- Present

Research Fellow

- Evaluation of source water protection strategies using water quality models and GIS
- Field experiments on nutrient and pathogen contamination in surface runoff and subsurface tile drainage water
- Monitoring of environmental quality data for comparison with simulated results of water quality models
- Developed a comprehensive water quantity and quality dataset for a watershed in southern Ontario for evaluation of hydrologic and non-point source pollution models
- Evaluated temporal pattern of flow and pollutant loadings and their relationship with land use activities
- Quantified seasonal variability in surface runoff, base flow, and tile flow in various physiographic regions of Ontario
- Quantified seasonal variation in soil hydraulic properties and their relationship with hydrologic soil groups
- Developed algorithms for identifying and quantifying movement of non-point and point pollutants from various sources to water bodies
- Created procedures for surface and sub-surface water budgeting on annual and seasonal basis for use by conservation authorities in Ontario
- Published water resources/environmental engineering research in peer reviewed scientific journals.

Agricultural & Biosystems Engineering, Iowa State University, Ames, IA.

Ames Laboratory, United States Department of Energy (USDOE), Ames, IA.

1/00-6/03

Postdoctoral Research Associate

- Worked on a project to evaluate the effect of vegetative filter strips on nutrient losses with surface runoff due to various cattle grazing practices. Being a key investigator, my responsibilities included the survey, design, and installation of the setup in the field and laboratory.
- Worked on a research project to evaluate the effect of vegetative filter strip on nutrient losses with surface runoff from dairy manure composting sites. The responsibilities were similar to the grazing project.
- Worked on two agricultural/environmental engineering oriented research proposals and received funding from the Iowa Department of Natural Resources.
- Taught an undergraduate level course on flow measurements design.
- Presented many research papers at various national and international professional conferences during my educational and research career at Iowa State University. Also, published papers in peer reviewed journals in the US and Europe.
- Worked in a project for Ames Laboratory, USDE, Ames, IA, where I used a method to measure soil quality by non-destructive evaluation (NDE) using x-ray tomography, a new methodology to measure soil properties.
- Coordinated several technical projects, communicated with cross-functional teams, and met project deadlines.
- Published progress reports on various engineering projects I have worked throughout my career.
- Reviewed various scientific papers and also appointed as a reviewer for an American scientific journal (Soil Science Society of America Journal).

Agricultural & Biosystems Engineering, Iowa State University, Ames, IA

9/97-12/99

Graduate Research Assistant

- Conducted research to better understand the processes responsible for the transport of key chemical (e.g. nitrate and pesticides) pollutants to shallow groundwater. Also, calibrated and validated a computer model (LEACHM 3.0) to predict the chemical transport through the soil profile.

Oregon State University, Corvallis, OR

1/95-8/95

Graduate Research Assistant

- Conducted field studies on nutrient management, irrigation methods, and salinity control in the field of irrigation/environmental engineering. Particularly, the work was based on the concept of deficit irrigation strategies for crops to maximize the water use in water scarce areas.
- Developed a computer model 'YIELD' to predict crop yields at various irrigation scheduling scenarios and validated with observed data.
- Analyzed the field data for calibration of a series of computer models (SRFR, FUSED, YIELD) for predicting irrigation water, sediment transport through surface runoff, and nitrate losses through the soil profile under furrow irrigation system.

Department of Agriculture Extension, Balochistan, Pakistan.

5/90-7/92

Subject-Matter Specialist (Engineering)

- Worked in a multidisciplinary program in which I was responsible for engineering aspects of the project.
- Collaborated and coordinated to plan and design the setup of the hydrological data for the site-specific research in the field of irrigation engineering. Also, implemented a strategic plan by managing vegetation, soil, and available water to optimize natural processes and so avoided or mitigated pollution.
- Introduced and demonstrated benefits of water management techniques (Trickle irrigation system, a comparatively new technology for the farmers in Balochistan) to the farmers and researchers by conducting the field studies.
- Traveled to remote areas to promote new irrigation methods and technology awareness through seminars and informal meetings.

Department of Agricultural Extension, Balochistan, Pakistan.

12/87-4/90

Assistant Research officer

- Conducted research on sprinkler irrigation system for optimum water use in arid zone.
- Participated as member of the team responsible for installation and operation of center-pivot irrigation system for an optimum irrigation management project. This approach was developed to lead the concept of precision agriculture.
- Applied and demonstrated technology transfer techniques and conducted relevant training to the farmers and other stakeholders.
- Evaluated the impact of improvements on water use efficiency after the introduction of new and improved irrigation engineering practices.

Education**Iowa State University of Science and Technology, Ames, IA, USA.**

Ph.D. Agricultural Engineering (Environment & Natural Resources), Dec. 1999

M.S. Agricultural Engineering (Environment & Natural Resources), Dec. 1996.

Oregon State University, Corvallis, OR, USA.

M.S. Bio-Resource Engineering, 1995.

Sind Agricultural University, Tando Jam, Pakistan.

B.E. Agricultural Engineering (Farm Power & Machinery) Sept. 1987.

Awards and Recognition

- Recipient of 'Certificate of Recognition' from International Commission of Agricultural Engineering, 2002
- Recipient of World Bank Scholarship, 1995 to 1998
- Recipient of Fulbright Scholarship, 1992 to 1994
- Scholarship holder throughout undergraduate and high school studies.

Professional Affiliations

- Member of Professional Engineers Ontario (2006-present)
- CSBE (Canadian Society of Agricultural Engineers) (1999- present).
- ASABE (American Society of Agricultural Biosystems Engineers) (1995- present).
- Alpha Epsilon honor society (1999-present).
- Reviewer of Soil Science Society of America Journal and Bio-Resource Technology (2001-present).

Computer Skills

Water Quality Models: HSPF, SWAT, GLEAMS (3.0), LEACHM 3.0, RZWQM(98/3.25), SRFR, FUSED

Programming language: QUICK BASIC, C++

Software: Microsoft word, Microsoft Excel, Word Perfect, Quattro Pro, Power Point.

Statistical/Technical Package: SAS, SURFER

References

Available upon request.