

Academic Profile :: Noorallah G. Juma, Ph.D., P.Ag.



**Founder & Team Leader, Pedosphere.com
& Professor Emeritus of Soil Science,
University of Alberta, Canada**

Pedosphere.com

**Global Soil Science Educators
& Knowledge Managers**

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Pedosphere.com Leadership

I took the initiative to establish pedosphere.com in 1999 and with the active participation of my two team members, Chris Harland and Craig Nickel, have integrated the knowledge of Soil Science, pedagogy and internet technologies as shown below:



I am now pursuing my passion of global Soil Science education and knowledge management through pedosphere.com.

World View

- The sum total of all the soils of the world is termed as the "pedosphere".
- The pedosphere is the foundation of life on this planet.
- The Pedosphere needs to be studied, valued, enhanced and treated in a sustainable and an ethical manner.

Current Position & Thrust:

- Founder & Team Leader, Pedosphere.com since 1999
- Actively pursuing my passion in global Soil Science education and knowledge management
- Professor Emeritus (Soil Science), University of Alberta since October 1, 2008

Academic Career

- | | | | |
|------------------------------|-----------|----------|-----------------------|
| ● Full Professor | 1993-2008 | 15 years | University of Alberta |
| ● Associate Professor | 1988-1993 | 5 years | University of Alberta |
| ● Assistant Professor | 1983-1988 | 5 years | University of Alberta |
| ● Killam Postdoctoral Fellow | 1981-1983 | 2 years | University of Alberta |

Academic Degrees

- | | | | |
|-----------------------|------------------------------|------|----------------------|
| ● Ph.D. | University of Saskatchewan | 1981 | Soil Microbiology |
| ● M.Sc. | Iowa State University | 1976 | Soil Biochemistry |
| ● B.Sc. (High Honors) | Southern Illinois University | 1974 | Plant & Soil Science |

Teaching & Scholarly Activities:

- Taught undergraduate and graduate students within the Faculty of Agriculture, Life & Environmental Sciences and the Faculty of Science.
- General Soil Science (SOILS 210)
The Soil Ecosystem (SOILS 330)
Soil Environmental Microbiology & Biochemistry (SOILS 430)
Soil Fertility (SOILS 460)
Soil Remediation (ENCS 455)
Environmentally Sustainable Agriculture (REN R 450)
Advanced Soil Ecology (SOILS 530)

Teaching Innovation:

- Launched 'The Pedosphere and Its Dynamics: A Systems Approach to Soil Science' series with the publication of Volume 1 titled 'Introduction to Soil Science and Soil Resources' in 1999
- Developed web-based interactivity for enhanced teaching and learning
- Developed Soil Science web resources for students and instructors in Agriculture, Forestry, Ecosystem Science, Environmental Science and Earth System Science

Teaching Innovation Awards:

- 2000 - Tyrchniewicz Innovative Teaching Award, Faculty of Agriculture, Forestry & Home Economics, University of Alberta for developing and integrating technology in the classroom
- 1997 & 1998 - Won the overall Prize for the university-wide, Chart Your Course 1997 & 1998 Contests organized by Academic Technologies for Learning, University of Alberta for developing Soils 210 courseware. The team consisted of Chris Harland (computer programmer), Craig Nickel (graphics artist) and myself (content builder).

Research & Scholarly Activities in Soil Biochemistry, Soil Microbiology and Soil Ecology:

- **Interests:** Carbon & nitrogen transformations in soil; Simulation modeling of C and N cycling; Role of microflora and fauna in decomposition, nutrient cycling & soil structure formation; Onsite, soil-based, pressurized at-grade private sewage treatment systems
- **Key Topics:** Phosphatase activity of plant roots and soil; Mineralization and immobilization of N in soil; Soil fauna in agroecosystems; Root growth and rhizo-deposition; Microbial-faunal interactions; Carbon sequestration and greenhouse gas evolution in long-term crop rotations; soil structure redevelopment in eroded soils; crop growth and microbial activities in soils along toposequences; Onsite, soil-based, at-grade private sewage treatment systems
- Used stable and radioactive isotope tracer and simulation modelling techniques to quantify flux of C and N in different soil pools
- Established an instrumented site for monitoring soil temperature in different onsite, soil-based, pressurized at-grade private sewage treatment systems in Leduc County, Alberta in 2007
- Supervised M.Sc. and Ph.D students, Post-Doctoral Fellows, Research Associates, Research Assistants and Laboratory personnel
- Served on graduate student committees, graduate student examination committees and as an external Ph.D. examiner
- Worked with International Visiting Scientists

- **Publications (1977-present)**

- Scientific abstract for 2010 (1)
- Scientific abstracts for 2008 (5)
- All research publications (79)
- Pedosphere Series Textbook (1)

- **Summary by Numbers:**

M.Sc Thesis and Ph.D. Dissertation (2), Refereed Primary Journal Articles (48), Refereed Chapters (12), Non-Refereed Publications (17), Soil Science Textbook (1)

Selected Key Publications By Year (2010-1977)

1. N. G. Juma, B. S. Chhabra, S. Khan, S. Singh, A. Durnie and A. Chu. 2010. Comparison of performance of four, pressurized, soil-based dispersal systems at an at-grade installation in Leduc County, Alberta. Department of Renewable Resources, University of Alberta, Edmonton, AB, Canada. Final report submitted to Canada Mortgage and Housing Corporation, Ottawa, ON; Alberta Municipal Affairs, Edmonton, AB; Leduc County, AB. 50 pp.
2. Juma, N. G., I. Bitterlich, and M. H. Rahman. 2007. Scientific investigation of pressurized, at-grade, private sewage treatment systems. Onsite Wastewater Treatment Research Laboratory, Department of Renewable Resources, University of Alberta, Edmonton, Alberta, Canada. 62 pp.
3. Juma, N. G. 1999. Introduction to Soil Science and Soil Resources. Volume I in the Series "The Pedosphere and its Dynamics: A Systems Approach to Soil Science." Salman Productions, Sherwood Park. 335 pp.
4. Campbell, C. A., H. H. Janzen and N. G. Juma. 1998. Case studies of soil quality in the Canadian Prairies: Long-term field experiments. Pages 351-397 In E. G. Gregorich and M. R. Carter (eds.) Soil quality for crop production and ecosystem health. Elsevier Science Publishers, Amsterdam, The Netherlands.
5. Juma, N. G., Izaurralde, R. C., Robertson, J. A., McGill, W. B. 1997. Crop yield and soil organic matter trends over 60 years in a Typic Cryoboralf at Breton, Alberta. Pages 273-281 in E. A. Paul, K. Paustian, E. T. Elliott, and C. V. Cole, eds., Soil Organic Matter in Temperate Agroecosystems. Long-term Experiments in North America. CRC Press, Boca Raton.
6. Brussaard, L. and N. G. Juma. 1996. Organisms and humus in soils. pp.329-359. In: A. Piccolo (ed.) Humic substances in terrestrial ecosystems. Elsevier, Amsterdam.
7. Juma, N. G. 1993. Interrelationships between soil structure/texture, soil biota/soil organic matter and crop production. Geoderma 57:3-30.
8. Juma, N. G. and W. B. McGill. 1986. Decomposition and nutrient cycling in agro-ecosystems. P. 74-136 in Microfloral and faunal interactions in natural and agro-ecosystems. M. J. Mitchell and J. P. Nakas (Eds.) Martinus Nijhoff/Dr. W. Junk Publishers.
9. Paul, E. A., and N. G. Juma. 1981. Mineralization and immobilization of nitrogen by microorganisms. In Clark, F. E. and Rosswall, T. (Eds.), Terrestrial nitrogen cycles. Ecol. Bul. (Stockholm) 33:179-195.

10. Juma, N. G. and Tabatabai, M. A. 1977. Effects of trace elements on phosphatase activity in soils. Soil Sci. Soc. Am. J. 41:343-346.

Global Outreach:

- Developed the Landscape Ecology Network, the Land-Econet E-mail distribution list, coordinated and executed the Landscape Ecology Seminar Series sponsored by the Department of Renewable Resources & the Office of Vice-President (Research), University of Alberta for a period of 7 years from 1995 to 2001.
- Taught 'Introduction to Soils and Soils Resources' to professionals from Industry, Government and the Private Sector who were enrolled in the Environmental Resource Management Certificate Program offered by the Faculty of Extension, University of Alberta in 1998 to 2000
- Developed web resources via course web sites, research and outreach sites such as the University of Alberta Breton Plots, Soil Monolith Collections and Displays and other content which is incorporated in the Departmental web site
- Initiated, developed and promoted the work of Alberta Soil Science Workshop (ASSW) and the Soils community in Alberta through the ASSW Website from 2000 to 2011
- Soil Science resource person through my web sites for a diverse audience such as high school students, teachers, professors, extension professionals, undergraduate and graduate students and other interested persons from different parts of the world
- Maintain a number of national and international contacts, and have access to a number of Institutions and resources in Asia, Europe, UK, USA and Canada

Recognition of Soil Science Pioneers:

- Initiated, fostered and drove the process to recognize the Soil Science pioneers at the University of Alberta
- Teamed up with Dr. J. A. Robertson to develop biographies of Dr. F.A Wyatt and Dr. J. D. Newton
- Obtained recognition for the Soil Science Pioneers from the Board of Governors, University of Alberta as per the following citations:

'In view of the tremendous contributions of Dr. F. A. Wyatt to Soil Science in Alberta and Canada, the lecture room located at 2-36 Earth Science Building was named as the 'F. A. Wyatt Lecture Room' on June 22, 2001.'

'In view of the tremendous contributions of Dr. J. D. Newton to Soil Science in Alberta and Canada, the conference room located at 4-42B Earth Science Building was named as the 'J. D. Newton Conference Room' on June 22, 2001.'

Soil Monolith Collections & Displays:

- Soil Monolith Collections Curator (1995-2008)
- Completed displays for the Soil Monolith Collections in 2008, a 14-year effort
- Developed A Guided Tour of Soil Science Collections in 2008

My approach to life:

*Do not follow where the path may lead.
Go, instead, where there is no path and leave a trail.*