

VIACHESLAV I. ADAMCHUK, PH.D., P.E.

Associate Professor

Department of Bioresource Engineering, McGill University
21,111 Lakeshore Blvd., Ste-Anne-de-Bellevue, Quebec, H9X 3V9, Canada
phone: 514-398-7657; fax: 514-398-8387; viacheslav.adamchuk@mcgill.ca
URL: <http://adamchukpa.mcgill.ca>; Skype: vadamchuk

EDUCATION HISTORY:

PhD	Agricultural and Biological Engineering	Purdue University	08/2000
MS	Agricultural and Biological Engineering	Purdue University	08/1998
BS	Agricultural Mechanization (Mechanical Engineering)	National Agricultural University of Ukraine	06/1996

EMPLOYMENT HISTORY:

- Associate Professor in the Department of Bioresource Engineering, McGill University, Ste-Anne-de-Bellevue, Quebec. 06/2010-present.
- Adjunct Associate Professor in the Department of Biological Systems Engineering, University of Nebraska-Lincoln, Lincoln, Nebraska. 06/2010-05/2015.
- Associate Professor and Extension Precision Agriculture Engineer in the Department of Biological Systems Engineering, University of Nebraska-Lincoln, Lincoln, Nebraska. 07/2007-05/2010.
- Assistant Professor and Extension Precision Agriculture Engineer in the Department of Biological Systems Engineering, University of Nebraska-Lincoln, Lincoln, Nebraska. 12/2000-06/2007.
- Post-Doctoral Assistant in the Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, Indiana. 08/2000-11/2000.
- Graduate Research Assistant in the Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, Indiana. 06/1997-08/2000.
- Visiting Research Assistant in the Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, Indiana. 10/1996-05/1997.
- Assistant to the Rector for International Programs and Co-coordinator of Linkage Project between National Agricultural University of Ukraine, Kyiv, Ukraine and Iowa State University, Ames, Iowa. 09/1995-10/1996.
- Project Assistant in the Laboratory of Distance Monitoring, Institute of Plant Physiology and Genetics, National Academy of Science, Kyiv, Ukraine. 10/1993-09/1995.

THESIS AND DISSERTATION:

- Adamchuk, V.I.** 2000. Automated mapping of soil pH, potassium and mechanical impedance for site-specific management. **PhD dissertation.** West Lafayette, Indiana: Purdue University, Department of Agricultural and Biological Engineering.

Adamchuk, V.I. 1998. Rapid determination of soil pH for site-specific farming. **MS thesis.** West Lafayette, Indiana: Purdue University, Department of Agricultural and Biological Engineering.

Adamchuk, V.I. 1996. System of individual cycles cut-off for multicylinder gasoline engines for vehicles used in agricultural transportation. **Diploma project.** Kyiv, Ukraine: National Agricultural University of Ukraine (in Ukrainian).

AREA OF RESEARCH AND OUTREACH:

Development and evaluation of sensor systems for on-the-go determination of soil and crop attributes, investigation of geospatial data acquisition, processing and interpretation techniques, and implementation of information technologies to improve value, quality and environmental safety of crop production.

PROFESSIONAL MEMBERSHIPS:

Professional Agricultural Engineer, **License E-10643**, State of Nebraska, 2002-present.

Engineering Societies:

American Society of Agricultural and Biological Engineers (ASABE), 1997-present.

Precision Agriculture Committee (PM-54), 2002-present. Secretary, 2004-2006.

Soil Dynamics Research Committee (PM-45), 2003-present.

Farm Machinery Management Committee (PM-43), 2003-present.

Robotics Competition Committee (P-127), 2008-present.

Canadian Society for Bioengineering (CSBE). 2011-present.

Environmental and Engineering Geophysical Society (EEGS), 2009.

Coordinating Committee for OECD Tractor Testing in the USA, 2002-2010.

Soil Science Societies:

Soil Science Society of America (SSSA), 2008-2011.

Canadian Soil Science Society (CSSS), 2012-present.

International Union of Soil Sciences (IUSS) Working Group on Proximal Soil Sensing, 2009-present, Co-founder and vice-chair, 2009-2013.

Precision Agriculture Societies:

International Society of Precision Agriculture (ISPA), 2010-present.

CRAAQ Commission Géomantique et Agriculture de Précision, 2010-present.

NCERA-180 Precision Technologies for Food, Fiber, and Energy Production Committee, 2001-2010.

Nebraska Agricultural Technology Association (NeATA), 2001-2010.

Editorial Boards:

Editorial Board of Computers and Electronics in Agriculture Journal, 2009-present.

Editorial Board of Precision Agriculture Journal, 2010-present

Guest Editor of a Special Issue of Geoderma Journal, 2011-2012.

PROFESSIONAL AWARDS:

Susan J. Rosowski Professorship in recognition of distinguished scholarship and creative activity, University of Nebraska-Lincoln, 2009-2010.

UNL Extension Excellence in Team Programming Award for “GEAR-TECH-21” non-formal education program, 2009.

- ASABE Educational Aids Competition Blue Ribbon Award for “The Nebraska 4-H robotics and GPS/GIS year 1 curriculum” website, 2009.
- ASABE Educational Aids Competition Blue Ribbon Award for “GNSS-based auto-guidance in agriculture (SSMG-46)” short publication, 2009.
- ASABE Educational Aids Competition Blue Ribbon Award for “Weed targeting herbicide management” extension circular, 2009.
- Pierre C. Robert Precision Agriculture Young Scientist Award, Ninth International Conference on Precision Agriculture, Denver, Colorado, 2008.
- ASAE Educational Aids Competition Blue Ribbon Award for “On-the-go vehicle-based soil sensors” extension circular, 2003.
- Dinsdale Family Faculty Award for outstanding teaching, research and outreach in the Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, 2002.
- ASAE Superior Paper Award for “Application of a strain gauge array to estimate soil mechanical impedance on-the-go” Transactions of the ASAE 44(6):1377-1383, 2002.
- The University of Nebraska University-wide Departmental Teaching Award for the 2001-2002 Academic Year, 2002.

PATENTS:

1. **Adamchuk, V.I.**, A.V. Skotnikov, and J.D. Speichinger. 2006. Instrumented deep tillage implement. US Patent No. 7,028,554.
2. **Adamchuk V.I.**, M.T. Morgan, and D.R. Ess. 2002. System and method for automated measurement of soil pH. US Patent No. 6,356,830.

EDITED BOOKS:

1. **Adamchuk, V.I.** and R.A. Viscarra Rossel. 2013. *Geoderma, volume 199, Special Issue: Proximal Soil Sensing*. Amsterdam, The Netherlands: Elsevier.
2. Barker, B.S., G.L. Nugent, N. Grandgenett, and **V.I. Adamchuk**. 2012. *Robotics in K-12 Education: A New Technology for Learning*, 407 pages. Hershey, Pennsylvania: IGI Global.
3. **Adamchuk, V.I.** and R.A. Viscarra Rossel. 2011. *Proceedings of the Second Global Workshop on Proximal Soil Sensing*, Montreal, Quebec, Canada, 15-18 May 2011, 163 pages. Montreal, Quebec, Canada: McGill University.

BOOK CHAPTERS:

1. Viscarra Rossel, R.A. and **V.I. Adamchuk**. 2013. Proximal soil sensing. In: *Precision Agriculture for Sustainability and Environmental Protection*, Chapter 6, 99-118, M.A. Oliver, T.F.A. Bishop, and B.P. Marchant, eds. Abingdon, UK: Routledge.
2. **Adamchuk, V.I.**, M.C. Patent Nygren, C.C. Lutz, and K.P. Morgan. 2012. Learning geospatial concepts as part of a non-formal education robotics experience. In: *Robotics in K-12 Education: A New Technology for Learning*, Chapter 14, 284-300, B.S. Barker, G.L. Nugent, N. Grandgenett, and V.I. Adamchuk, eds. Hershey, Pennsylvania: IGI Global.
3. Shiratsuchi, L.S., M.F. Vilela, R.B., Ferguson, J. F. Shanahan, **V.I. Adamchuk**, A.V. Resende, S.C. Hurtado, and E.J. Corazza. 2012. Developing an algorithm for on-the-go nitrogen management in the Brazilian Cerrado (in Portuguese: Desenvolvimento de um algoritmo baseado em sensores ativos de dossel para recomendação da adubação nitrogenada em taxas variáveis). In: *Agricultura de Precisão: Um Novo Olhar*, 184-188, R.Y. Inamasu,

- J.M. Naime, A.V. Resende, L.H. Bassoi, and A.C.C. Bernardi, eds. São Carlos, São Paulo, Brasil: Embrapa Instrumentação.
4. **Adamchuk, V.I.**, R.A. Viscarra Rossel, K.A. Sudduth, and P. Schulze Lammers. 2011. Sensor fusion for precision agriculture. In: *Sensor Fusion – Foundation and Applications*, Chapter 2, 27-40, C. Thomas, ed. Rijeka, Croatia: InTech.
 5. **Adamchuk, V.I.**, R.A. Viscarra Rossel. 2011. Precision agriculture: proximal soil sensing. In: *Encyclopedia of Agrophysics*, 650-656, J. Gliński, J. Horabik, and J. Lipiec, eds. New York, New York: Springer.
 6. **Adamchuk, V.I.**, R.D. Grisso, and M.F. Kocher. 2011. Spatial variability of field machinery use and efficiency. In: *GIS Applications in Agriculture. Volume Two. Nutrient Management for Energy Efficiency*, Chapter 8, 135-146, D.E. Clay and J.F. Shanahan, eds. Boca Raton, Florida: CRC Press.
 7. **Adamchuk, V.I.**, R.B. Ferguson, and G.W. Hergert. 2010. Soil heterogeneity and crop growth. In: *Precision Crop Protection – the Challenge and Use of Heterogeneity*, Chapter 1, 3-16, E.C. Oerke, R. Gerhards, G. Menz, and R.A. Sikora, eds. New York, New York: Springer.
 8. **Adamchuk, V.I.** and R.A. Viscarra Rossel. 2010. Development of on-the-go proximal soil sensor systems. In: *Proximal Soil Sensing*, Chapter 2, 15-28. R.A. Viscarra Rossel, A. McBratney, and B. Minasny, eds. New York, New York: Springer.
 9. **Adamchuk, V.I.** and C. Wang. 2007. Collocating multiple self-generated data layers. In: *GIS Applications in Agriculture*, Chapter 10, 185-196. F.J. Pierce and D. Clay, eds. Boca Raton, Florida: CRC Press.
 10. **Adamchuk, V. (Slava)** 2005. Selected sample problems in the area of power and machinery. In: *A Guide to Professional Licensure for Agricultural, Food, and Biological Systems Engineers*, F.W. Koenig and C.G. Henry, eds. St. Joseph, Michigan: ASAE.
 11. Casady, W.W. and **V.I. Adamchuk**. 2003. Global positioning system and GPS receivers in agriculture. In: *Encyclopedia of Agricultural, Food, and Biological Engineering*, 444-446. D.R. Heldman, ed. New York, New York: Marcel Dekker, Inc.

REFEREED JOURNAL ARTICLES:

1. An, W., S. Ci, H. Luo, D. Wu, **V. Adamchuk**, H. Sharif, X. Wang, and H. Tang. 2013. Effective sensor deployment based on field information coverage in precision agriculture. *Wireless Communications and Mobile Computing* (DOI: 10.1002/wcm.2448).
2. Pan, L., **V.I. Adamchuk**, D.L. Martin, M.A. Schroeder, and R.B. Ferguson. 2013. Analysis of soil water availability by integrating spatial and temporal sensor-based data. *Precision Agriculture* 14(4):414-433.
3. Roberts, D.F., R.B. Ferguson, N.R. Kitchen, **V.I. Adamchuk**, and J.F. Shanahan. 2012. Relationships between soil-based management zones and canopy sensing for corn nitrogen management. *Agronomy Journal* 104(1):119-129.
4. **Adamchuk, V.I.**, A.S. Mat Su, R.A. Eigenberg, and R.B. Ferguson. 2011. Development of an angular scanning system for sensing vertical profiles of soil electrical conductivity. *Transactions of the ASABE* 54(3): 1-11.
5. **Adamchuk, V.I.**, R.A. Viscarra Rossel, D.B. Marx, and A.K. Samal. 2011. Using targeted sampling to process multivariate soil sensing data. *Geoderma* 163(1-2): 63-73.

6. Viscarra Rossel, R.A., **V.I. Adamchuk**, K.A. Sudduth, N.J. McKenzie, and C. Lobsey. 2011. Proximal soil sensing: an effective approach for soil measurements in space and time, Chapter 5. *Advances in Agronomy* 113: 237-283.
7. Kocher, M. F., **V.I. Adamchuk**, J.A. Smith, and R.M. Hoy. 2011. Verifying power claims of high-power agricultural tractors without a PTO to sell in Nebraska. *Applied Engineering in Agriculture* 27(5): 711-715.
8. Roberts, D.F., **V.I. Adamchuk**, J.F. Shanahan, R.B. Ferguson, and J.S. Schepers. 2011. Estimation of surface soil organic matter using a ground-based active sensor and aerial imagery. *Precision Agriculture* 12(1): 82-102.
9. Shiratsuchi, L., R. Ferguson, J. Shanahan, **V. Adamchuk**, D. Rundquist, D. Marx, and G. Slater. 2011. Water and nitrogen effects on active canopy sensor vegetation indices. *Agronomy Journal* 103(6): 1815-1826.
10. Gebbers, R. and **V.I. Adamchuk**. 2010. Precision agriculture and food security. *Science* 327(5967): 828-831.
11. Easterly D.R., **V.I. Adamchuk**, M.F. Kocher, and R.M. Hoy. 2010. Using a vision sensor system for performance testing of satellite-based tractor auto-guidance. *Computers and Electronics in Agriculture* 72(2): 107-118.
12. Coffman, B.A., M.F. Kocher, **V.I. Adamchuk**, R.M. Hoy, and E.E. Blankenship. 2010. Testing fuel efficiency of a tractor with continuously variable transmission. *Applied Engineering in Agriculture* 26(1): 31-36.
13. Solari, F., J.F. Shanahan, R.B. Ferguson, and **V.I. Adamchuk**. 2010. An active sensor algorithm for corn nitrogen recommendations based on a chlorophyll meter algorithm. *Agronomy Journal* 102(4): 1090-1098.
14. Barker, B., N. Grandgenett, G. Nugent, and **V. Adamchuk**. 2010. Pairing educational robotics with geospatial technologies in informal learning environments. *Journal of Youth Development* 5(2): 48-56.
15. Nugent, G., B. Barker, N. Grandgenett, and **V. Adamchuk**. 2010. Impact of robotics and geospatial technology interventions on youth STEM learning and attitudes. *Journal of Research on Technology Education* 42(4): 391-408.
16. Barker, B.S., N. Grandgenett, G. Nugent, and **V.I. Adamchuk**. 2010. Robots, GPS/GIS, and programming technologies: the power of "digital manipulatives" in youth extension experiences. *Journal of Extension* 48(1): 1FEA7 (electronic publication, 9 pages).
17. Roberts, D.F., **V.I. Adamchuk**, J.F. Shanahan, R.B. Ferguson, and J.S. Schepers. 2009. Optimization of crop canopy sensor placement for measuring nitrogen status in corn. *Agronomy Journal* 101(1): 140-149.
18. Hemmat A., A. Khorsandy, A. Masoumi and **V.I. Adamchuk**. 2009. Influence of failure mode induced by a horizontally-operated single-tip penetrometer on measured soil resistance. *Soil Tillage and Research* 105(1): 49-54.
19. **Adamchuk, V.I.**, T.I. Ingram, K.A. Sudduth, and S.O. Chung. 2008. On-the-go mapping of soil mechanical resistance using a linear depth effect model. *Transactions of the ASABE* 51(6): 1885-1894.
20. Hemmat, A. and **V.I. Adamchuk**. 2008. Sensor systems for measuring spatial variation in soil compaction. *Computers and Electronics in Agriculture* 63(2): 89-103.
21. Hemmat, A., **V.I. Adamchuk**, and P. Jasa. 2008. Use of an instrumented disc coulter for mapping soil mechanical resistance. *Soil Tillage and Research* 98(2): 150-163.

22. Sethuramasamyraja, B., **V.I. Adamchuk**, A. Dobermann, D.B. Marx, D.D. Jones, and G.E. Meyer. 2008. Agitated soil measurement method for integrated on-the-go mapping of soil pH, potassium and nitrate contents. *Computers and Electronics in Agriculture* 60(2): 212-225.
23. Kyaw, T., R.B. Ferguson, **V.I. Adamchuk**, D.B. Marx, D.D. Tarkalson, and D.L. McCallister. 2008. Delineating site-specific management zones for pH-induced chlorosis. *Precision Agriculture* 9(1-2): 71-84.
24. **Adamchuk, V.I.** and P.T. Christenson. 2007. Development of an instrumented blade system for mapping soil mechanical resistance represented as a second-order polynomial. *Soil Tillage and Research* 95(1): 76-83.
25. **Adamchuk, V.I.**, E.D. Lund, T.M. Reed, and R.B. Ferguson. 2007. Evaluation of an on-the-go technology for soil pH mapping. *Precision Agriculture* 8(2): 139-149.
26. Sethuramasamyraja, B., **V.I. Adamchuk**, D.B. Marx, A. Dobermann, G.E. Meyer, and D.D. Jones. 2007. Analysis of an ion-selective electrode based methodology for integrated on-the-go mapping of soil pH, potassium and nitrate contents. *Transactions of the ASABE* 50(6): 1927-1935.
27. **Adamchuk, V.I.**, M.T. Morgan, and S.M. Brouder. 2006. Development of an on-the-go soil pH mapping method: analysis of measurement variability. *Applied Engineering in Agriculture* 22(3): 335-344.
28. **Adamchuk, V.I.** and J.P. Molin. 2006. Instrumented shanks for soil mechanical resistance measurements (in Portuguese: Hastes instrumentadas para mensuração da resistência mecânica do solo). *Revista Engenharia Agrícola* 26(1): 161-196.
29. **Adamchuk, V.I.**, E. Lund, B. Sethuramasamyraja, M.T. Morgan, A. Dobermann, and D.B. Marx. 2005. Direct measurement of soil chemical properties on-the-go using ion-selective electrodes. *Computers and Electronics in Agriculture* 48(3): 272-294.
30. Siefken, R.J., **V.I. Adamchuk**, D.E. Eisenhauer, and L.L. Bashford. 2005. Mapping soil mechanical resistance with a multiple blade system. *Applied Engineering in Agriculture* 21(1): 15-23.
31. **Adamchuk, V.I.** and L.V. Aniskevich. 2005. Precision farming technologies to serve agriculture (in Ukrainian: Tehnologii tochnogo zemlerobstva na sluzhbi sil's'kogo gospodarstva). *Visnyk Agrarnoi Nauky* 10: 42-44.
32. **Adamchuk, V.I.**, A.V. Skotnikov, J.D. Speichinger, and M.F. Kocher. 2004. Technical note: Development of an instrumented deep-tillage implement for sensing of soil mechanical resistance. *Transactions of the ASAE* 47(6): 1913-1919.
33. **Adamchuk, V.I.**, J.W. Hummel, M.T. Morgan, and S.K. Upadhyaya. 2004. On-the-go soil sensors for precision agriculture. *Computers and Electronics in Agriculture* 44(1): 71-91.
34. **Adamchuk, V.I.**, M.T. Morgan, and J.M. Lowenberg-DeBoer. 2004. A model for agro-economic analysis of soil pH mapping. *Precision Agriculture* 5(2): 109-127.
35. Grisso, R.D., M.F. Kocher, **V.I. Adamchuk**, P.J. Jasa, and M.A. Schroeder. 2004. Field efficiency determination using traffic pattern indices. *Applied Engineering in Agriculture* 20(5): 563-572.
36. Voityuk, D.G., L.V. Aniskevich, and **V.I. Adamchuk**. 2004. Modern technologies for energy management within an agricultural field (in Ukrainian: Suchasni tehnologii keruvannya energetychnym potentsialom sil's'kogospodars'kogo polya). *Naukovyj Visnyk Natsional'nogo Agrarnogo Universitetu* 73(1): 222-229.

37. Brouder, S.M., M. Thom, **V.I. Adamchuk**, and M.T. Morgan. 2003. Potential uses of ion-selective potassium electrodes in soil fertility management. *Communications in Soil Science and Plant Analysis* 34(19-20): 2699-2726.
38. Dobermann, A., J. Ping, **V.I. Adamchuk**, G.C. Simbahan, and R.B. Ferguson. 2003. Classification of crop yield variability in irrigated production fields. *Agronomy Journal* 95(5): 1105-1120.
39. **Adamchuk, V.I.**, M.T. Morgan, and H. Sumali. 2001. Application of a strain gauge array to estimate soil mechanical impedance on-the-go. *Transactions of the ASAE* 44(6): 1377-1383.
40. **Adamchuk, V.I.** 2001. Automated systems for measuring of soil properties in process (in Ukrainian: Avtomatyzovani systemy dlia vymiriuvannia vlastyvostej gruntu na hodu). *Agrarna Nauka i Osvita* 2(3-4): 107-112.
41. Heber, A.J., J.Q. Ni, T.T. Lim, C.A. Diehl, A.L. Sutton, R.K. Duggirala, B.L. Haymore, D.T. Kelly, and **V.I. Adamchuk**. 2000. Effect of a manure additive on ammonia emission from swine finishing buildings. *Transactions of the ASAE* 43(6): 1895-1902.
42. **Adamchuk, V.I.**, M.T. Morgan, and D.R. Ess. 1999. An automated sampling system for measuring soil pH. *Transactions of the ASAE* 42(4): 885-891.

PUBLISHED CONTRIBUTIONS SUMMARY

• US Patents	2
• Book chapters	11
• Refereed journal articles	42
• Refereed conference proceedings	30
• Non-refereed conference proceedings	26
• Non-refereed ASABE/CSBE professional society papers	23
• Extension circulars	10
• Professional magazine articles	12
• Edited books	3
• Other publications	29
Total	188