

Scott X. Chang, Ph.D., P.Ag., FSSSA, FASA

Professor of Forest Soils and Nutrient Dynamics

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EDUCATION, WORK EXPERIENCE AND AWARDS

Education:

1991-1996. Ph.D. in Forestry (Forest Soils). University of British Columbia (UBC).

1984-1987. M.Sc. in Soil Science. Institute of Soil Science, Chinese Academy of Sciences.

1980-1984. B. Agronomy (Soil Science). Zhejiang Agricultural University, P.R. China.

Research Interests:

Forest soil processes (N and C cycling), forest fertilization and nutrition, soil microbial ecology, land reclamation, carbon sequestration, greenhouse gas emissions, and agroforestry.

Professional Experience:

2011- Professor of Forest Soils and Nutrient Dynamics. University of Alberta.

2007-11 Associate Professor. University of Alberta.

2001-7 Assistant Professor, University of Alberta.

1999-01 Research Assistant Professor, North Carolina State University.

1996-9 Lecturer in Forestry, Agronomy and Horticulture Group, Lincoln University.

Scholarships and Awards:

2016 Soil Science Society of America Fellow award

2016 American Society of Agronomy Fellow award

2015 Faculty International Engagement Award. University of Alberta.

2014 Killam Annual Professorship, University of Alberta

2003 Canadian Foundation for Innovation New Opportunity Fund Award

1997 New Zealand/China Travel Award (\$2,500)

1994 GREAT (Graduate Research, Engineering And Technology) award (\$17,000)

1989-90 Special Scholarship from the University of Alberta. (\$14,600)

TEACHING AND SUPERVISION OF PERSONNEL

Courses Taught:

SOILS 420/RenR 441-Soil Formation & Landscape Processes; SOILS 210-Introduction to Soil Science and Soil Resources; RENR 414/751-Agroforestry Systems; Soil Fertility; Spring Camp (on Soil/Site Classification); FOR 314/RenR 314 - Forest Soils

Postdoctoral Researchers Supervised: current and completed (20)

Visiting Scientists Supervised: current and completed (22)

Visiting Graduate Students Supervised: 14

Graduate Students Currently Supervised: 6

Graduate Students Completed: 12 PhD, 13 MSc

RESEARCH SUPPORT AND OUTPUT

Research Grants Received: Current (partial listing)

- 2016-21 BMPs to enhance carbon sequestration and reduce greenhouse gas emissions from agroforestry systems. Agriculture and Agri-Food Canada. **\$690,720. PI**
- 2013-8 Carbon forms and fluxes in different land use systems. NSERC Discovery. \$40,000/year for \$200,000 over five years. **PI**.
- 2016-21 Grassland soil organic carbon, greenhouse gas emissions, water infiltration and biodiversity under grazing management practices in Canadian grasslands. Boyce, M.S. et al.. \$1,936,627. **Co-PI**
- 2015-8 Identification of regionally appropriate grazing systems for the reduction of greenhouse gasses in Alberta, now and in the future. Climate Change and Emissions Management Corporation (CCEMC) C. Carlyle, et al. \$487,500. **Co-PI**
- 2015-8 Are grazing impacts on greenhouse gas fluxes in Alberta's rangelands mediated by the soil microbial community? Alberta Livestock and Meat Agency Ltd. (ALMA). C. Carlyle et al.. \$316,844. **Co-PI**

Research Grants Received: Previous (~\$6 million as PI and ~ 7 million as Co-PI)

Publications (Refereed Science-Citation-Indexed Journal Articles): Partial listing (Names highlighted are students and other trainees I have supervised. † indicates corresponding authorship). **Career-wide publication of 222 peer-reviewed journal articles.**

- Baah-Acheamfour, M.**, Carlyle, C.N., **Lim, S.S.**, Bork, E.W. and Chang[†], S.X. 2016. Forest and grassland cover types reduce net greenhouse gas emissions from agricultural soils. **Science of the Total Environment** 571: 1115-1127.
- Chang[†], S.X., **Shi, Z.** and Thomas, B.R. 2016. Soil respiration and its temperature sensitivity in agricultural and afforested poplar plantation systems in northern Alberta. **Biology and Fertility of Soils**. 52: 629-641.
- Sun, S.Q.**, Bhatti, J.S., Jassal, R.S., Chang[†], S.X., Arevalo, C.M., Black, T.A. and Sidders, D. 2015. Stand age and soil productivity control soil CO₂ efflux and soil organic carbon dynamics in hybrid poplar plantations. **Soil Science Society of America Journal**. 79: 1638-1649.
- Jamro, G.M.**, Chang[†], S.X., Naeth, M.A., **Duan, M.** and **House, J.D.** 2015. Fine root dynamics in lodgepole pine and white spruce stands along productivity gradients in reclaimed oil sands sites. **Ecology and Evolution** 5(20): 4655–4670.
- Duan, M.**, **House, J.** and Chang[†], S.X. 2015. Limiting factors for lodgepole pine (*Pinus contorta*) and white spruce (*Picea glauca*) growth differ in some reconstructed sites in the Athabasca oil sands region. **Ecological Engineering**. 75: 323-331.
- Ojekanmi[†], A.A.** and Chang, S.X. 2014. Soil quality assessment and ratings for peat–mineral mixed soil for land reclamation in the oil sands. **Journal of Environmental Quality** 43: 1566-1575.
- Li, X.P.**, Chang[†], S.X. and Salifu, F. 2014. Soil texture and layering effects on water and salt dynamics in the presence of a water table: a review. **Environmental Reviews**. 22: 41-50.
- Wu, F.P.**, Jia, Z.K., Wang, S.G., Chang[†], S.X. and Startsev, A. 2013. Contrasting effects of wheat straw and its biochar on greenhouse gas emissions and enzyme activities in a Chernozemic soil. **Biology and Fertility of Soils**. 49: 555-565. [2012 IF=2.51]

- Arevalo, C.B.M.,** Bhatti, J.S., Chang[†], S.X. and Sidders, D. 2011. Land use change effects on ecosystem carbon balance: from agricultural to hybrid poplar plantation. **Agriculture, Ecosystems and Environment** 141: 342– 349.
- Lin, Y.,** Han, G.D., Zhao, M.L. and Chang[†], S.X. 2010. Spatial vegetation patterns as early signs of desertification: a case study of a desert steppe in Inner Mongolia, China. **Landscape Ecology**. 25:1519–1527.

SERVICE TO THE COMMUNITY

Professional Services:

- Member, Werner Nelson Award Committee, American Society of Agronomy (ASA). 2017-8.
- Chair (2017) and Member (2016), Environmental Quality Research Award Committee, ASA.
- Secretary (2015), Vice-President (2016) and President (2017), the Association of Chinese Soil & Plant Scientists in North America (ACSPSNA)
- Chair, Soil Fertility and Plant Nutrition Commission, International Union of Soil Sci. 2014-8.
- Chair (2015) and Member (2013-4), Wilde Lectureship on Forest Soils Committee, SSSA
- Chair-elect 2013, and Chair, 2014. Forest, Range, and Wildland Soils Division, SSSA.
- Member, Soil Science Research Award Committee. SSSA. 2012-3.
- Past Chair (2009-10), Chair (2008-9) and Treasurer (2007-8), Alberta Soil Science Workshop
- President (2008-10), and VP External (2006-8), Association of Chinese Canadian Professors.

Consultancy

- Consultant to IAEA to offer a week-long training course on Monitoring of C-Sequestration and Climate Smart Agricultural Practices. University of Costa Rica. July 19-25, 2015.
- Consultant to IAEA on a Coordinated Research Project (CRP) on the use of cover crops, chemical fertilizers and manure to enhance soil fertility and resilience to climate change. Nov.17-20, 2014. Vienna, Austria.

Special Issues Editor:

Canadian Journal of Soil Science (Agricultural Institute of Canada). 2015.2-

Associate Editorship:

- Acta Ecologica Sinica (International Journal). 2009-
- Canadian Journal of Soil Science. 2006-2011.
- Journal of Soils and Sediments. 2008-17

Membership on Editorial Boards:

- Biology and Fertility of Soils (Springer). 2007-;
- Pedosphere (Elsevier). 2015-
- Communications in Soil Science and Plant Analysis (Taylor & Francis). 2004-10.

Guest Editorships:

Canadian Journal of Soil Science. 2007/8 and 2016/7; Environmental Science and Pollution Research. 2016/7; Forest Ecology and Management, 2008/9; Journal of Environmental Quality 2010/1; Journal of Soils and Sediments 2013/4 and 2016/7; Soil Science Society of America Journal. 2016/7; Forests.2016