

Edward Topp Ph.D.

Current and previous employment history:

Research Scientist, Agriculture and Agri-Food Canada (AAFC), 1988-current. Ottawa, London.

Adjunct Professor, Dept. of Biology, University of Western Ontario. 1996-current

Adjunct Professor, Soil and Water Science, University of Florida, 2014-current

Profile: I am an environmental microbiologist with an interest in understanding and managing risks to human and environmental health from microbial and chemical contaminants generated in primary food production. In the last several years the focus has been on understanding the genesis and management of antimicrobial resistance in agriculture as practiced in North America. Results are used to inform policy-relevant risk analyses by colleagues in the regulatory and public health domains. We have evaluated the dynamics of antibiotic resistant bacteria and antibiotic resistance genes in crop production systems following application of human or animal waste. Using functional and molecular tools we have been evaluating the long-term impacts on soil microorganisms of antibiotics that are entrained onto agricultural land via animal or human wastes. I am the Project Coordinator for the Government of Canada's Genomics Research and Development Initiative on AMR (GRDI-AMR; \$20 million/2016-2021) being undertaken through the Federal Action Plan on Antimicrobial Resistance. I have recently been awarded the Government of Canada Public Service Award of Excellence for Scientific Contribution (2016), and the AAFC Gold Harvest award for Career Achievement (2015).

Five most relevant publications from the last five years (Total career 251):

1. Lau CH-F, Li B, Zhang T, Tien Y-C, Scott A, Murray R, Sabourin L, Lapen DR, Duenk P, Topp E. 2017. Impact of pre-application treatment on municipal sludge composition, soil dynamics of antibiotic resistance genes, and abundance of antibiotic-resistance genes on vegetables at harvest. *Sci. Total Environ.* pii: S0048-9697(17)30370-4.
2. Tien Y-C, Li B, Zhang T, Scott A, Murray R, Sabourin L, Marti R, Topp E. 2017. Impact of dairy manure pre-application treatment on manure composition, soil dynamics of antibiotic resistance genes, and abundance of antibiotic-resistance genes on vegetables at harvest. *Sci. Total Environ.* 581–582:32-39.
3. Ross, J., and E. Topp. 2015. Abundance of antibiotic resistance genes in bacteriophage following soil fertilization with dairy manure or municipal biosolids, and evidence for potential transduction. *Appl. Environ. Microbiol.* 81:7905-7913.
4. Rahube, T.O., R. Marti, A. Scott, Y.-C. Tien, R. Murray, L. Sabourin, Y. Zhang, P. Duenk, D. R. Lapen and E. Topp. 2014. Impact of fertilizing with raw or anaerobically-digested sewage sludge on the abundance of antibiotic-resistant coliforms, antibiotic resistance genes and pathogenic bacteria in soil, and on vegetables at harvest. *Appl. Environ. Microbiol.* 80:6898-6907.
5. Marti, R., Y-C. Tien, R. Murray, A. Scott, L. Sabourin, and E. Topp. 2014. Safely coupling livestock and crop production systems: how rapidly do antibiotic resistance genes dissipate in soil following a commercial application of swine or dairy manure? *Appl. Environ. Microbiol.* 80:3258-3265.