



# Biology @ Acadia

## OPTIMIZING THE USE OF THE ECOPLATE TO ACHIEVE THE MOST CONSISTENT RESULTS WHEN CHARACTERIZING THE MICROBIAL CONTENT OF RIPARIAN AREA SOILS

**Huizen, Jennifer**, Soren Bondrup-Nielsen, and Greg Bezanson.<sup>1</sup>  
 Department of Biology, Acadia University, Wolfville, N.S.; <sup>1</sup>Atlantic Food and Horticulture Research Centre, Agriculture and Agri-Food Canada, Kentville, N.S.

Understanding the differences between the microbial communities of cattle exposed versus non-cattle exposed riparian areas in Berwick, Nova Scotia is part of a larger study on biodiversity in an agricultural landscape. The BIOLOG EcoPlate™ was elected for use in this study, as it does not assess the presence of individual bacteria, but rather considers microbial communities as functional units characterized by their total metabolic activity, thus generating Community Level Physiological Profiling (CLPP). Because CLPP measures the potential microbial diversity of soil communities it gives insight into the biodiversity of microorganism populations within soil samples. The EcoPlate™ contains three replicates of an array of 31 common carbon source compounds and one water-only control well. EcoPlate™ results have been criticized because of low reproducibility. In order to reduce the variation between the replicates, various protocols for preparing the EcoPlate™ inoculum were tested and compared manipulating both method of collection and dilution. Our results and previously published data suggest that the most effective and consistent method of preparing the inoculum is to suspend 5 grams of crushed, dry soil in 45 grams of sterile 0.85% NaCl solution, then vortex this mixture for 3 minutes before centrifuging it at 1150 RPM for 5 minutes at 20°C and diluting the inoculum ten-fold prior to inoculation. After this method was established, the EcoPlate™ was used to assess soil samples from some of the initial riparian areas set out in the larger project and no notable difference was found between the sites. These findings support the conclusion that on a community level, there is no detectable difference between soil microbial communities of cattle exposed and non-cattle exposed riparian areas in Berwick, Nova Scotia when using this method of detection.



**Jennifer Huizen** graduated from Concord Senior High in Concord, New Hampshire in 2006. Jennifer is currently completing her Honours thesis in her fourth year of Biology at Acadia. Jennifer will also be graduating with a second degree in English. Jennifer served as a member of Christofor House Council and sits on the editorial board for both *Estuary*, Acadia's Creative Arts Magazine, and Minifest, Acadia's student run annual play production. After Acadia Jennifer will be pursuing a masters degree in Microbiology and intends to be an Infectious Disease specialist.

