



## **Assessing the sources of suspended sediments in the streams of an agricultural watershed in the Canadian prairies using caesium-137 as a tracer**

A.J. Koiter (1), D.A. Lobb (2), P.N. Owens (1), K.H.D. Tiessen (3), and S Li (4)

(1) Environmental Sciences Program and Quesnel River Research Centre, University of Northern British Columbia, British Columbia, Canada (owensp@unbc.ca, +1 250 960-5845), (2) Department of Soil Science, University of Manitoba, Winnipeg, Manitoba, Canada, (3) International Development Research Centre, Canada, (4) Agriculture and Agri-Food Canada, Canada

Sediments adversely impact the quality of surface waters and are a significant source of contaminants such as nutrients and pesticides in agricultural watersheds. The South Tobacco Creek watershed is part of a national project aimed at measuring the economic and water quality impacts of different agricultural practices and is one of nine sites across Canada. This predominantly agricultural watershed extends across the Manitoba Escarpment; its upper reaches lay in undulating glacial tills and its lower reaches lay in the lacustrine sediments of glacial Lake Agassiz. Past studies of soil erosion within fields and sediment delivery from the watershed have produced conflicting results. In 2009, a comprehensive study of the sources of sediments was undertaken using sediment fingerprinting techniques. Suspended sediments were sampled using paired time-integrated samplers fixed to the stream bed. Samples were collected over the course of three years at several locations along the main stem of the creek, ranging from 3rd order (42 ha) to seventh order (7441 ha) drainage basins. Sediment samples were analyzed for caesium-137 content and the values were compared to those measured within the surface soil of field and riparian areas, and streambank profiles. Analysis determined that the majority of suspended sediments being exported from the watershed were coming from the stream channels and not the soils of the uplands.