



The use of tillage to modify land surfaces to manage soil moisture and surface water

D.A. Lobb (1), S. Li (1,2) and K.H.D. Tiessen (1,3)

(1) Department of Soil Science, University of Manitoba, Canada, (2) Agriculture and Agri-Food Canada, (3) Department of Natural Resource Sciences, McGill University
(lobbda@ms.umanitoba.ca)

Tillage is responsible for moving considerable amounts of soil within cultivated landscapes. The recent focus of research on soil movement by tillage has been on tillage erosion, the progressive downslope movement of soil by tillage which causes soil loss on upper slope landscape positions and soil accumulation on lower slopes. This follows a long history of research into the design of tillage tools, implements and practices to manage soil conditions to enhance crop production. Tillage has, and continues to be used as a means of modify land surfaces to manage soil moisture and surface water. Tillage equipment and practices used for these purposes are examined, and their effectiveness and sustainability are discussed. In particular, the use of mouldboard plough to create and maintain surface drains and terraces is examined. Also examined is the use of mouldboard plough to reverse the effects of tillage erosion by progressively moving soil upslope.