



## **The Effects of Soil Water Repellence on Erosion**

Mary-Anne Lowe (1), Gavan McGrath (1,2), and Matthias Leopold (1)

(1) The University of Western Australia, School of Agriculture and Environment, Perth, Western Australia  
(mary-anne.lowe@research.uwa.edu.au), (2) Ishka Solutions, Nedlands, Western Australia

Erosion has a major effect on agriculture and the environment with losses of soil and nutrients. The severity of erosion is increased by the effects of soil water repellence, through its susceptibility to decrease infiltration and therefore runoff and erosion potential. To understand the surface interaction of water on water repellent soils we set up a 60 x 60 cm laboratory catchment, with rainfall simulation by a spray system and the measurement, through time, of runoff and erosion from outlets at the base of the catchment. The soil that had been eroded was then separated from water runoff and analysed for potential repellence, particle size distribution and nutrient levels. DEMs of the catchment surface were also created through 3D surface imaging and were used to monitor where erosion was occurring and how it developed through time. We hypothesise that greatest losses will be incurred by particles with lower repellence, with the surface self-organising into channels lined with highly repellent material causing greater transport potential. The results are currently being processed but expect to show the formation of channel networks with dynamic converging and diverging streams. Analysis of eroded soil from the surface after watering is expected to present a separation of characteristics from the catchment soil as the surface networks develop.