

Subsurface Flow Effects on Soil Erosion in Watersheds

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Abstract

Soil erosion in watersheds is routinely viewed as a surface phenomenon in which rainfall and surface flow detaches soil that is substantially transported to the drainage network for further disposition. Only rarely is the role of subsurface flow considered and then only in a qualitative manner. The lack of a quantitative assessment can in part be attributed to the highly complex nature of this process and is in part due to differences in time scale between erosion caused by surface flow during a storm event and subsurface flow-induced erosion. Subsurface flow induced erosion often occurs at specific locations in the watershed which commonly are associated with head cut and rill development. This paper presents a brief review of this phenomenon and discusses on-going theoretical research of soil erosion induced by changes in the soil water pressure in the head cut region of a moving head cut and recently started preliminary laboratory experiments of measuring rill growth by subsurface flow effects.

Keywords: soil erosion, subsurface flow, seepage, gully

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