This research has allowed us to observe both soil loss from a field and soil re-deposition within a field simultaneously using a mesh-pad technology.

A Mesh-Pad Technology for Observing Soil Erosion in Large-Scale Field Experiments

Who cares and why?

Accelerated soil erosion is one of the most serious elements that threaten the sustainability of agricultural lands. Erosion control is critical to the survival of humanity. Soil erosion is estimated by models such as statistical Revised Universal Soil Loss Equation (RUSLE) or process based Water Erosion Prediction Project (WEPP). Those models require quality field data to validate and calibrate. Unfortunately, there is a lack of quality field soil erosion data due to the limitation of the traditional methods. We developed the mesh-pad technology to provide a sensitive and practical method for collecting quality soil erosion data in large-scale field experiments. The need of quality field data for the validation and calibration of soil erosion models is tremendous.

What has the project done so far?

We developed the mesh-pad technology and made it applicable to a wide range of field conditions: vegetated and non-vegetated croplands, managed and natural forests. Now the technology can observe both soil loss from a field and soil re-deposition within a field simultaneously. The mesh-pad method is sensitive for single-event soil erosion observation and practical for a 10-ha field experiment. There is little information pertaining to soil re-deposition in literature. Soil re-deposition is a precursor of soil loss and a process we need to know in order to understand soil erosion and conservation.

Impact Statement

The mesh-pad technology is a new development in soil and water conservation research. It provides a means to generate quality field data that is critical for the validation and calibration of soil erosion models.

We do not have quality soil erosion field data because of the limitation of the current technology. The mesh-pad technology also provides us with a means to gain insight into the processes of soil transport, re-deposition and loss in a large-scale field condition. This insight is necessary for the mitigation of soil erosion problems in all croplands.

What research is needed?

We need to further expand the application of mesh-pad method to all types of croplands under all types of field conditions. The relationships between soil re-deposited in a field and soil loss out of a field is poorly understood and we need to improve that.

Want to know more?

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Strategic Priority:
Agricultural Systems; Natural Resources and Environment

Additional Links:
http://www.umes.edu/ard/Default.aspx?id=46285

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