
Erosion mapping with Light Detection and Ranging (LIDAR) and RUSLE – method testing at experimental plots and farmers' fields

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In southern Finland abundant of clayey soils, erosion carries major part of phosphorus load to water bodies. The purpose of this poster is to demonstrate present study intended to draw maps of soil erosion risk by using RUSLE (Revised Universal Soil Loss Equation) and field parcels situated both on experimental fields of MTT (Kotkanoja and Lintupaju) and on private farms.

The first uncalibrated model uses only three factors of RUSLE: 1) Length Slope factor (LS) that was evaluated from 1-m resolutions of LIDAR based Digital Elevation Model, 2) Erosion factor (K) that was evaluated from 1:4000 scale soil maps by using K-values that were taken from earlier studies done with ICECREAM model (Finnish heavy clay soils seem to be vulnerable to dispersion erosion, but the values used by earlier models might not consider the phenomena; therefore new K-values should be evaluated), 3) The cover factor (C) is based on the concept of deviation from a standard; in this study only the standard value (pasture) was used.

The first erosion maps of field parcels on private farms have been delivered to farmers in south-western Finland by “TEHO” project and feedback from the farmers will be used in the model development. After the basic calibration against data from experimental fields of MTT the changes caused by the cultivation measures (P-factor) and rainfall (R) are adapted to the model. The final objective is to estimate the erosion risk of fields (t/ha/year) for whole Finland and show calibrated results on the map. The calibrated model could also be utilized when creating a national phosphorus index. The project is financed by the foundation of the Central Union of Agricultural Producers and Forest Owners (MTK-säätiö) and the Ministry of Agriculture and Forestry.