

Simulating Soil Erosion in a Warm, Humid Climate¹

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Abstract: Erosion is one of the most serious agricultural problems in the world. It is a primary source of sediments that pollutes streams and fills reservoirs. Erosion also adds to the removal of valuable plant nutrients lost with runoff. There are many model developed to estimate the soil loss. All erosion models try to simulate the movement of sediment on a field or watershed. The Universal Soil Loss Equation (USLE) is an erosion model designed to predict the longtime average soil losses in runoff from specific field areas in specified cropping and management system. The objective of the study was to evaluate the capability of the CREAMS model to simulate soil erosion from in a warm, humid climate.

CREAMS (Chemical, Runoff, and Erosion from Agricultural Management Systems) model was developed by a team of USDA-ARS scientists to simulate the effect of management system on nonpoint source water pollution (Knisel et al., 1980). The model consists of three components which describe field hydrology, erosion and sedimentation, and chemistry.

The CREAMS model was used to simulate erosion from an experimental plot, located 5.5 km south of Louisiana State University, Baton Rouge, Louisiana, USA. Surface runoff was sampled at 20-minute intervals and analyzed for sediment. Seven years of observed data (1981 to 1987) were used to evaluate the capability of the model in simulating the sediment loss. In general the performance of the CREAMS model in simulating the sediment loss from a flat agricultural field with warm, humid climate is satisfactory.

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