

Tanyathorn Jitorawan 2010: Estimation of Soil Erosion and Chemical Content in Sediment on Maize Field at Namchun Subdistrict, Lomsak District, Phetchabun Province by Using CREAMS Mathematic Model. Master of Science (Agriculture), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Associate Professor Viroj Impitak, Ph.D. 101 pages.

The study on estimation of soil erosion and chemical content in sediment on maize field at Namchun Lomsak District, Phetchabun province by using the mathematic model of CREAMS was conducted in 2004. Geographic Information System was used to analyze the variables. The results of analyzing the variables were used to create the map showing factors of the 3 combinations of CREAMS sub model that were hydrology sub model (Q , Qp), erosion sub model (Di , Dr , Tc and Dep) and chemical sub model (SED_N , SED_P and Y_H). Analyzing the amount of soil erosion and chemical content from CREAMS model by overlaying the created map. Then classifying level of soil erosion according to Land Development Department and classifying range of chemical content by geo-statistic method (natural break).

The study area locates between coordinate 725461 to 726448 East and 1855163 to 1855835 North. It was covered 189.5 rai. The values of detachment from rain drop (Ds), sediment transport capacity (Tc) and deposition capacity (Dep) were used to determine in estimating the amount of soil erosion and chemical content in sediment. The calculated results shown the amount of sediment was equal to the value of detachment from rain drop, that was the on-site erosion. The calculated amount of sediment by using the mathematic model of CREAMS was 33,319 pound/square feet/years as equal as 266,818 ton/rai/years. The level of soil erosion in the study area which was very severe (>20 ton/rai/years), covered 58.99 percent of the study area. The calculated amount of chemical content in sediment was less than the amount of sediment. The annual of Nitrogen and Phosphorous in sediment was 0.561 and 1.121 kilogram/hectare, Atrazine was 0.423 milligram/ kilogram of Atrazine/kilogram of soil. The range of chemical content which was high (F3H4) was covered only 0.22 percent of study area. The results pointed out that land use factor which depend on manageable human activities can cause severe soil erosion and hence soil and water conservation must be recognized.

Student's signature

Thesis Advisor's signature