

Vatanagan Dokpikul 2012: Estimation of Soil Loss and Soil Organic Carbon Content in Different Vetiver Experimental Plots at Vetiver Usage for Forest Development and Campaign Demonstration Center Unit 2, Sukhothai Province. Master of Science (Watershed and Environmental Management), Major Field: Watershed and Environmental Management, Department of Conservation. Thesis Advisor: Assistant Professor Somnimit Pukngam, Ph.D. 72 pages.

Estimation of soil loss and soil carbon content in different vetiver experimental plots at Vetiver Usage for Forest Development and Campaign Demonstration Center Unit 2, Sukhothai Province was investigated using 3 experimental plot design with different replications and treatments. The first, experiment 1 on 5 percent of slope consists of one 2x10 m experimental plot with 6 treatments one replication were bare soil, 5, 10, 15, 20 and 25 cm respectively with 4 m vertical interval of all treatments. The second, experiment 2 on 15 percent of slope was designed as two 4x20 m respectively plots with a treatments and 2 replications as bare soil, 4 m and 5 m vertical interval. The last, experiment 3 on 25 percent of slope consists of four 2x2 m and 1.5 m vertical experimental plots with 3 treatments and 4 replications were bare soil, one row and two row of vetiver respectively with space 1.5 m. The investigation was carried out during the rainy season, May - October 2011. The sediment was collected every time after rainfall. The results of the study found that the maximum soil loss was occurred on bare soil plot in all experimental design . In experiment 1, the minimum soil loss was in 5 cm spacing plot as 1.33 ton/ha/yr with the maximum efficiency of 87.57 percent. In experiment 2, the minimum soil loss in vertical interval 4 m plot was 2.62 ton ha<sup>-1</sup> yr<sup>-1</sup> with maximum efficiency as 59.91 percent. For experiment 3, the minimum soil loss was in 2 row with 1.5 m spacing plot as 33.36 ton ha<sup>-1</sup> yr<sup>-1</sup> with the maximum efficiency as 73.83 percent. For soil organic carbon content, the mean soil organic carbon in bare soil for experiment 1, 2 and 3 were 0.214, 0.215, 0.02 g C m<sup>-2</sup>. The trend indicated that the soil organic carbon in almost bare soil plots were decreased that opposite all vetiver plots which were increased.

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Thesis Advisor's signature