

Patrawoot Sripo 2011: Efficiency of Vetiver in Preventing Soil Loss and Soil Carbon Storage 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. 92 pages.

Efficiency of vetiver in soil loss prevention and soil carbon storage at Vetiver Usage for Forest Development and Campaign Demonstration Center Unit 2, Sukhothai province was investigated using 3 experimental designed with different replications and treatments. Experiment 1: on 25-30 percent of slope consisting of four 2x2 m replication plots with bare soil (control), 1 row in the middle and 2 row with 1.5 m vertical interval. Experiment 2: on 10-15 percent of slope was designed as two 4x20 m replication plots as bare soil, 2 m vertical interval and 4 m vertical interval. Experiment 3: on 0-5 percent of slope consistionly of one 2x10 m plot with bare soil, 5, 10, 15, 20 and 25 cm respectively with 4 m vertical interval of all treatments. The investigation was carried out in the rainy season during May-October 2010. The results showed that the maximum soil loss was occurred on bare soil plot in all experimental designs which could be classified as severe and extremely severe soil erosion rate according to the Land Development Department. In experiment 1, the minimum soil loss was in 2 row vetiver plot (42.50 ton/ha/yr) with the maximum efficiency of 92.9 percent. For experiment 2, the minimum soil loss was occurred in the 2 meter vertical interval of vetiver plot at 5.39 ton/ha/yr with the maximum efficiency was 98.3 percent. In experiment 3, the minimum soil loss was found in 5 cm spacing plot (0.50 ton/ha/yr) with the same maximum efficiency (99.6 percent). Regarding soil carbon storage, it was found that soil organic carbon at 0-15 cm on bare soil plot trends to decrease in all experiments. For those vetiver plots, soil organic carbon trends to increase in nearly all methods.

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Student's signature

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Thesis Advisor's signature