

Progress of the Use of Vetiver Grass System for Erosion Control and Slope Stabilization along the Yadana Gas Pipeline Right of Way

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Extended Abstract

Soil and water conservation is a very crucial issue at local, national and global levels. Vetiver grass has been used in the preservation of soil and water in agricultural areas and along road shoulder slopes. PTT Public Company Limited, on the other hand, has used vetiver grass in a different application in the Yadana Gas Pipeline Project along the 50-km. strip of forestry area for erosion control, slope stabilization, and water and soil conservation along the pipeline right of way (R/W). Vetiver grass was applied after the completion of pipeline laying in 1998. Vetiver grass system was integrated with the engineering erosion control structure in a total of 50 areas, classified into 44 high-risk areas and 6 very high-risk areas. Monitoring and follow-up have been continuously implemented for 5 years (1998-2003), of which result was found that vetiver grass system has played a significant role in turning engineering erosion control structure into natural permanent stabilized structure, able to naturally preserve soil and water.

Special techniques used in the areas with very high-risk of soil erosion with the 30°-40° slope are berms, or soil-filled jute sacks in which vetiver grass slips were planted and sacks were arranged as ladders. Vetiver grass slips have grown with root system permanently holding berms serving as soil and water conservation tools. This has enabled vegetation additionally sowed to grow and cover the areas. In addition, as soil and water have been well conserved by vetiver grass, native plants have also grown during the end of the 2nd year. Such results have confirmed the benefits and qualities of vetiver grass. Special techniques have, therefore, been extended to other erosion areas. As for agronomic technique using live stakes of 7 species, 2 species have been found to grow better. Vetiver grass growth recorded is as follows: the 1st year vetiver grass thickets had a diameter of 10-15 cm; 2nd year 20-30 cm and 3rd year 40 cm. Leaves in the areas together with EM fertilizer have been used as nutrients for vetiver grass slips instead of chemical fertilizer, which has proved to be equally effective. Vetiver grass, however, needs to be trimmed after the rainy season, resulting in its growth and strength. It was also found that vetiver grass from bags grew better than the slips but the cost was 2.5 times higher. Jute sacks are also more efficient but are 6 times more costly than plastic bags.

From 1998 to the present, a total of 2,013,500 vetiver slips have been used, with 20,922,315 baht of expense. The erosion control has been modified from reparation to preventive measures and there is a trend that expenses will decline annually. Jute sacks can absorb water better and are decayed into nutrients for soil. Above all, they do not create visual impact. The benefit derived is that no critical erosion was found along the gas pipeline right of way, and no critical damage was done to gas pipeline. The vetiver grass system and engineering techniques can be integrated to effectively control erosion and preserve soil and water in areas with high risk of erosion.

Key words: Natural permanent stabilized structure, soil-filled jute sacks, vetiver grass system and engineering techniques

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