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**ESTIMATION OF POTENTIAL SOIL EROSION IN  
KHLONG YAI SUB-WATERSHED OF THAILAND:  
A GIS MODELING APPROACH**

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Soil erosion is a serious environmental problem causing threat to sustainable land management. Inappropriate agricultural practices, intense rainfall and steep sloppy topography are the main causes of soil erosion. Estimation of the potential erosion of a land area will be useful to plan proper preventive measures. This study was undertaken to find the potential soil erosion of agricultural land-uses in Khlong Yai sub-watershed in Thailand, using Geographic Information System (GIS). The Khlong Yai sub-watershed lies in the Eastern coastal region of Thailand. It is located between  $12^{\circ} 65'$  to  $13^{\circ} 14'$  N latitudes and  $101^{\circ} 03'$  to  $101^{\circ} 44'$  E longitudes. The total area of the sub-watershed is 170,175 ha. Almost 80% of the land-use is agriculture. A modified Universal Soil Loss Equation (USLE) was used in this study. Each component was estimated using appropriate equations using rainfall, soil, topographic and land-use data. The factors were integrated using GIS and an erosion hazard map was produced based on the potential rate of erosion. Results indicated that 84% of the agricultural land-uses had potential erosion rate less than  $2 \text{ tons ha}^{-1} \text{ yr}^{-1}$ . Only 3% of agricultural land-uses had potential erosion rate higher than maximum permissible limit ( $12 \text{ tons ha}^{-1} \text{ yr}^{-1}$ ). Among the areas where potential erosion was above permissible limit, 37%, 23%, and 19 % were under cassava, para rubber and sugarcane-cassava land-uses respectively. Similar methodology could be used to estimate potential erosion of agricultural land-uses elsewhere.

**Key words:** erosion, GIS, agricultural land-uses, hazard map.

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