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SHORT-TERM SOIL EROSION RATE IN DIFFERENT LAND USE AREAS IN THE SEMBRONG CATCHMENT

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Abstract

Soil erosion is one of the environmental problems that often becomes an obstacle in a development process especially in the opening of land for agricultural activities and new settlements. The use of Beryllium-7 as a tracer has been proven through several studies that tested the potential of this fallout radionuclide as a very efficient and significant tracer in estimating soil erosion rates in the short term. This study was conducted in the Sembrong catchment area, Kluang for both seasons by taking soil samples using a metal corer to within 5 cm of the soil surface in different land use areas . The sample was sliced into 2mm and then dried using an oven at $45 - 60^{\circ}$ C until the weight became constant. All the samples were sieved and then put into a 6ml vial tube before being counted using a Gamma Spectrometry overnight. The results of the analysis from this study found that there were varying results for both seasons throughout the study. The dry season has given higher soil erosion rates compared to the wet season, 0.62 t ha^{-1} yr⁻¹ to 27.11 t ha^{-1} yr⁻¹ and 0.44 t ha^{-1} yr⁻¹ to 20.04 t ha⁻¹ yr⁻¹ each respectively. Mixed crop at Station 15 and UK's Farm at Station 13 gave the highest values for soil erosion rates in both seasons, 27.11 t ha⁻¹ yr⁻¹ and 20.04 t ha⁻¹ yr⁻¹. However, there was no statistically significant difference in soil erosion rate between the two seasons across all land uses. In conclusion, the use of Beryllium-7 as a tracer to identify soil erosion rates in different land use areas in the study for both seasons was successful.

Keywords: Environmental, Beryllium-7, Fallout Radionuclide, Varying, Soil erosion