

**Soil erosion in disturbed forests and agricultural plantations in tropical undulating terrain: *in situ* measurement using a laser erosion bridge method**

**ABSTRACT**

The rapid growth of agricultural plantations and climatic extremes has raised concerns pertaining to enhanced soil erosion. Soil erosion studies are still relatively limited in Malaysia. In this study, soil erosion in four sites such as high conservation value forests (HCVFs), logged forest (LF), mature oil palm (MOP), and mature rubber (MR) within the Kelantan River Basin was measured. A total of 3,207 measurements were conducted via the Modified Laser Erosion Bridge in all sites over 1 year. Results of soil erosion are 87.63, 25.45, 8.44, and 5.90 t ha<sup>-1</sup>yr<sup>-1</sup> for the HCVF, LF, MOP and MR, respectively – classified as very severe (HCVF), very high (LF), moderate (MP) and slight (MR) according to the Indian condition classification. Steep slope gradient (significant positive correlation to erosion) and logging are the main factors attributed to the high erosion rates. This is to be further explored in the future and more detailed studies should be conducted on the HCVF and LF areas, respectively. Mitigation measures and sustainable agricultural practices should be planned to control and reduce soil erosion.