

B-04 : A SIMPLE INDEX TO REPRESENT RAINFALL EROSIIVITY

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To be valid as an index of potential erosion, an erosivity index must be significantly correlated with soil loss. In Sri Lanka the erosivity index EI_{30} had been used in 1950s and was replaced by KE25 in 1960s for tropical storms. Both indices have an energy parameter which needs to be calculated by using an appropriate energy - intensity relationship of rainfall. Calculation procedure for such indices hence becomes laborious and its accuracy depends on the type of energy - intensity formula used. The I_{30} is the 30 minutes maximum intensity which cannot be obtained for short duration storms and rainfalls with varying intensities both of which are very common events in the dry zone. Thus, an alternative index referred to as RI_e is proposed to avoid above disadvantages, and it is defined as;

$$RI_e = R_i \cdot I_e, \text{ where } R_i \text{ is amount and } I_i,$$

is intensity in i th increment of rainfall.

Rainfall data and field erosion rates measured at Maha Illuppallama from October 1989 to December 1990 were analyzed to assess the suitability of 8 different erosivity indices including EI_{30} , RI_{30} , KE25 etc. and the alternative index RI_e .

The index, RI_e was found to be better than KE25 and equally suitable as EI₃₀ and RI₃₀. Coefficients of determination for the relationship between measured soil loss and the calculated index were 0.8, 0.91, 0.89 and 0.90 for KE25, EI₃₀, RI₃₀ and RI_e respectively.