

ABSTRACT

An erosion study to evaluate water runoff, soil loss, rainfall erosivity, and soil erodibility was carried out over a 21 month period in Trinidad. Water runoff, nitrogen losses and crop yields were the major parts of another study and are not reported here. In evaluating soil loss, five experiments on 7°, 14° and 30° slopes using bare plots, corn (*Zea mays* L.) and cowpea (*Vigna unguiculata* (L.) Walp) treatments, on tilled or untilled plots, were carried out on two Orthoxic tropudults viz. Maracas sandy clay loam (Hillside Station), and Matelot sandy clay loam (La Pastora Station). The following results were obtained:

(i) The Maracas soil lost the greater amount of soil; (ii) Soil loss increased with slope, though not proportionally; (iii) Soil loss was greater from 14° tilled plots than untilled plots on 14° slopes; (iv) Cropping reduced soil loss which was nonetheless substantial on the steeper (14° and 30°) slopes; (v) There were no significant differences between soil loss from corn or cowpea plots on the different slopes during 1977, but in 1978 corn plots lost the greater volume of soil on all three slope categories.

The  $KE > 25$ ,  $AI_m$  and  $EI_{30}$  erosivity indices were also evaluated at Hillside and La Pastora Stations. The indices followed similar trends showing the rains to be most erosive from June to December. Storms of  $< 10$  mm did not contribute significantly to the  $AI_m$  and  $KE > 25$  erosivity values. Highly significant correlations were observed between amount of

rainfall and maximum intensity and the erosivity indices, and also between the different indices. Correlations between the indices and soil losses were low. Correlations at La Postora were consistently lower than Hillsides for all the parameters tested.

Erodibility assessment of ten Trinidad soils was done using four empirical indices, USDA's Erodibility Nomograph, An Australian Erodibility Index, a Raindrop Test, and Aggregate Stability Indices. The Nomograph indicated that soils were slightly to moderately erodible, while the Australian Index rated the ten soils from slightly to highly erodible. The Raindrop Test and Aggregate Stability Indices indicated that the majority of the soils was of similar stability status. All indices showed the sandy soils to be among the more erodible. Erodibility computed from soil losses from the runoff plots and erosivity values at the two stations, showed the Maracas and Matelot soils to be slightly erodible.