B-87: Potential runoff and soil movement in reddish brown earths (Rhodustalfs)

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Soil erosion by water is a natural process mainly governed by characteristics of rainfall, soil, land and the vegetation. Increasing agricultural activities accelerate the soil erosion process, and the need for controlling it arises with the consequent deterioration of soil resource. Determination of the potential soil and water movement is a pre-requisite in planning such controlling strategies.

A plot based study was carried out at Maha Illuppallama during the period 1989 to 1991 for measuring the runoff and soil loss from bare, up-down ridged 22 m x 4 m plots. Two sites were selected from well drained portion of Reddish Brown Earths (RBE) with land slopes 2 - 2.3%, and runoff collecting tanks were constructed below the bounded rectangular plots. Daily rainfall was recorded from a recording rain gauge. Runoff was measured from collecting tanks on storm basis. Well mixed runoff samples were oven dried to determine the soil loss.

Results showed that the runoff varied from 6% in June to 52% in November indicating an annual value 47%. More than half the monthly rainfall can become runoff in the months of April, October, November and December. The potential soil movement under bounded conditions was recorded as 12.6 t/ha/year. This was more than 4 times the permissible level of soil loss (3 mt/ha) for the concerned soil type, and it indicated the necessity of reducing the soil loss at least by 7% in the RBE investigated.