B-03 : ESTIMATING RUNOFF FROM SMALL AGRICULTURAL LANDS

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In designing drainage and mechanical erosion control measures for small agricultural fields, the estimation of runoff from the uper area is a pre-requisite. The methods available for estimating runoff from larger areas (Cook's method, Rational formula etc.) seem to be inappropriate for these small farms. Thus, a formula based on basic principles of flow dynamics had to be developed.

A runoff estimating formula was derived in this study using Kinematic Wave Theory and the discharge - flow depth relationship and is given below:

$$Q = K (i - f) (1 - (S/100)^2)^{0.5} X.L.$$

where, Q is discharge, i is rainfall intensity, f is infiltration rate, S is percent land slope, X is longitudinal distance, L is field width and k is flow resistivity.

Runoff plot based studies were carried out during the period from October 1989 to December 1990 at Yoda Ela Farm and Paindikulama area in Anuradhapura district. Runoff, rainfall intensity and infiltration data were used to compare estimated and measured values of runoff. Results showed that runoff from open cultivated fields, chena lands and fallow lands can be estimated using the above formula but it is not suitable to estimate runoff from forest lands.