

SOIL CONSERVATION ON SOIL EROSION, RUNOFF AND MUNG BEAN YIELD IN LOW COUNTRY DRY ZONE OF SRI LANKA

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A field experiment was carried out during 2010/11Maha season at Regional Agricultural Research and Development Center, Aralaganwila by using 22.1 x 2 m standard erosion plots to ascertain the effect of soil conservation practices (Alley cropping, Contour strip cropping, Mulching, Fallowing and Sole cropping) on soil erosion and runoff using Randomized Complete Block Design with three replicates. Runoff volume was collected by constructed collection tanks below the plot. Amount of soil erosion was measured as both sediment load and suspended solids. Rainfall was measured using a recording type rain gauge to find out the effect of rainfall intensity, duration and amount on soil erosion and runoff. Nutrient losses through erosion were measured by analyzing representative runoff water and soil samples for phosphorus and potassium. Growth parameters of randomly selected five plants / plot and plot yield were assessed to find out the treatment effects on growth and yield.

Soil erosion and runoff were significantly higher in fallow plots followed by sole mung bean crop, while mulched plots recorded the lowest. Results revealed 1.85 t/ha of soil can be saved by mulching the sole cropping. Mulching reduced 10.46% of runoff in fallow land. Nutrient losses through erosion were also significantly higher in fallow plots, while mulching recorded the lowest. Mulching can save 89.56 kg/ha of phosphorus and 110.29 kg/ha of potassium by in sole cropping. Results revealed that yield and growth parameters of mung bean were not significantly affected by different soil conservation measures. Positive relationship between rainfall intensity and soil erosion was identified. Mulching was identified as the most suitable soil conservation measure for dry zone under Non Calcic Brown Soil. However, further studies needed to confirm these findings.

Key words: Nutrient losses, Rainfall, Runoff, Soil conservation measures, Soil erosion