

SOIL AND NUTRIENT LOSSES THROUGH SEDIMENT AND SURFACE RUNOFF UNDER MAIZE MONO-CROPPING AND MAIZE-LEGUME, INTERCROPPING FROM UP-LAND SLOPING FIELD

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ABSTRACT

The experiment was conducted on slopping land in northern NWFP near Thana, Malakand Agency on permanent plots of maize mono-cropping and maize-legume inter-cropping to assess soil and nutrient losses through sediment and surface runoff in comparison with bare plots. The total runoff, soil and nutrient losses were monitored for a period of one maize crop season. The results showed that total runoff, soil loss, organic matter and nutrient losses were high from bare plots as compared to cropped plots. Surface cover reduced soil erosion by more than 45 %. Total runoff and soil loss showed good correlation with organic matter and plant nutrient losses. The loss of organic matter through sediment was higher from all plots followed by loss of K, Mn, Fe, N, P, Cu and Zn. Losses of N P K in surface runoff were higher as compared to the losses of N P K in sediment. Nutrient enrichment ratio of the sediment was greater than 1, indicating higher losses of nutrients in the sediment. It was concluded from the results that maize mono-cropping and maize-legume inter-cropping proved effective cropping system for controlling long term soil, runoff and nutrient losses on the sloping land.