

Sediment outflow from paddy mulch at varying land slopes under simulated rainfall conditions

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ABSTRACT : Soil erosion in India is really need of hour as to improve soil health is on main agenda. Various measures are used by researchers to reduce soil loss due to runoff and best one is found to be biological measures. In biological measures, organic mulches are very effective in preventing soil erosion, to reduce sediment transport rate, runoff and increasing infiltration. The study was carried out with the objectives to observe the sediment outflow during paddy mulch treatments at selected land slopes with different rainfall intensities under simulated rainfall conditions, just to count soil loss. The quantity of mulch was taken as, 6 ton/ha, 8 ton/ha and 10 ton/ha and for each mulch treatment, three rainfall intensities viz. 11cm/h, 13cm/h and 14.65cm/h at 0%, 2% and 4% land slopes were selected. The average sediment concentration and outflow was found to be increasing with the increase in land slope, but sediment concentration and outflow decreased with increasing mulch rate for particular land slope and rainfall intensity. The sediment outflow rate for no mulch treated land was higher as compared to paddy straw mulch treated lands. Mathematical relationships were developed for relating sediment outflow rate, sediment concentration, land slope and rainfall intensity for a particular mulch treatment. It was observed that values of sediment outflow rate and average sediment concentration had a good correlation with rainfall intensity and land slope for each mulch treatment. The correlation coefficients of developed models were found to be more than 90% which supports mulching as the best biological measure.

Key Words: Paddy mulch, sediment outflow, land slope and simulated rainfall.