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Review Article

Application of Jute Geo Textiles (JGT) for Sustainable Management of Hill Slopes

S Manivannan[1], OPS Khola[1], K Kannan[1], V Kasthuri Thilagam[1] and PK Choudhury[2]

[1]ICAR - Indian Institute of Soil and Water Conservation, Regional centre, Tamil Nadu, India

[2]National Jute Board, Kolkata, India

***Corresponding Author:** S Manivannan, ICAR - Indian Institute of Soil and Water Conservation, Regional centre, Tamil Nadu, India.

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Abstract

Permanent structures are being used traditionally to stabilize the slopes in hill region which is tedious and costly process. As the slope failure is result of land slide, mining, flood, etc, slope stabilization using permanent structures cannot be adopted in larger scale. Slope stabilization by establishing vegetation with the support of Jute Geotextiles is an alternative method for stabilization of slopes in hilly areas. Set of field studies have been conducted at ICAR- Indian Institute of Soil and Water Conservation (IISWC), Regional Centre, Udhagamandalam, Tamil Nadu, India with the objective to study the effect of various Jute Geotextiles (JGT) on runoff, soil loss, survival and growth of tea. The results shows that the 500 GSM Open Weave Jute Geotextiles is effective in reducing runoff (6.7 - 12.5%), soil loss (3.93 $t^{-1}ha^{-1}yr^{-1}$) and nutrient loss (46 - 62%) and recommended for hill slope stabilization and reclamation of land slide affected areas using tea plants. Similarly, 700 GSM Open Weave Jute Geotextiles with grass reduced runoff (3.5 - 7.7%) soil loss (2.4 $t^{-1}ha^{-1}yr^{-1}$) and nutrient loss (55.7%). As per BIS (Bureau of Indian Standard), 730 GSM open weave jute goe-textiles is recommended for hill slop stabilization using grass species up to 90 percent slope. Grass/hedge crop establishment with jute geo-textiles can also help to environmentally sustainable landscape development in airports, parks and housing estates. It is also proved that the mass eroded land and areas affected by natural calamities can be rehabilitated by vegetation establishment using jute geo-textile. Thus, it is the high time to review the policy interventions in all developmental activities of various departments to include the vegetation establishment using jute geo-textiles as an eco-friendly slope stabilization measures.

Keywords: JGT; Slopes; Land Slide