JUTE GEOTEXTILES: AN EFFICIENT SOIL SAVER

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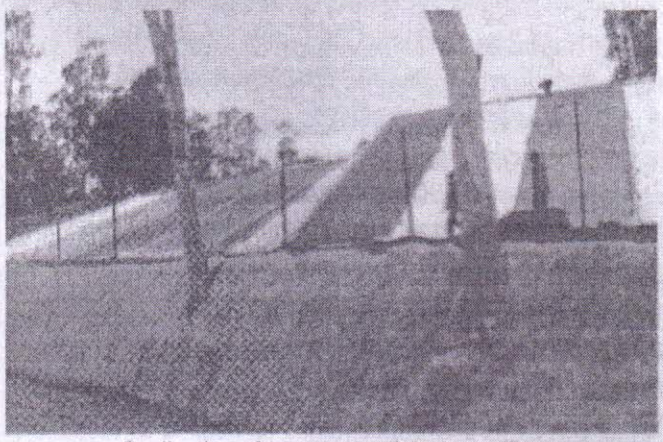
INTRODUCTION

Geotextiles are the textile materials in woven, non-woven or other forms, when applied to soils (geo) for improving its engineering characteristics. Geotextiles have seen enormous growth with a forecast of 1,400 million m2 by Europe and North American markets each accounted for 40 %, and remaining 20 % was achieved by Asia, Australia and Japan as reported by the United Nations International Trade Centre (UNITC). Major areas of Geotextiles applications are separator in earth works, filters in drainage, lining material in water harvesting structures and soil saver for controlling erosion. Jute is one of the natural fibre accounting for a small proportion of geotextile and there is vast scope for increased usage in the above mentioned areas with the help of modern technologies. Jute is a textile fibre, which when converted into fabric possesses many of the desired properties required for geotechnical engineering works and termed as Jute Geotextiles (JGT). Jute Geotextiles (JGT) is fabricated by natural jute fibres with different designs, shapes and composition as per functional need and site conditions. In addition to its physical, mechanical and hydrological properties, JGT are accepted due to its environmentally sustainable nature. The growing consciousness on environmental conservation has changed the usage of natural fibre based Geotextiles like JGT in recent years. Major advantages of JGT include agro-origin, annual renewability, soil friendly organic content, biodegradable nature, eco-compatibility and improvement of soil fertility and enhancement of vegetation growth. Functionally there is no difference between synthetic geotextile and JGT, though the life of man-made geotextile is much longer and not safe for environment. But as jute geotextile acts as a change agent for a limited initial period, shorter life of JGT is not a technical deterrent. Interestingly, it has also revealed from the laboratory studies that the rate of gain in strength in soil is compensated by the rate of degradation of JGT. Extensive laboratory studies and field trials with JGT have substantiated its efficacy in addressing a number of soil



Application of open weave jute geotextiles in road side slope

related problems in the field of soil and water conservation engineering. The earliest example of jute woven fabric geotextiles for sub grade support was in the construction of a highway in Aberdeen in the 1930's. Jute mesh was probably first used in erosion control in USA in the early 30's, where soil conservation was said to have taken a modified form of jute mesh used to wrap bales of cotton and laid on slopes to prevent wash-off from newly seeded grounds. These types of construction however are more comparable to reinforced concrete than today's reinforced earth techniques, because of the rigid way in which stress was transferred to the tensile elements and the cemented nature of the fill. JGT had also been used for mine dumps stabilization, hill slope protection and sand dune stabilization in 1987 and 1988.

JUTE FIBRE

Jute is a lingo-cellulosic based fibre widely used in the production of packaging and wrapping textiles besides its additional uses as carpet backings, decorative fabrics, carry bag fabrics, geotextile fabrics, as well as for manufacture of high quality paper and composites etc. Jute is the common name given to the fibre extracted from the stems of plants belonging to the botanical genus Corchorus. The genus Corchorus includes about 40 species distributed throughout