## **GEOTEXTILE PROTECTION**

Coir is a 100% organic naturally occurring fiber, from a renewable source obtained from coconut [*Cocos nucifera*] husk. Naturally resistant to rot, moulds and moisture, it is not treated with any chemicals during its spinning process for converting it into a yarn. Hard and strongest among all natural fibers, it can be spun and woven into different types of mattings and mats. Geotextiles made out of coir are ideally suited for low cost applications because coir is available in abundance. Only 36% of available coconut husks in India are used for extraction of coir. Therefore there is enough scope to enhance its application. Coir fibers resemble the wood fibres in terms of physical properties and chemical composition.

Coir geo textiles are found to provide protection against soil erosion to the various types of slopes that has been demonstrated and documented by the Coir Board.



The ability of coir fibres to absorb water and to degrade with time is its prime properties, which give it an edge over synthetic geotextiles for erosion control purposes

It was reported that when natural coir was exposed to water continuously for 167 days, in order to simulate the traction effect while flooding, it had almost no damage. Studies were carried out

on change in tensile strength of woven coir geotextiles by immersion in water and embedding in saturated kaolinite clay. It was found that even after 6 months, the strength of woven coir geotextiles was not affected in both the cases except increase in elongation at failure, which was due to water absorption by coir yarn resulting in increased elasticity.

Considering the above difficulties, it was considered to utilize the coir geotextiles to provide protection to the stream banks and allow vegetation to become established for providing sustainable protection against soil erosion.

1	Leveling of ground to fixed slop		
	shrubs on both sides of the strea	ams	
	1.00 Male/Female/day @ Rs. 164		164.00
2	0.25 mm x 0.025 m fixing geo		
	stream making of Bamboo nails		
	4 nos per square meter for 10 m <sup>2</sup>		
	4 x 10 = 40 x 0.25	= 10.00	
	weight age	= <u>2.00</u>	
		12.00	
	Cost of Bamboo	= <u>12 x 95</u>	38.00
		4 x 7.50	

DETAILED ESTIMATE FOR GEOTEXTILE PROTECTION

Kerala State Land Use Board & Vamanapuram Block Panchayath

3	Labour cost of making Bamboo nails @ 4 nails per 1m <sup>2</sup> or	197.00
	10m <sup>2</sup> /40nails @ Rs. 164/day for 1.2 Male/Female	
4	Planting of Locally Available grass on geotex and watering	
	for 30 days.	
	Rs. 164/per days/person for 1.6 male/female	262.40
5	Cost of trench construction 0.45 x 0.30 m of the upper and	
	lower portion of both sides of the stream to fix geotex.	
	4 x 0.45 x 0.30 = 0.54m <sup>3</sup> @ 485.85/10m <sup>3</sup>	26.23
6	Fixing of geotex (740 GSM) on the side walls of the stream	
	using Bamboo Nails	
	Cost of 10 m <sup>2</sup> geotex = $10 \times 50/m^2$	500.00
	Labour charge for 0.66/male/female @ Rs. 164	108.24
7	Watering replacing charges for about 30 days till the grass	
	takes roots on the geotex it is estimated that 10 m <sup>2</sup> shall	
	for watered/hour therefore	
	the cost @ 164/ day for 30 days = 164/8 x 30 = 615	615.00
	Grand Total	1910.97/10m <sup>2</sup>
	Say @ Rs. 191/m <sup>2</sup>	