

## A REPORT ON FIELD TRIAL OF AGRO-GEO-NATURAL FOR EROSION CONTROL

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### **1. Introduction :**

The use of needle punched natural fibre non-woven as medium for growing of plant seeds opens a new area of application of enormous potential. The roots of these plants could be easily trapped in the soil which would prevent erosion. The natural Geo-fabs have been exclusively promoted because it is ecologically, economically attractive material and advantageously used for erosion control. The paper highlights the field trial reports of geo-nonwoven naturals.

### **2. Bench scale field trials :**

The field trials were carried out in simulating conditions to investigate the effectiveness of different types of geo-nonwovens such as geo-jute, geo-ramie, geo-coir, geo-sisal, geo-flax and geo-pineapple in protecting embankments and similar slopes from soil erosion by heavy rainfall. The tests were conducted from 13.6.96 to 15.8.96. The geo-naturals were placed on each 0.6m wide and 4m on plot of a silty 100m soil. The filling of surface areas took place until the seeded soil was uniformly distributed with the top of the material facing the plots.

#### **2.1 Average weather parameters from 13.6.96 to 15.8.96 :**

In this period, average maximum/minimum temperatures were 30° C/25° C, average relative maximum/minimum humidities were 98% / 67% and average rainfall was recorded - 20mm to 25mm.

#### **2.2 Results & Discussions :**

The grasses have been started growing within average fifteen days (30.6.96). The vivid observation have been carried out. The data recording has been performed in three days i.e. 15.7.96, 30.7.96, 15.8.96 & tabulated in Table-I.

In all times the effectiveness of jute samples is better than other samples. Based on performances of geo-natural considering their

seedling/sqm and length of grasses in cm, the geo-natural nonwovens can be ranked in order to increasing sensitivity to create microclimatic conditions to help grow the grasses.

Jute > Ramie > Pine-apple > Flax > Sisal > Coir > Control (No fabric). This is happened because jute is having higher moisture regain values in comparison to other fibres. The capacity of root reinforcing into the soil would help to catch the soil quickly thus to protect erosion.

### 3. Field trial at Sabujdeep Ghat, Somrabazar, Hooghly, W.B. :

The different types of geo-naturals have been laid on the slopes of the banks of river Ganges. The proper design have been made to lay the above nonwovens. It has been observed that grasses have been grown and penetrated to soil within fifteen days. Further works are going on.

### 4. Conclusion :

1. Jute, Ramie, Pine-apple, Flax, Sisal and Coir can be used as Agro-Geo-Tex to protect soil erosion.
2. Among all geo-natural, jute is the most effective material for vegetation growth.

TABLE - I

Field trial reports with geo-natural Nonwoven which was conducted at NIRJAFT's own land from 13.6.96 to 15.8.96

Geo-Nonwovens Date recording	Control No.Fabric P-7	Pineapple P-3	Ramie P-2	Jute P-4	Flax P-6	Sisal P-5	Coir P-4
15.7.96 Seedling per sq.mtr.(Ava)	160	200	215	250	190	173	150
Length of grass(CM)	15	24	28	30	21	19	19
30.7.96 Seedling per sq.mtr.(Ava)	115	220	230	330	200	195	180
Length of grass(CM)	18	28	30	40	25	23	24
15.8.96 Seedling per sq. mtr.(Ava)	140	250	270	350	240	210	200
Length of grass(CM)	25	40	45	60	34	30	32