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JUTE RESEARCH AND DEVELOPMENT

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INDIA

Technical report: First mission report*

Prepared for the Government of India

by the United Nations Industrial Development Organization

acting as executing agency for the United Nations Development Programme

Based on the work of B.C. Goswami
Expert in fabric engineering

Backstopping officer: A. Eräneva, Agro-based Industries Branch

United Nations Industrial Development Organization

Vienna

* This document has not been edited.

1. Following the dicussions with Dr. S.R. Ranganathan, Director, IJIRA, Mr. Palit and the fellows (who will be working on these projects), a plan of work for the two projects has been finalised. The outline that follows will spell out the general direction in the development of the projects and delineate the task that will be taken up by the fellows in the first year of the execution of the projects. The starting date for the first group of fellows to join Clemson (July 1989) has been set to allow for the forthcoming period (February 1989 to July 1989) to be used for the preparation of the material for experimentation. This period will also be used for procuring certain pieces of equipment e.g. pattern wheel for sonic bonding and material such as fibres and films that will be used in the project.

The plan of work and the allocation of individual responsibilities of the fellows are given as follows:

TOPIC	PLAN OF WORK	PERSONNEL AND REMARKS
(A) Fabric Engineering This area will deal with the development of fabric structures for use as sacking and bagging materials, insulation tapes and quilting structures in order to improve the performance of existing structures with lower weights without sacrificing strength	(a) Insulation Tapes: The insulation tape material will be made by blending jute with a thermo-plastic fibre or powder and then bonded with ultrasonic bonding or through air bonding (thermal) to ensure bulkiness in the structures. 100% jute fibre tapes will be bonded by the powder technology also	Mr. N. Chattopadhyay will be responsible for making batts: i) 100% jute and ii) 90% jute + 10% PPropylene iii) 85% of jute + 15% PP iv) 80% jute + 20% PP in the weight ranges of i) 100 g/m ii) 150 g/m and iii) 200 g/m
	(b) Fertilizer bags and related fabrics. Woven jute fabrics in the following combination will be bonded to PP or HDPE films to develop laminate structures. These combinations will include (i) 100% jute fertilizer bag weight woven fabric with oil (ii) same as (i) above but without oil finish (iii) Union fabric made from jute and HDPE tape	Mr. P. Chatterjee will prepare these materials and ship them to Clemson for the development work. All these fabric materials will be bonded to PP or HDPE film (100 mil) by (i) ultrasonic bonding and (ii) by calendering (hot). The degree of film bonding will be determined by measuring the peel strength.
	(c) Tapes for encapsulation of seeds: Carded jute plus polypropylene fibre tapes will be made and bonded at the edges by the ultrasonic techniques for possible encapsulation of seeds for planting. This development would allow easy and systematic laying of seeds for planting.	Mr. S.N. Ghosh will prepare carded tapes (with open structure). Jute + 10,15 and 20% Polypropylene blended tapes in the weight range 30-50 g/m will be made and then bonded by the ultrasonic technique. These materials will be shipped to Clemson.

TOPIC	PLAN OF WORK	PERSONNEL AND REMARKS
(A) Fabric Engineering (cont'd)		
	(d) Geo-Jute Nonwoven fabric:	Mr. S.N. Ghosh
	Nonwoven batts made from blends of jute with polypropylene fibres will be embossed and apertured to create fabrics that can be used for controlling soil stabilization and grass seeding of embankments.	Jute and polypropylene batting in various blend proportions (90%, 85% and 80% Jute with 10, 15 and 20% PP, respectively) will be processed and shipped to Clemson. The fabric weight range should be between 100 g/m^2 and 250 g/m^2.
	The fabrics will be hot calendered to create integrity and surface texture including open spaces (holes) in the fabric for shoots to grow.	This will require the design and fabrication of a calender (embossing) roll which will be done at Clemson.
(B) Blending		
This area will deal with the development of blending of jute with other synthetic fibres for developing new products and improving the wright and performance of existing products for domestic textiles and other end uses.	(a) Jute Quilting material.	Mr. U. Dutta
	Nonwoven batting made from blends of jute with polypropylene fibres will be bonded by the ultrasonic technique.	i) 95% Jute + 5% pp ii) 90% Jute + 10% pp iii) 85% Jute + 15% pp iv) 80% Jute + 20% pp nonwoven (carded) batts in the weight range of 100-200 g/m
	In another variation 95% Jute + 5-10% PP blended Nonwoven batt will be sandwiched between an extremely light weight viscose/ pp blended webs (to provide softness) will be bonded to cotton or cotton/PET sheeting for making quilt fabrics.	All these will be shipped to Clemson.

TOPIC	PLAN OF WORK	PERSONNEL AND REMARKS
(B) Blending (cont'd)		
	(b) Jute Plus polypropylene blended batts bonded to thermoplastic films for packaging and interlining enduse. The blend material will be then lightly calendered or bonded with through hot air and the thermoplastic film or sheet will be bonded to this by ULTRASONIC technique.	Mr. U. Dutta Nonwoven batting from carded Jute and polypropylene blends in the following proportion will be processed and shipped to Clemson. i) 90% Jute + 10% pp ii) 85% Jute + 15% pp iii) 80% Jute + 20% pp in the weight range from 80 to 200 g/m^2.

2. Schedule of visits by IJIRA (UNDP) Fellows to Clemson University, South Carolina, USA

Following is the schedule agreed mutually for the fellows to visit Clemson University during the year 1989-90. So far the schedule for four fellows has been finalized. However, two more fellows as stipulated in the planned programme will visit at a later mutually agreeable date.

Fellow	Time Period	
	Starting	Ending
Mr. N. Chattopadhyay Blending technology	July 1989	December 1989
Mr. P. Chatterjee Fabric engineering	July 1989	December 1989
Mr. U. Dutta Geo-Jute textiles	January 1990	June 1990
Mr. S.N. Ghosh Agricultural scientist	January 1990	June 1990

Prior to the second visit by the expert and during the stay of first group of fellows (July - December 1989), programme assessment meeting with the National Project Director, Dr. S.R. Ranganathan and a UNIDO representative will be arranged with Dr. B.C. Goswami, expert, at Clemson University, during September - October 1989. This will be followed by a mission visit by the expert (mentioned above) to IJIRA during December 1989 - January 1990 for a period of no more than one month. This meeting in India will be taken with a mind to initiate parallel and coordinating activity at IJIRA and the cooperating Jute Mill (for Geo-Jute at Ludlow Jute Mills) in Calcutta.