DETAILED PROJECT REPORT (DPR)

BANANA FIBRE EXTRACTION & WEAVING

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EXECUTIVE SUMMARY

Banana fibre is eco friendly like jute fibre. The technology of banana fibre extraction has been developed in South India where in a good number of banana fibre extraction units have been running very successfully. Some firms are exporting the banana fibre products.

Banana growing states of N.E.Region has adopted the technology from South and started production of banana fibre and fabric. This can create a lot of employment opportunities for almost all age groups. The banana fibre is being used for weaving of clothes, for making Papers, handicraft items etc.

Banana fiber extraction process involves mechanical as well as automated mechanical extraction technique. Initially the banana plant sections were cut from the main stem of the plant and then rolled lightly to remove the excess moisture and impurities. A machine consisting of two horizontal beams is used for extraction process to avoid fibre breaking. This fibres are then labelled and made ready for lamination process. After extraction of fibre, weaving is done in the looms as per normal process like any other material.

INTRODUCTION

Global warming is a major threat to mankind .To stop and to reverse the effect of global warming, there is a need to replace non-reverse the effect of global warming, there is a need to replace non- renewable, non-degradable, and synthetic materials with renewable, bio-degradable, and natural material. The best way to bring about the change is to make use of or find innovative uses for agricultural waste.

Banana is one of the important fruit crops grown in most of the states of India. In India, approximately 5 lakhs tones of banana trunk is discarded as waste every year , after harvesting. There is good scope to get additional income from banana crop through appropriate utilization of pseudostem, leaves, suckers etc. In this direction, in some of the states, attempts are being made to utilize the pseudostem, leaves and suckers for making the products like papers, handicrafts, ropes, edible items etc., on very small scale which have good economical value. We can extract fibre from hose trunks which has extensive uses in industries like textile, paper, and composite materials. Banana fiber is a very good replacement for synthetic fiber.

MARKET POTENTIAL

The banana fibre is being used for weaving attractive pieces of clothes, rugs, sarees etc. Besides, it is also being used to produce a variety of items such as hats, photo frames, trinket boxes, gift bags, picture frames, hand bags, belts, baskets and sandals etc. Dresses woven out of natural fibres are in great demand inside and outside India.

To make currencies, bond papers, and speciality papers which can last for 100 years, as a very good replacement for wood pulp in paper industry, as it has high cellulose content, thus reducing the Environmental impact of deforestation. In making composite materials as a replacement for fiber glass. For manufacturing mattresses, pillows and cushions in the furniture industry.




MACHINERY

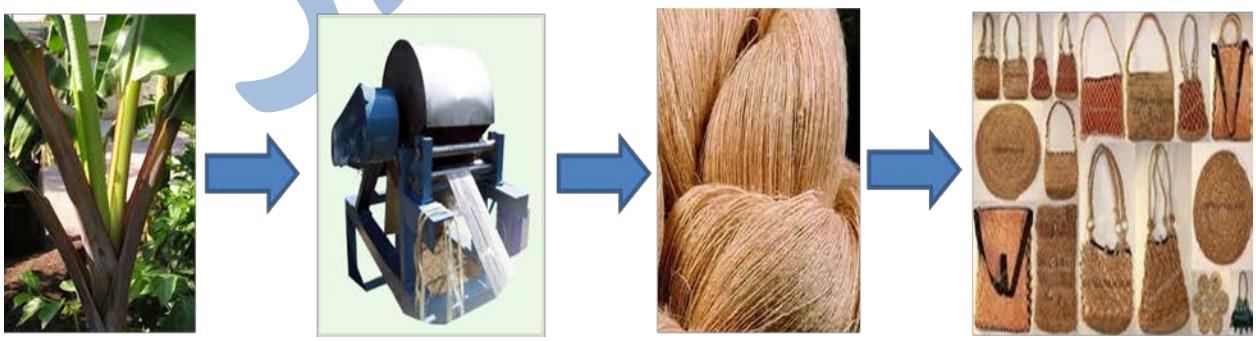

The major equipment required are :

Sl.No.	Particulars	Nos.
1.	Banana fibre Extractor (Raspador Machine)	2
2.	Loom complete with all accessories	4
3.	Bobbin circle	1
4.	Charkha	1
5.	Bobbin	100
6.	Pirn	100
7.	Shuttle	8

PROCESS

Banana Fibre Processing and Weaving :

The extraction of the natural fibre from the plant required certain care to avoid damage. In the present experiments, initially the banana plant sections were cut from the main stem of the plant and then rolled lightly to remove the excess moisture. Impurities in the rolled fibres such as pigments, broken fibres, coating of cellulose etc. Were removed manually by men as of comb, and then the fibres were cleaned and dried. This mechanical and manual extraction of banana fibres was tedious, time consuming, and caused damage to the fibre. Consequently, this type of technique cannot be recommended for industrial application. A Raspador machine was specially designed and developed for the extraction of banana fibres in a mechanically automated manner. It consisted mainly of two horizontal beams whereby a carriage with an attached and specially designed comb, could move back and forth. The fibre extraction using this technique could be performed simply by placing a cleaned part of the banana stem on the fixed platform of the machine, and clamped at the ends by jaws. This eliminated relative movement of the stem and avoided premature breakage of the fibres. This was followed by cleaning and drying of the fibres in a chamber at 20^{o}C for three hours. This fibres were then labelled and ready for lamination process. After extraction of fibre, weaving is done in the looms as per normal process like any other material.



Banana fiber yield test.

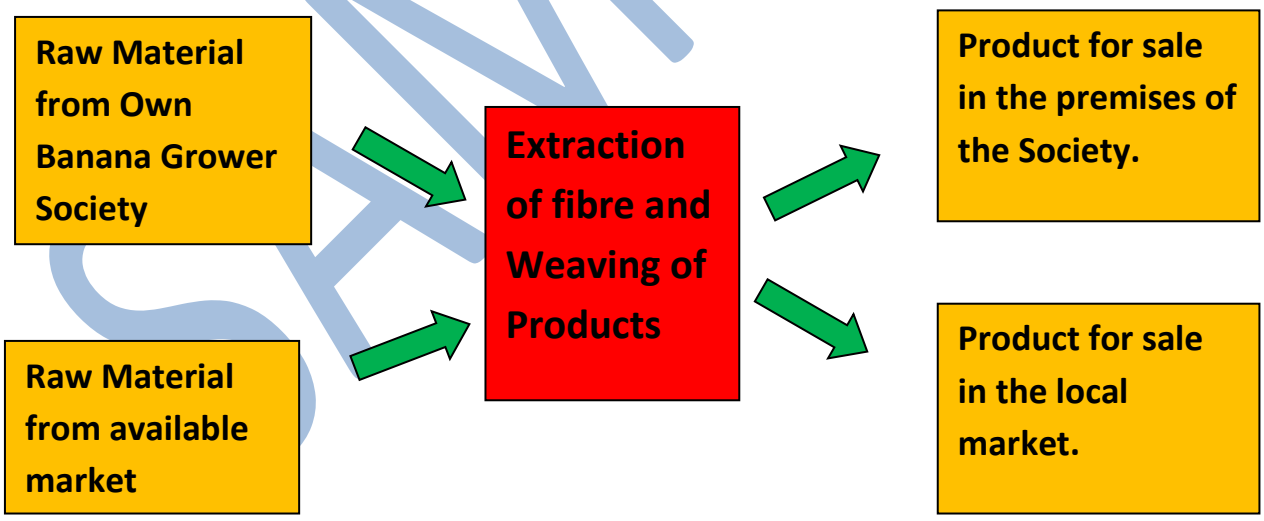
Fiber collection Yield (%)

Fibers (used for spun yarn).	25-30
Short-length fibers (used for banana paper pulp).	25-30
Sap (used for banana sap printing.	35-40
Unused waste for mulch and fertilizer.	10-15

Business Model and Strategies

The key stake holders identified for this project are following

- The beneficiary cooperative society and its members.
- Consumer of the products.
- Labours and transporters.



Assumptions

- The unit will work 6 days a week. On single shift basis (8 hours)
- The calculations have been carried out on present data available.
- In first year production capacity 80% have been taken into account.

SWOT Analysis

Strength of the Project

- Raw material is already available with the society and moreover it is readily available at the location.
- Peoples are now a days moving to the natural fibre products instead of synthetic fibres.
- Doesn't requires high level of machinery installations and man power.
- Low cost, user-friendly machines can extract 15-20 kg fibres from the banana pseudostem in a day compared to 500 gm through the laborious manual process

Weakness of the Project

- Though banana fibre extractors have been designed and developed at various parts of the country over the years, no where the quality matches the desirable properties of textile grade fibre like fineness, strength etc., to get fine quality yarn.
- Products manufactured in starting will be marketed only in local area, not outside.

Opportunity in the Project

- The fibres obtained from these extractors differ in quality posing problem to the processor. Hence, there is a great scope in developing an efficient extractor for getting good quality fibre for textile use.

Threat to the Project

- Non availability of suitable market.
- Competition from other natural fibre products.

Risk Assessment and Risk Management

Risk is inherent to any business, however for success of the project its identification and mitigation is necessary. For the envisaged project following risks are identified:

Production Risk

Banana is a seasonal agricultural produce and that too depends on vagaries of the environmental factor such as rain, bad weather etc. For continuous supply of raw material, managing such risks is very important. The raw material is primarily procured from grower members however; other backward linkages are also well established in case of shortages of raw material. Also in lean period prices may soar high for the raw material so well established contacts with supplier will help in procuring raw material at reasonable rate.

Quality of final product, i.e. mats, hand bags, basket etc. Need to be of good quality. Hence, latest machinery are being procured and also proper training is proposed to be provided to the workers to get better marketable final products.

ANNEXURE-I

Financial Analysis

	Particulars	Yr - 0	Yr - 1	Yr - 2	Yr - 3	Yr - 4	Yr - 5
A	**Production**						
	Door Mats		3500	4000	4000	4000	4000
	Hand Bags		3000	3500	3500	3500	3500
	Baskets		3500	4000	4000	4000	4000
B	**Income**						
	By Sales of Door Mats	(@Rs.80/-)	280000	320000	320000	320000	320000
	By Sale of Hand Bags	(@Rs.100/-)	300000	350000	350000	350000	350000
	By Sale of Baskets	(@Rs.60/-)	210000	240000	240000	240000	240000
	Total Income(Rs)		**790000**	**910000**	**910000**	**910000**	**910000**
C	**Expenditure**						
i.	Cost of Raw Material		50000	60000	60000	60000	60000
ii	Utility Bill (Electricity, Water Etc.)		65000	65000	65000	65000	65000
iii	Wages & Transport		350000	350000	350000	350000	350000
iv	Depreciation		50000	43500	37875	33004	28782
v	Interest on Term Loan		75000	75000	56250	37500	18750
	Total Expenditure		**590000**	**593500**	**569125**	**545504**	**522532**
D	Profit before tax		200000	316500	340875	364496	387468
E	Income tax 30%		60000	94950	102263	109349	116240
F	Profit after interest, tax & depreciation		140000	221550	238612	255147	271228
G	Term Loan Repayment		0	187500	187500	187500	187500
H	Salvage						206839
I	Cashflow for IRR	-1000000	325000	435000	435000	435000	435000
J	IRR		30.83%				
K	DSCR		3.53	1.30	1.37	1.45	1.55
L	Average DSCR		1.84				

ANNEXURE-II

Bank Loan Repayment Schedule

Instalment No.	Loan Outstanding	Principal	Interest (@10.00% p.a.)	Total Instalment
1	750000	0	75000	75000
2	750000	187500	75000	262500
3	562500	187500	56250	243750
4	375000	187500	37500	225000
5	187500	187500	18750	206250
Total		**750000**	**262500**	**1012500**

ANNEXURE-III

DEPRECIATION CHART

Year	Machinery		Building		Total Depreciation	Value at the end of the year
	Value at the beginning of the year	Depreciation @ 15%	Value at the beginning of the year	Depreciation @ 10%		
1	200000	30000	200000	20000	50000	350000
2	170000	25500	180000	18000	43500	306500
3	144500	21675	162000	16200	37875	268625
4	122825	18424	145800	14580	33004	235621
5	104401	15660	131220	13122	28782	206839
Salvage value	88741		118098			
Total Salvage value	206839					