



# Business Opportunities in Banana Fiber

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# One-stop solution for Integrated Rural Devp

- In India, there is a drastic need to –
  - Improve job opportunities in rural areas
  - Enhance productivity of agricultural produce
  - Build craftsmanship among unskilled women
  - Recycle farm waste
- It would be great to find one such product that can cater to all these needs of integrated rural development



# Basic Idea – What is Banana Fiber

- Banana fiber is a natural fiber that has its own physical and chemical characteristics, which makes it a unique quality fiber.
- Appearance of banana fiber is similar to that of bamboo fiber and ramie fiber, but its fineness and spin-ability is better than the two. Its average fineness is 2400nm.
- The chemical composition of banana fiber is cellulose, hemi-cellulose, and lignin.
- The fiber is strong and light weight, but has a smaller elongation.
- It has a dull brown shiny appearance, which varies depending upon the extraction & spinning processes.
- It has strong moisture absorption capability. It absorbs as well as releases moisture very fast.
- It is biodegradable and has no negative effect on our environment and thus can be categorized as eco-friendly fiber.



# Product differentiation – Why Banana Fiber?

- Banana fiber has emerged as a new eco-friendly innovation, since it is produced from banana stem, a waste material after harvesting the fruit.
- Banana fiber is used to make currency paper, bond papers, and specialty papers, which can last more than 100 years. It is a good replacement for wood pulp in the paper industry. Composite materials made from banana fiber are a good replacement for fiber glass.
- It is also used for producing mattresses, pillows and cushions in the furniture industry. In handicraft, it is used extensively for making bags, purse, mobile phone cover, door mats, curtains, and yoga mats, etc.
- Countries like Japan have been using banana fiber for centuries. Since there is a large export market, banana fiber has a ready buyers.

# Process of Banana Fiber Extraction

- Banana stems have to be collected in volumes to be stripped into sheaths
- Sheaths have to be fed into a machine to extract fiber, which is then dried



# Steps in banana fiber production



Banana stem is harvested



Stems are peeled to extract sheaths



Sheaths are fed into machine



Extracted fiber is sun dried for a day



Banana fiber is ready for craft



Fiber used for handicrafts

# Brief description of target market

- India leads the world in banana production, producing around 29.8 million tons in FY2016 (18% of the global crop). However, banana fiber has limited uses in the country and is primarily used to make items like garland threads, ropes, mats, and some composite materials. With increasing environmental awareness and growing importance of eco-friendly fabrics, banana fiber is being recognized for its good qualities and its application is rising in apparel making and home furnishings.
- Banana fiber has a ready market in Western countries. Companies in Tamil Nadu, Karnataka and Maharashtra are purchasing coarse banana fiber for about INR120-150 per kg depending on quality. It is then processed further to obtain fine yarn that is used in handloom and is exported to Japan and Western Europe.
- Banana paper also has a huge export potential since people in Western countries are keen on buying eco-friendly products. Banana fiber can partially replace the consumption of synthetic fiber in India.



# Existing players in India

- Gramya Turnkey Services is a manufacturer of eco-friendly home décor and lifestyle products made from banana-fiber. Gramya works with 200 families in Chitradurga, giving them the means to produce handicrafts from banana-fibre for their livelihood. <http://www.gramya.co.in/aboutus.html>
- The Kishkinda Trust is an voluntary organization that runs programs to integrate heritage conservation with handicrafts, rural tourism, and organic farming for local people in Hampi and Anegundi in Karnataka. It produces handicrafts from banana fiber mainly for the export market. <http://tktkishkinda.org/>
- Eco Green Unit is a Tamilnadu-based voluntary organization working for rural upliftment, women empowerment and creating wealth from waste. It promotes self help groups in projects such as banana fiber, areca leaves, paper bag making, etc. <http://www.ecogreenunit.org/home.htm>
- Sri Achu Fibres is a manufacturer of banana fibre pillows and beds in India. They have ISO:9001 Certified quality products that are 100% nature products for healthy living. They have their own Banana fiber extraction unit with 2 machines and 7 workers at Erode. <http://www.sriachufibres.com/profile.html>
- Champs Agro Unit is establishing its niche in the market by exporting all types of eco-friendly handicraft items from India. Especially, they produce finely handcrafted products made of natural fibers like banana fiber, palm, jute, etc. <http://www.champsecosignunit.in/index.html>

# Business model description

- Banana crop generates huge amounts of biomass in the form of pseudo stem, leaves, roots, etc. At present, this biomass particularly pseudo stem mostly wasted in most of the states of India. Not only this, but for disposing the pseudo stem presently farmers are spending about Rs. 2000-3000 per acre. So this idea of extracting banana fiber a simple method of generating revenue from waste.
- An acre of banana cultivation can produce about 1,000 to 1,500 stems, depending upon the soil, water and plant conditions. This stem production can generate about 120 kg of banana fiber a day. Roughly 7-8 stems are needed to produce around one kg of fiber.
- Companies are willing to pay INR120-150 for a kg of banana fiber. If an extractor machine is operated for 8 hours per day, banana fiber production of 15 kg per/day can be assumed. This calculation results in 450kg of banana fiber per month. If the fiber is purchased at the rate of Rs.120/kg, it would generate an income of Rs.55,800/month. Further, the decaying waste pith generated from the stem can also sold as compost.

# Various products from Banana Fiber



# Detailed description of revenue model

## Business Plan for Banana Fiber Production & Trading operations

### Banana Fiber Manufacturing

- Cost per Fiber Extraction Machine – INR100,000
- Operation to start with 2 machines
- Investment in operation and storage space
- Approximate cash outflow per month – INR118,000
- Approximate cash inflow per month – INR180,000
- Operation can be expanded in 3 years to increase profit margin (economies of scale)
- Breakeven in 12 months

Detailed calculation is attached here: –

	Cost per unit (Rs.)	Units	Days	Cost per month
Raw material - stem cost	13	10	25	3,250
Transportation per truck	500	2		1,000
Stem loading labour	200	2	2	800
Labour for production	300	2	25	15,000
Electricity	1000		1	1,000
Maintenance	1000		1	1,000
Total production cost				22,050
Production of fiber	10		25	250
Revenue from fiber sales	100		250	25,000
Profit margin				12%

# Infrastructure needed for banana fiber

Infrastructural requirements to set up a banana fiber extraction unit are –

- Workshop of 15 x 10 ft space for one unit
- This space includes storage of raw material and finished products as well
- Machinery required –
- 1 HP single phase motor
- Extracts 15 kg fiber in 8 hours
- Consumes less electricity that is 0.75 units per hour
- 7-8 stems are needed to extract 1kg of fiber
- Machines can be easily operated by semi-skilled labor
- Provides fiber of superior quality in terms of length softness , strength, and color
- Less maintenance, easy and safe to operate

# Description of our team

- **Monica Levine** – a versatile marketing professional who leads Indigenous Innovations and has worked in various sectors such as education, airlines and media. Being an environmentalist by passion, she has been associated with various ecological groups since 2004. She has participated in various seminars and has organized events related to organic food products in Bangalore and has been supporting women's self-help groups.
- **Arokya Swamy** – has worked as a mechanical engineer all through his career. He has 35 years of professional experience in managing projects in energy and paper industries, with assignments done both in abroad and in India. He has built capability to work independently, undertake any type of fabrication, erection of machines for glazing and M.F. paper M.C. and pulp mills.
- **Levine Lawrence** – a veteran media professional with 20 years of diverse experience in business media and research in India. Apart from his full time job as a researcher, he has been an avid travel photo-journalist, who has covered the art & cultural aspects of South India. Further, he actively involves himself in various voluntary organizations working on energy efficiency, organic farming and environmental issues.

# Investment considerations

- Indigenous Innovations seeks investments from potential like-minded business partners who want to set up banana fiber extraction units
- Investment needed – INR300,000 against equity
- Various incentives and support available under the Startup India initiative of Govt. of India
- Indigenous innovations has strong management team with relevant experience
- All the marketing tie-ups and logistics are under finalization



**Thank You**

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