Extraction of Fibre Using Raspador from Banana Pseudostem and Preparation of Non-woven fabric

Non-woven fabric prepared from banana pseudostem fibre is not available in the market.

Background
Banana is one of the important fruit crops grown in most of the states of India. Among the states, Tamil Nadu, Maharashtra, Karnataka, Kerala, Andhra Pradesh and Gujarat are the major banana growing states contributing about 80 per cent of the total production. 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. CIRCOT, Mumbai (MS), MANTRA, Surat (Gujarat) and K Paper Ltd., Songadh (Gujarat) as the partners.

Benefits / Utility
Following value added products can be prepared from banana pseudostem fibre viz., Handicraft items and Rope, Yarn and fabrics (woven and non-woven), Handmade papers, High quality papers, Micro Crystalline Cellulose.

Country Context
India: Area under banana 7.1 lakh ha, Availability of pseudostem: Ample (50-60 ton/ha) Dry fibre available 600 to 800 kg/ha; Potential natural fibre for preparing fabrics.

Technology Description
CIRCOT, Mumbai have developed Raspador machine for extraction of fibre from banana pseudostem. After harvesting of banana bunch, pseudostem can be used for extraction of fibre. Cut pseudostem near the ground level horizontally and remove all leaves. After removal of upper portion of pseudostem near the first leaf and lower portion slightly above sucker, it should be split in to two halves using pseudostem cutter machine, separate layers of sheaths by hand. Both sides of separated sheaths are to be removed by sharp knifes because presence of thin edges deteriorate quality of fibre. Sheaths are then cut to 3-4 feet length to extract fibre. These separated sheaths are then fed to Raspador machine by holding one end by hand. Beater of the Raspador crushes the entire sheath and by pull back action all cutchets fall down in tray placed below Raspador and we get the Raspador crushes the entire sheath and by pull back action all cutchets fall down in tray placed below Raspador and we get

Scalability
Projections for production of banana pseudostem fibre and preparation of non-woven fabric (a unit of five Raspador machines): 1 pseudostem contains 200g of extractable fibre (27.2 t of fibre can be obtained from 40 ha banana pseudostem) ; Revenue realizable from sale of fibre = 27.2*20*120 = Rs. 32.64 lakhs ; Fiber is used to make non-woven fabric ; Recovery 80%; cost addition due to processing and transport = Rs. 50 per kg and marketing price = Rs. 250 per kg.

Business and Commercial Potential
Fiber is extracted from banana pseudostem using raspador which can be used in making yarn and woven fabrics (R&D) Non-woven fabric can be used in acoustics, insulator in automobiles, wall panelling, yarn and fabrics.

Potential investors to this technical innovation

Financials
The economics has been calculated considering, five raspador machines as one unit covering 40 ha banana pseudostem; the economics has been considered as 100% recovery.

Target Market / Customer

Limiting factors for large scale commercialization
1. To meet industry demand, there is need to establish network of fibre extraction units in banana growing areas.
2. There is still scope for improving efficiency of existing machine.

Social impact of the technology
Waste management in eco-friendly way; Providing degradable material (as a substitute of plastic); Increase in farmer’s income.

Employment generation in rural areas

Limiting factors for large scale commercialization
1. To meet industry demand, there is need to establish network of fibre extraction units in banana growing areas.
2. There is still scope for improving efficiency of existing machine.

Social impact of the technology
Waste management in eco-friendly way; Providing degradable material (as a substitute of plastic); Increase in farmer’s income.

Employment generation in rural areas