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Wealth from Waste: A Profitable Project for Banana Farmers

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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-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. One such agricultural waste which can be used is Banana pseudostem.

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 percent of the total production. In India, under irrigated conditions it is relatively more remunerative than other field crops. This realization accrued is predominantly due to fruit yield (average productivity – 34 t/ha). However, 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, an attempt are being made to utilize the pseudostem, leaves and suckers for making the products like papers, handicrafts, ropes, edible items, etc., which have good economic value. In India, approximately 5 lakh tonnes of banana pseudostem is discarded as waste every year after harvesting. Instead, we can extract the fibre from those pseudostems which has extensive uses in industries like textile, paper and composite materials. Banana pseudostem fibre is a very good replacement for synthetic fibre.

Extraction of fibre

The fibre is extracted from the pseudostem sheath of the plant. The extraction can be done mainly in three ways i.e. Manual, Chemical and Mechanical. Of these, mechanical extraction is the best way to obtain fibre of both good quality and quantity in an eco-friendly way. In this process the fibre is extracted by inserting the pseudostem sheaths one by one into a Raspador machine. The Raspador machine removes non-fibrous tissues and the coherent material (known as scutcher) from the fibre bundle present in the sheath and gives the fine fibre as output. After extraction, the fibre is shade dried for a day and then it is stored away from moisture and light to keep it in good condition until it is used.



Extraction unit



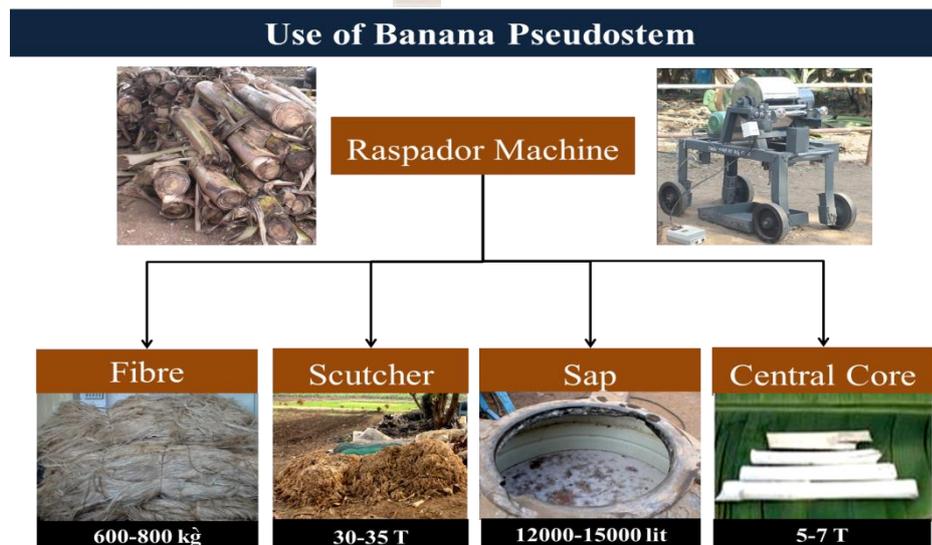
The Raspador machines are easily available in the market. The machine is user-friendly, low maintenance, high percentage of fibre recovery and safe in handling. The advantage of using this machine, farmers can extract around 25 to 30 kg dry fibre/ day/ machine. So per acre fibre can be extract around 150 kg dry fibre and therefore a farmer with 10 acres can extract around 1.5 ton of fibre, earning around Rs. 1 lakh INR in two months, excluding expenses. Also it provides fibre of superior quality in terms of length, softness, strength and colour with less maintenance, easy and safe to operate.

Uses of banana pseudostem fibre in various purposes:

- To make currencies, bond papers and specialty papers which can last for 100 years.
- As a very good replacement for wood pulp in the paper industry, as it has high cellulose content, thus reducing the environmental impact of deforestation.
- In making composite materials as a replacement for fibre glass.
- For manufacturing mattresses, pillows and cushions in the furniture industry.
- In handicrafts, extensively for making hand bags, purse, mobile phone cover, door mats, curtains and yoga mats, etc.
- As fillers in packaging to absorb shock and vibration.
- In manufacturing of textiles.
- Making of Micro Crystalline Cellulose (MCC)

Apart from the fibre, the scutcher waste which can be used to produce vermi-compost for use in the farmer's own field as manure which is available at free of cost. Also from this scutcher waste, separation of liquid portion i.e. sap, can be separated by squeezing the scutcher waste which can be used as mordant (Natural adhesive) in textile dyeing and also as a supplement for agriculture crops. The central part of the banana pseudostem i.e. central core which is highly nutritious and can be used for making edible products.

On an average from pseudostem of one hectare banana plantation, the recovery also of different components as follows.



Conclusion

There is immense potential in developing values added products from fruits as well as pseudostem. Technical guidance, training and developing of proper market linkage from production to utilization of the products on commercial scale is a challenge to all the stakeholders. This will not



only increase the net income of the farmers, cooperatives, local entrepreneurs and industries but will also generate employment both in rural as well as urban areas. Though it will decrease the major banana pseudostem waste which will save the environment and from that waste, different value added products can be made which will be sustainable for future.

