

Innovations in Production of Banana Fiber Products by Mr.Murugesan



Sri. Murugesan (54) studied upto 8 th standard is a farmer in Melakkal village, Madurai District, Tamil Nadu. He is owning coconut and banana garden in 2 acres of garden land and cultivates additional 4 acre on lease basis. His wife Malarkodi(46 years studied 10 th std.) also supporting this venture and added few improvements. They have a daughter recently graduated in computer science. Melakkal and nearby villages situate in Vaigai river basin and farmers raise banana in this region. He once attended a meeting at KVK, Madurai and developed interest in recycling banana plant waste into an income venture programme. During 1998 he started taking fiber from banana pseudo stem after the harvest of banana fruits. He has mechanized fibre separating process and stabilized the production of banana fiber over the last 19 years based on his own experiments and failures.

Initial Struggle

By seeing the interest of innovator, KVK, Madurai and also IIT, Madras gave few suggestions. Initially he and his wife Mrs. Malarkodi were 2 people who were involving in separating fiber from banana sheath manually and woven 200 metres of (single play quality) length. The banana rope is used for making products such as handbags; mat and small baskets etc. He was able to sell the banana fiber products by himself and he found it tedious. By seeing the manual method he and his wife have fed up this activity and reached a stage to stop this activity during 2002.

1.Rope making Wheel and Rope making machine



He went to IIT, Chennai and the model of wheel suggested for making the ropes was not at all satisfactory. He made modifications in the wheel and able to improve this wheel. He later fitted with motor through a belt and a switch operated by laborers anywhere they stand. This mechanization is a break through and gave little relief. The switch for on and off is operated through strings connected directly to the switch board. However this model can make a single rope only. Therefore he contemplated to increase the number of ropes made per machine and developed 5 models. Out of this 2 models failed and during 2016 he made success in the new machine which can make 6 rolls at time instead of single. The capacity increased to 25,000 metre output with 6 women labourers per day compared to 2500 metres with 5 labourers using single wheeler model.



2.Fiber Separator

For separating the fiber from banana sheath he designed a manual fiber separator with about 16-20 pointed serrations (2x1.5c.m.). This fiber separator will help a person to separate fiber from 20 bundles compared to manual method of efficiency at 10 bundles per day. A banana sheath with a width of 3-4'' is usually separated into 20 fibers.



His wife Malarkodi has been doing this task. She later by using comb used for hair dressing able to increase the efficiency upto 35 bundles. The rope size 1-2 m.m. thickness can be obtained from the single sheath and totally 36 ropes obtained in this method compared to 20 earlier type. The later method involves two steps: first split the sheath using fibre separator(using widened serrations) and later use ordinary comb for further splitting.



3.Rope Twiner



The finished banana ropes have been bundled by labourers. It was a tedious and it results in pain in the shoulders once this work is done throughout the day. So he developed a hand operated twiner which not only twine in a systematic way but also indicates the length of the rope bundled. It reduces the drudgery of hand bundling and saves the time. This needs two labourers. Later he mechanized into power operated winder. During 2016 he developed 3 models and he rectified the mistake of even on hook or rope breakdown other pins will function normally. Initially he come across all 6 laborers struck down even if there is breakdown in one hook and it affected the labour productivity. He improved this model winder where 6 rolls can be winded at a time and this is operated with 1 hp motor. The capacity of twiner is 20,000 metre per day of 8 hours.

4.Two in One machine for rope making and Twining:



In each wheel 6 women are working and they have to walk a distance of about 10 meter in each time and daily they walk distance totalling 20 k.m. per day. This is laborious for women. Mr. Muthugesan was contemplating a roller to twine the rope at the source of wheel itself so that women can sit and twine the rope without walking. During 2017 he developed an automatic rope making machine where dual function of rope making and winding can be done and walking of labourers avoided and labour productivity increased thrice. However he is still working on improving the belt functioning and it is tight initially and loosens later and it affects the even speed of the machine. He hopes that this will be rectified in few months. Based on his suggestions the new machine has been designed by ICAR Coimbatore and the cost is Rs.1.5 lakhs.

5. Rope length counting machine



After making winding or twining the bundle length of say 100 meters of size can be made through a manual machine where each half rotation equal to 1 metre and 50 full rotation leads to 100 metres. While unleashing the bundle it will be rotating and placing the bundle not in fixed place and his wife Malarkodi found out a method of winding with one end of fibre tied in the rod and this will lead to unleashing comes from inside the bundle thereby it rotates with speed without any dislocation.

Production Capacity



He is getting more offers for supply order for the products. From initial 2 labourers he increased them to 80 over the last 10 years. Based on orders or demand he introduced operating in 2 shifts. One is morning shift from 7 a.m. to 3 p.m; and other shift 3 p.m. to 11 p.m. He is paying Rs.200 per day per women labourer. In each wheel 6 women can make a rope of 35000 meters in a day. In a month the unit is making 15-20 lakh metres of rope of single ply or 10 lakhs meters of two ply stature. He is selling the rope at Rs. 0.70 per metre for single ply or Rs.1.20 for double ply. In addition he produces baskets(8'x6") 6000 number(Rs. 250 per basket), lamp cover(16"x13") 2000 numberat Rs. 600 per cover..Every month he incurs Rs.5,00,000 towards labour cost (Rs.4,20,000) and for purchase of raw material (Rs. 80,000). His gross income is Rs.7 lakhs and able to get a net income of Rs.1.75 lakhs - per month after accounting electricity, GST, income tax. He has not included the cost of his time and also his wife's time even though they are fully involved.

His unit was under a thatched shed earlier and, with bank loan of Rs. 4.75 lakhs (from SBI, Sholavandan) he completed pucca shed (26'X16'X16')for his production centre during 2008. Khadi & Village Industries offered a subsidy of Rs.1.75 lakhs. Later he obtained NABARD term loan of Rs.9.4 lakhs for his unit and he closed the loan. He becomes a member of BIRAC Agribusiness incubator by associating with Tamil Nadu agricultural University, Coimbatore and obtained Rs.10 lakhs as grant for improving his rope making machines . TNAU has value added by testing the optimum moisture content and variety banana suitable for fibre making.

Dissemination : He has also sold rope making machines to 10 person in Erode, Madurai and Thanjavur districts. (Automatic rope maker-Rs. 1,50,000; rope maker Rs. 22,000; Rope winder Rs. 40,000) and also automatic rope maker to Bihar(Vaishali), Assam(Guwahati), Andhrapradesh(Godawari),Kerala(Kanakunga).

Awards:

He received many awards: Citi bank Entrepreneur award of Rs 2 lakhs in 2008, Farmer scientist Award by ICAR Rs.5 lakhs in 2010, Tamil Nadu Govt. Handicraft award(Poompuhar) of Rs.50,000 in 2013 and MSME micro enterprise Award 2016.

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