

Yenkhom Mangi Singh

Manipur

Yenkhom Mangi Singh, from Kakching, Thoubal District of Manipur pioneered Kakching mat weaving machine which is the first of its kind in India. The innovation is a small weaving machine for making the mats of water reed locally known as Kouna in Manipur. The Machine works like a shuttle loom. The leg treadle in shuttle loom is replaced by a hand lever which lifts the warp threads. The machine increases the productivity 3-4 times in comparison to the conventional weaving process.





Kakching Mat Weaving Machine

State Award – Manipur; Scout: NIF Manipur Cell

Life has been a struggle for Mangi Singh since childhood. He had to discontinue studies after class 3, since he was affected by polio. His wife Mypakpi (52) is illiterate. He has three sons, the elder son has studied upto X Standard, second upto IX Standard. Mangi Singh's youngest son is differently abled. Other than Mangi Singh, his second son also supports the family; he is a hawker.

Mangi Singh, though not formally educated is very well skilled in the Manipuri language. Being specialized in Manipuri, he is a well known tutor for Manipuri language in the area. He gives tuitions to the school students in his neighbourhood for Manipuri subject. His students show extra ordinary performance. His daily routine starts with the early morning tuition for the small kids and after that he starts mat weaving. In between he does other small works as and when he gets the demand. He manages to earn about Rs 3000 by way of tuitions and *Kouna* mat making. Mangi does a wide variety of jobs to earn a living. Because of his interest in learning new things, he was able to attain mastery in a wide variety of jobs. Apart from being a craftsman by profession, his other face includes that of an electrician (mechanic) cycle repairer, barber and blacksmith.

The only driving force has been his inquisitive mind and will to fight and this helped him so far for learning and solving many local problems while earning for livelihood. If there is a person who is equally hardworking and struggling to survive in the locality, that will be only Mangi. He is a brave man! “Bring any kind of problem I will give solution for that” claims Mangi Singh proudly.

Being creative in nature, Mangi is always busy making something or other. But he started making products from zinc like buckets, water sprayer, *meiphu* (a type of *chulah*) etc. and mat from locally available weed, as a source of main income 15 years back. He made the mat manually for two years. But as the raw material was the widely available weed (*Kouna*), the product cost was only Rs 100-200/- per mat and 10-15 days are required for making the same. After sometime he found difficult to run his family with an income of only Rs 100-200 in 10-15 days, thus, stopped making the same.

Then he started thinking day and night for about a couple of months, how to shorten the days required for making the same. Ultimately, he could develop a mat making machine and took ten days to develop a complete machine, with the help of a carpenter, as he is not physically fit to assemble all the parts required. Now, after a gap of 6-7 years, he is making the mat again in his machine, from another locally available weed (*Chungthang*). The advantage of the machine is that two mats can be made in one day and each cost Rs 230-300/-, he could get a profit of Rs 200/- per machine. Deputy Director of Development commissioner for Handicraft, Ministry of Textile NE, Guwahati visited and approved the machine.

Genesis of Kakching Mat Weaving Machine:

Mangi Singh, the innovator of the Kakching mat weaving machine has been able to provide the much needed impetus on the traditional *Kouna* (water reed) mat weaving industry in Manipur. Water reed known locally as *Kouna* (*Scripus lacustris* Linn.) is a firm stemmed water or marsh plant used for weaving and is grown generally in places where paddy is not suited at all. This plant is synonymous with the exotic craft tradition of Manipur and the unique feature is that Manipur is the only place where *Kouna* is grown and extensively used in local crafts. More than 4 lakh people in the unorganized sector are engaged in the state crafts industry of Manipur and more than 180 items are made using *Kouna*. Kakching (Thoubal district), where the innovator lives, is also one of the places in Manipur where the *Kouna* grows abundantly.

As a craftsman, he learned the traditional mat weaving art some 30 years back and tried to earn a living from that. The traditional method for weaving is labour intensive in which a weaver has to work on a squatting position for hours and this brought him a lot of physical strain and illness. In spite of all the difficulties he continued weaving. This

back-breaking experience triggered his inquisitive mind and thought of developing a machine which would simplify the weaving process. About 25 years back, he started working on the machine which could relieve his physical discomfort and pain while weaving. He spent years on the experiments related to the development of the machine. First prototype allowed the weaver to operate sitting on the ground. But he gave up this model experiencing the strain on neck while working for long hours and started working on an improvised model. After five years of trial and error, he came up with the first workable machine in 1993. Mangi Singh shares that he even kept awake for three days without rest, while working on the machine. It is observed that the life of Mangi Singh is passing through a new horizon with the launch of *Kouna* mat weaving machine.

***Kakching* Mat Making Machine as a solution to sustainable livelihood**

Making mats of local reed/grass called '*Kouna*' is a popular practice in Kakching and surrounding areas in Manipur. The traditional manual mat making is a tedious, slow and physically challenging work. Moreover, it is not a profitable occupation as well. The tradition survives mainly because that it is being done by the elderly and others who have no other means of earning. Mat weavers perceive it as a tedious work. Since the traditional weaving is done on the floor, one has to continuously squat for hours and needs total concentration. It takes about four days to complete a single mat in the traditional mat making process costing about Rs 300. After deducting the costs of raw materials and other expenses which comes about Rs 140, becomes a completely hopeless profession. This makes the occupation highly unproductive and uneconomical. Hence it is undertaken by only those who have no other alternatives. The major constraint in large scale production of *Kouna* products especially the mats and cushions is the lack of mechanization process which restricts the production capacity. A revolution has brought in this tendency with the weaving machine innovated by Mangi Singh who is physically handicapped and the one who has undergone this toiling process for years. The significance of the machine lies with the fact that it reduces the toils and physical strains of women, elderly people and physically challenged individuals.

The *Kouna* Mat Weaving Machine is a small size loom and works like a shuttle loom. However, there is no shuttle in the machine and the leg treadle in shuttle loom is replaced by a hand lever, which lifts the warp threads and here lies the main innovation. It has a wooden frame of about 4 ft high, 4 ft in breadth and 4 ft in length. The lever is either pulled up or pulled down to lift the warp threads and restores in its normal position once the lever moves back to the original place. Each of the two harnesses/shafts has a set of heddles through which the wrap threads (small plastic rob) are threaded. The warp plastic threads are rolled into a wooden beam on the front end of the machine and on the other end; the plastic threads are tied to a collection beam which lies below the weaving area. Using gears and sprockets, the two beams can be rolled simultaneously.

The open ended weft 'Kounas' are rolled by hand into a designed frill which just takes about 4-5 hours to complete frill rolling of a single mat (6.5ft long). Once the weaving is done, the woven mat is cut into desired length using a cutting knife.

This is the first effort for mechanizing the 'Kouna' mat weaving in Manipur and 'Kouna' mat being made only in Manipur; the machine appears to be the only one of its kind. The modification of treadle into a hand lever, hand lever running on an arch wire, adjustable heddle shaft holder, wooden comb etc emphasize the innovation done by Mangi Singh and the experts verified that these processes along with the machine is a new concept in the weaving process.

The weaving machine brought a solution to many livelihood concerns. At first it introduced a new weaving practice and thus it is ensuring that the tradition of weaving is sustained. Earlier it was considered as a male domain and now even the females can weave with the support of this machine. The demand of physical efforts for weaving was a concern in the traditional method and it created more stress to physically handicap. Mangi Singh, the innovator was also handicapped and he found it difficult for him to weave because of the pain while squatting. Presently he is working with this machine and found that the physical stress and the pain is not at all a concern as it provides comfort to weavers. Also the productivity has increased three to four times with this machine. A skilled traditional mat weaver can make only one mat in four days where as the present machine can weave one mat per day including the frill tying. It just takes 8-ten hours. Prior Art Search found no handloom kind of machine's availability for making mats from the grass or local reeds without the support of an external motive power (engine/motor). Taking this into consideration NIF has filed a patent in the name of innovator (148/KOL/2011)

Diffusing the technology to the unknown:

Efforts for diffusion were undertaken so as to assure the reach of the technology to the local weavers. As the part of this, collaborations were made with the State and the Central ministries of the department of the Industries and Handicrafts along with many other organizations. With the support of NIF, a *training-cum-production centre* was established at Mangi Singh's house. The formal inauguration of the same along with a demonstration cum training programme of machine was arranged on July 7, 2011 with the leadership of Alliance for Development Alternatives Manipur (ADAM). About 100 women participated in the event and out of this 50 were the young girls who registered for the training. The training of 30 girls was financially supported by Nehru Yuva Kendra. Representatives from the Crafts Council of India attended the programme and assured the linking up of the trainees under Crafts programme and also the provision of assistance for the procurement of the machine. Others who attended the programme

include the representatives from the Department of Commerce and Industries, Women Income Generation Centre (WIGC), Manipur etc. Besides this training, Mangi Singh has trained about six women at his own initiative and out of this 4 is working regularly in his production centre. Depending on the mat variety they are paid for weaving and selling as well.

The machine costs about Rs.15000/- and has region specific potential. It may be good for making mats of other similar grasses too. There is no any remarkable sale of the machine apart from the sale of one machine to WIGC for which the team is highly satisfied on the performance. But more than 100 pieces of mats which was manufactured with the new weaving machine is sold.

Support and Recognition

Mangi Singh was supported financially by NIF for the development of the prototype. Apart from this, the value addition of the machine is being undertaken with the financial support of NIF and the technical support from CMERI Durgapur and IIT, Guwahati. As a result the machine is improvised to such a stage that it can be used in all season where as previously it was not possible to use this machine in the rainy season. Also the mat can be stretched so that it does not gather at one place. Besides the support for the establishment of training cum production unit, NIF also gave him a fellowship of three months recognizing his contribution to sustain the Kouna mat weaving tradition in Manipur through his machine. Seeing the potential of the machine for enabling many more weavers to continue the practice so as to promote the traditional kouna mat weaving as a good livelihood alternative, NIF endorsed Mangi Singh the business development support for trail marketing. A total of Rs.150000/- is sanctioned for this out of Rs.130000/- is dispersed to him as of January, 2012. Besides he also received the continuous mentoring support from ADAM throughout the product development and also in the business development. As the part of the Business development initiative for the machine, NIF and ADAM took lead to collaborate with various leading government and non government institutions. Some leading institutes include Department of Industries and Handicrafts, Nehru Yuva Kendra, Department of Commerce and Industries, Women Income Generation Centre. Etc.

Mangi Singh was selected by NIF for participating in Grass root Innovations Exhibition held on March 2011 in Mughal Garden, Rashtrapati Bhavan. Followed by this a reception cum interaction programme was arranged by Nehru Yuva Kendra, Thoubal in his locality to facilitate the knowledge exchange. During this period a good number of local and national media covered Mangi Singh's innovation which includes Indian express, Assam tribune, rediff.com and many other local news papers. He was also interviewed by Doordarshan Kendra of Imphal, North East TV etc.

