



The Multipurpose Processing Machine

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“Sangharsh hi sabse badi kaamyabi hai. Agar badhna hai to peeche mud kar nahi dekhna hai.”

(The capacity to struggle itself is a big effort. There is no looking back, if one has to keep on moving forward)”

For Dharamveer Kamboj, an innovator who encountered many hurdles on the road to success, these are not pompous words but a truism by which he lives his life. This multifaceted innovator wears many hats. Best known for his multipurpose processing machine that enables farmers to process various farm products on a domestic level, he also sells *Aloe vera* juice, gel, *amla* juice and other *amla* products and a whole range of herbal products. He also grows medicinal plants in his fields in addition to selling *safed musli seeds* and *Aloe vera* saplings to other farmers.

Born in 1963, Dharamveer was the youngest amongst five siblings. He used to assist his father in farming and running an *aata chakki* (flour mill) and *gur bhatti* (jaggery processing plant). However, it was his mother who played a critical role in inculcating in him a love for nature. He was very close to her and would often help her in plucking and taking care of *Kesuda* flowers, which she used as colours for playing Holi. Already inquisitive by nature, this laid the foundation for his life-long pursuit of learning more about the plants around him.

About this time, a chance encounter further deepened Dharamveer’s interest in herbs. In 1980, a holy man visited his village and gave him knowledge of different herbs and Ayurvedic medicines. This interaction made him realize the potential of earning a good living through cultivation of herbs. He also came to know a lot about herbs and their uses while working as a

rickshaw puller in the old city area of Delhi where he used to ferry passengers dealing in herbs.

An innovator at heart, he was the first farmer in the area to cultivate hybrid tomatoes and maintain a record of his produce. In 1990, he developed a battery operated spraying machine using a tape recorder motor. For catching insects, he tried various things including the use of adhesive tape as an insect trap. To maximize returns from his farm, he practiced intercropping by cultivating coriander, bottle gourd and sugarcane. He also developed a special implement to plough the field without disturbing the sugarcane crop. In 1991, he started growing mushrooms under the guidance of the Department of Horticulture.

A Cleaning Machine to Assist Sweepers

In 1995, he observed a sweeper cleaning the platform at the Saharanpur Railway Station in Uttar Pradesh. The philosopher in him reasoned that in the struggle between the pen and the broom, it is the pen that always wins. The pen got upgraded to a typewriter, printing press and then a computer but the broom has remained the same. Observing the drudgery involved in the work, he challenged himself to design a machine that would ease the work of the sweepers. After about a month of design and development, he was ready with a machine that was made using an old auto

engine and scrap materials like chain, sprocket, brushes and dustbin. He used air pressure for the pump and fitted it with a water sprayer so that dust could settle down and garbage could be collected in one place from where the machine could pump it into attached dustbins. He took a loan of Rs 8000 for making this machine, going against the wishes of his family. Eventually, the machine became so popular that people from many places started visiting him for demonstrations. In 1997, his interest shifted towards medicinal plants and strawberry.

Genesis of the Multi Purpose Machine

In 2002, a new bank manager was posted in Yamuna Nagar. A forward looking person, he promoted *Aloe vera* farming amongst the villagers. He specifically discussed with Dharamveer the benefits of an *Aloe vera* gel extractor, and the possibility of installing a unit. In December 2004, Dharamveer got the opportunity to visit various *Aloe vera* and *Amla* processing units for various products in Rajasthan along with a group of farmers through the Department of Horticulture, Government of Haryana. He found this a lucrative business but the high plant cost emerged as a barrier. However, instead of backing out, he decided to develop his own machine as he had understood the processing methodology by now. He started working on the development and by April 2006, was ready with the first prototype of the machine, which he used mainly

for juice extraction of *Aloe vera*. He further modified the machine and used it as an essence extraction unit. With the help of this feature and a few more improvements, he could use the machine for processing of several herbs and farm produce.

The Multi Purpose Processing Machine

Multi Purpose Processing machine is a portable machine, which works on a single phase motor and is useful in processing of various fruits, herbs and seeds. It also works as big pressure cooker with temperature control and auto cut-off facility. It also offers condensation mechanism, which helps in extraction of essence and extracts from flowers and medicinal plants.

The machine is a cylindrical container made of food grade stainless steel having an opening (with lid) at the top to feed the herbs and an outlet at the bottom to collect the residue. The machine has an electric motor to drive the central shaft.



The power of the motor varies depending on the capacity of the machine. Gauges for monitoring the temperature and pressure are provided so that they can be controlled for the processing of certain products. The machine is also equipped with an oil jacket outside the main chamber to prevent direct heating of the herbs. Its portability makes it most suitable for farm processing, thereby producing farm

fresh products and reducing problems associated with transportation and stocking. The machine is unique because it has the capacity to process a wide variety of products without breaking the seeds of the fruit or vegetable. This machine can be used for processing *Aloe vera* (making juice, hair gel, face wash, shampoo, hand wash, extract, powder), mango, (chutney, jam), amla (juice, powder, extract, hair oil, candy, sweets laddoo), tulsi, aswagandha, satavar, herbs (juice, extracts), flowers like rose, chameli, lavender etc. (extract and essence).

The machine is available in two models with juice extraction capacity of 50 kg/hr and 150 kg/hr. Dharamveer is also contemplating developing machines with other capacities to diversify his range and attract customers from different segments.

Support and diffusion

Dharamveer has been supported by NIF and GIAN North for value addition and business development activities under the Micro Venture Innovation Fund (MVIF) support. A patent application (367/DEL/2008) was also filed in his name for the technology, for which a Request For Examination (RFE) has been filed. NIF also engaged a designer to improve the machine, who has come up with an improved model with good aesthetics and certain improvements.

Relying more on a positive word-of-mouth of his customers, Dharamveer does not aggressively market his product though he attends various trade fairs. He has sold his machine in many states of the country and also exported one to Kenya. Apart from selling his machine units, he also sells machine based products like



aloe vera juice, gel, shampoo, cream, *amla* juice, sweets, power and essence which have been developed with the help of this machine. He has given employment to over two dozen women, who make these products. This machine, thus while improving a farmers income by the value addition of his produce, also generates livelihood options for others in the process.

More than 90 machines have been sold by the innovator, with the bulk of sales being in last two years. With sheer hard work and dedication, he has been able to turn around his fortunes from being a rickshaw puller to being a successful

innovator entrepreneur with over 4 million rupees of annual turnover.

Recognition

For his innovation of the multipurpose processing machine, NIF gave him the Haryana State award in its Fifth National Biennial Awards function in 2009. Dharamveer had been labeled '*pagal*' (mad) by his family and the community. He says that he looked unkempt as he was too engrossed with his work to

bother about appearances. However, recognition by NIF and winning the award triggered a change in his father who now started calling him '*mehenati*' (hard working). His family and the local community also started respecting him as they see that he has provided employment to the women of his village and helped generate revenue for his village. He also wants to provide similar opportunities to others around him. He has provided good education to his children. His daughter has a MBA and is married while his son is a graduate and works with him. His work has also widely been covered by media, print and electronic alike, the latest being a BBC News story in February 2013. For a man who began as a rickshaw puller, Dharamveer's remarkable achievements inspite of innumerable difficulties show what a person can do by the sheer strength of their will power.

