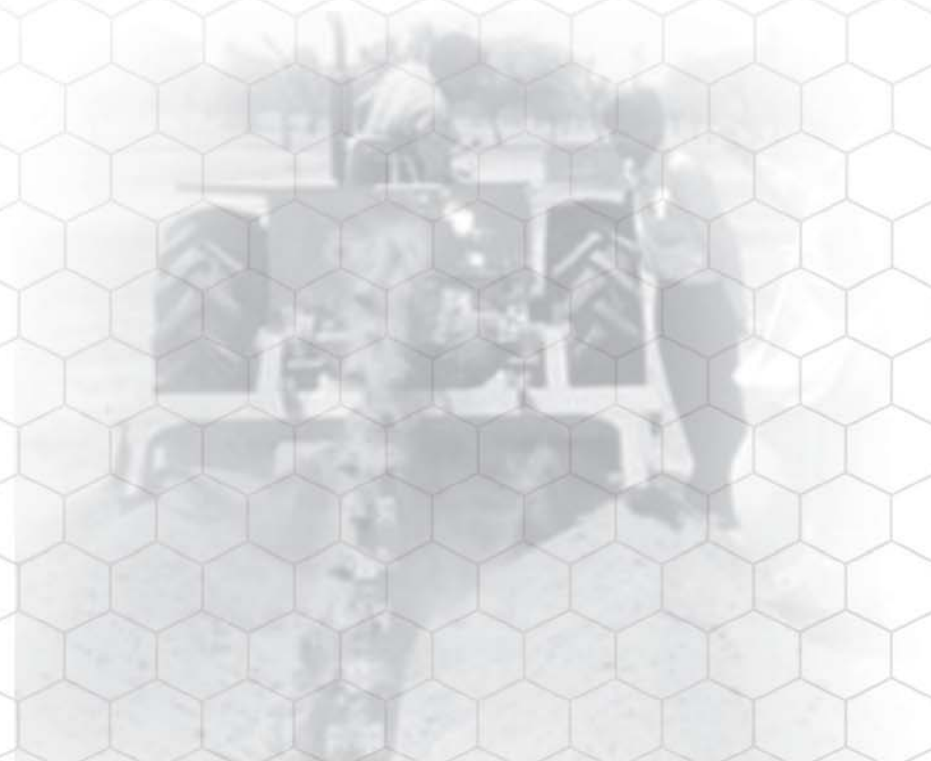


## PART III

# INNOVATIONS for HARYANA

**This section contains details of national innovations  
which are deemed suitable for introduction  
in Haryana**





**Arvindbhai Patel**  
Gujarat

## Auto Air Kick Pump

This innovation is a low cost, portable, compact aid to inflate tyre tubes/punctures of any vehicle having kick start or auto start mechanism so as to fix the problem on the spot and enable the rider to reach the nearby gas station or repair shop.

This device uses the existing air inside the compressor, so that, while kick starting, this air is utilized and transferred to the tube. A pinch of polymer granules is also inserted to seal the leakage in the tube.



## Fruit Harvesting Device

Farmers all over India need a simple device that can reach tall branches of trees to cut and harvest thousands of fruits per day. This innovative device with unique shape and cutting action can be used to harvest fruits quickly, saving time and increasing output.

The novelty lies in the design of replaceable cutting blades and hooking angle given to the oval shaped ring that assists in harvesting the fruits on upright branches. It is light weight, durable and suitable for harvesting fruits like mango, safota, guava, orange, etc.



**Madhav Mahajan**

Maharashtra





**N Sakthimainthan**  
Tamil Nadu

## Hand Operated Water Lifting Device

An efficient way of pumping water to meet requirements in a cost effective way is always a challenge in rural India.

Developed from locally available materials, this hand operated water lifting device is simple in design, delivers high discharge and is low cost compared to conventional hand pump, bucket pump, and bicycle operated pumps.



## Multi Purpose Wood-working Machine

Small carpentry workshops have difficulty in purchasing and using multiple machines due to high initial costs, space constrains and maintenance considerations.

This multipurpose machine with minimal footprint, is built to address all major workshop needs, allowing completing the sequence of woodworking operations in one place, and allowing better control on finished product.



**Ghonakanta Gogoi**  
Assam





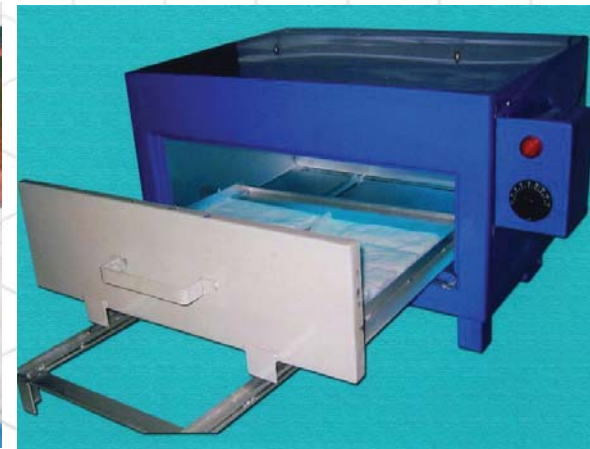
**A. Muruganandam**  
Tamil Nadu

## Sanitary Napkin Making Machine

Sanitary napkins, a universal product, have a very low penetration in India due to high selling cost and the traditional trend of using cheaper but unhygienic clothes. The innovator has developed a machine that produces quality sanitary napkins at a low cost.

The machine prepares sanitary napkins with standard material while cutting down the cost in production. It requires 3 to 4 persons to produce 2 pads per minute. Costing less than half of conventional options, this machine produces sanitary pads @ Rs.1/pad approximately.

The innovator has partnered with R. K. K. Trust for setting up a women based enterprise in Mewat district. The enterprise will be managed by rural women from the district who will be engaged in manufacturing and marketing the sanitary pads locally.





## Garlic Peeling & Lemon Cutting Machine

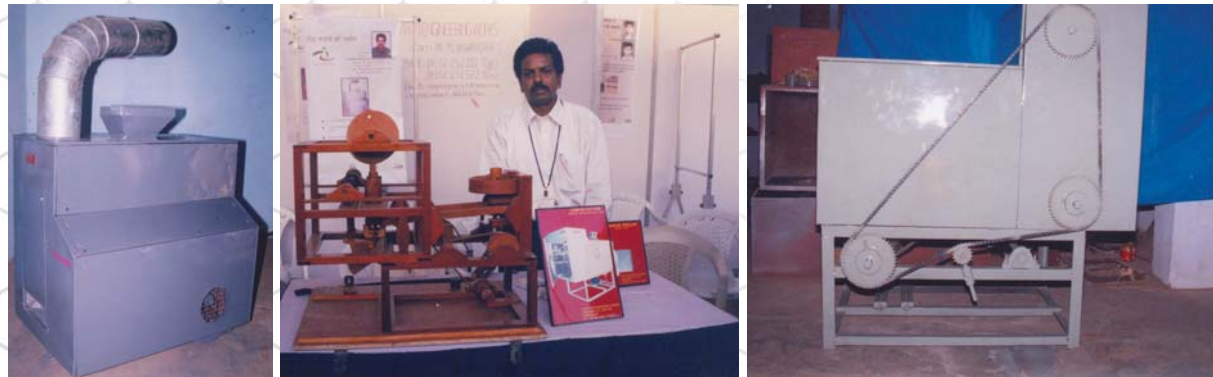
Peeling of garlic in a fast effective way is a requirement in the pickle industry. This product is a food-grade, fully automated machinery designed for bulk quantity peeling of garlic. The machine ensures minimal damage and has wide application in making pickles and herbal medicines. The machine is energy efficient, saves labour, needs low capital and operating cost. It frees the industry from capacity constraints caused by shortage of labour in peak seasons

The second product is also used in pickle industry, but for cutting lemons. It is a cost effective machine, having innovative design, with continuous feeding system. It performs precise and standard cutting of large quantity of lemons in uniform shape and sizes. It can be operated by one person.



**M. Nagrajan**

Tamil Nadu



**Raghav Gowda**

Karnataka

## Manual Milking Machine

Fast and efficient milking of cows is a requirement across rural India and this product is a efficient step in that direction. The product is a low cost, manually operated device that helps farmers to milk the animal hygienically and also reducing drudgery in the process.

It is easy to use with simple controls and operations and can be easily operated by women as well. The creation of suction and low vacuum makes it suitable for other applications.





## Power Generation through Sewage

Energy agencies around the world are looking at solutions that harness alternate energy sources to generate electricity. The innovator has developed a system that achieves energy generation from sewage

This arrangement is a system to generate electricity in which the slow moving sewage water is passed through a cylindrical drum. The helical blades inside the cylindrical drum provide desired efficiency to the system in generating power. The capacity of the existing pilot unit is 30 KVA.



**K. Balakrishna**  
Karnataka





**Chinder Singh**

Uddhamsingh Nagar,  
Uttaranchal

## Multicrop Combine Unit

Harvesting of wheat and collection of chaff for feeding the animals is a time consuming affair. The existing combines are fitted to tractors and need separate units to be fitted for harvesting of wheat and then for cutting of straw. Few farmers have the dual tractor-combine units and most small farmers have to wait for combine units to be available and pay necessary hire charges.

The innovator has developed a dedicated single unit which can simultaneously do both harvesting of wheat and generating the straw and depositing them in two separate tanks on either side. The machine also cleans grains, pulses and oilseed crops without breakage.

Using an Ashok Leyland engine, with a compact footprint, it is a versatile option that can maneuver in tight zones with narrow plant interspacing. The machine can harvest wheat at the rate of one acre per hour.





## Ten-in-one Agricultural Implement

Every season presents a variety of farm work requiring skilled labour and implements which lands many small farmers in a fix. The innovator has developed a multi-functional motorized implement that addresses ten key applications centered on rural needs.

The equipment can do ten tasks including water pumping, chaff cutting, generation of electricity, grinding and sharpening of tools, sawing and cutting of wood, coconut dehusking, winnowing, threshing of paddy, threshing of groundnut and cutting of grass for soft cattle feed.



**Guru Charan Pradhan\***  
Sundargarh, Orissa

\* As per its mandate, NIF does not consider such professionals for awards or financial support, but only helps in providing visibility or linkages.





**Kishanlal Jangid**  
Sikar, Rajasthan

## Safe Wood Cutting Machine

Carpenters work intensely on their job using powered equipment and sometimes get too close to the cutting blades while holding the log firmly and feeding them. This opens the chance for accidents as well as related occupational hazards due to inhalation of the fine dust, chips and woodflakes.

The innovator has developed an improved machine to address these concerns. The machine uses a 2HP motor, transmission system, rotating platform, and saw blade with a simple elegant construction. It consists of a moving platform to feed the job, while being able to fix and cut the job in any orientation. It also has facilities to mount multiple fixtures using an inbuilt scale for measurement and productivity enhancement.



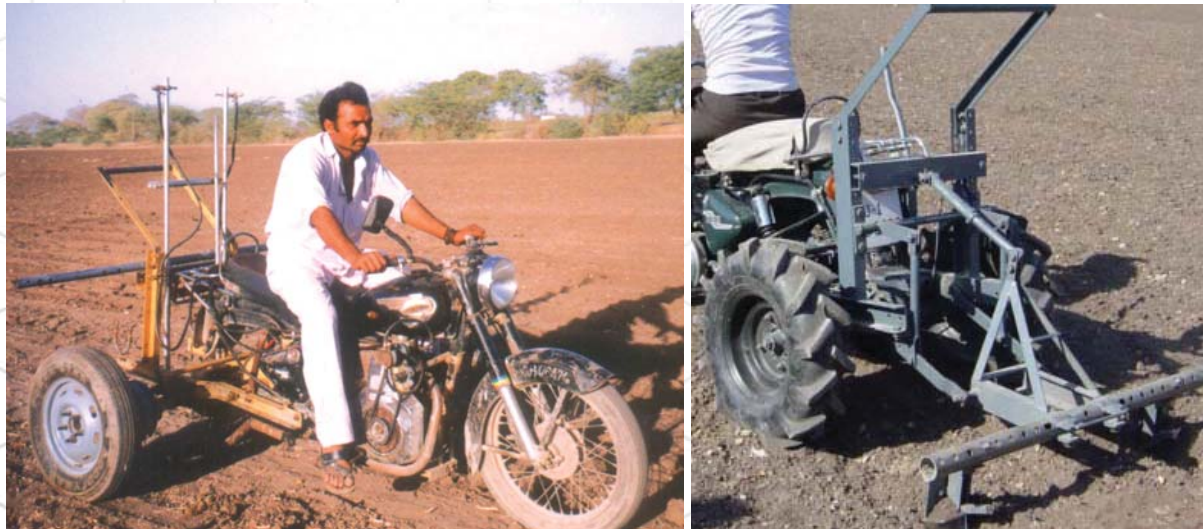
## Bullet Santi

Like other drought prone regions, this region has severe labor shortage, few farm animals or mechanized implements to conduct farming operations. To address this need, the innovator designed a unique unit: the 'Bullet Santi'.

Using the chassis, drive and power of an Enfield Bullet motorcycle in front, the innovator has retrofitted an attachment with two wheels at the rear with a tool bar to fit farm implement options. This meets various needs such as ploughing, weeding and sowing seeds. Being a unique local solution, the machine has proven to be cost effective and fuel efficient. Bullet Shanti can plough an acre of land in half an hour consuming only two litres of fuel.



**Mr. Mansukh Bhai Jagani**  
Amreli, Gujarat







**Gopalbhai Suratia,**  
Vadodara, Gujarat

## Hand Driven Sprayer

This innovator, a farmer by profession, has designed and built a sprayer based on a novel idea. The innovativeness of the design lies in harnessing the power generated by the motion of bicycle wheels on the ground to drive the piston of the sprayer.

Some of the features of this model include a customized barrel for storing pesticides, ability to adjust the nozzle distance and the height of the spray boom as per the orientation of the crop, and ease of maintenance and repairs. The unit can spray an acre of land in 6 hours of operation





## Trench Digging Machine

While on a trip, the innovators noticed laborers manually digging the ground to make long trenches to lay telephone cables, taking months to complete the work. This inspired the innovators to build a mechanized equipment to dig trenches rapidly.

The trench digging unit developed by the innovators can be fitted to any tractor. The modified unit has a hydraulic lever to adjust digging depth and to maneuver the running unit, a planetary gear system and motion converter unit to achieve speed reduction and deliver power from the tractor. Other components include a chain gear and roller system, a belt with trench digging blades and the chain gear system with helical blades fitted to a horizontal conveyor to shovel the earth and lay it flat on either side of the trench.

The compact machine can dig narrow and deep channels evenly, on hard and soft soil conditions. In one hour, it can dig a pit 65 meters long, 6 feet deep and 14 inches wide, while consuming only 2.5 liters of diesel per hour. The equipment costs less than half that of imported models. It is even used by the local telephone department to lay cables.



**Radhey Shyam Tailor**  
**Nathulal Jangid**  
**Yusuf Khan**

Sikar, Rajasthan



**Yusuf Khan**

Sikar, Rajasthan

## Groundnut Digging Machine

Rajasthan has predominantly sandy soil. Groundnut cultivation is affected during harvest, as upto 20% of the pods are left underground. Complete digging out of all the groundnut pods from the soil is not possible as manual labor is scarce, costly and other means are not available.

The innovator has revolutionized groundnut digging with this sturdy rugged desert unit which is retrofitted on a standard 35HP tractor. As the tractor moves forward, the vanes at the bottom of this unit rotate, digging and scooping out the soil-groundnut mixture and dropping them into a vibrating storage bin. The bin has fine sieves at the bottom which lets out the soil while trapping the individual groundnut pods on the top. The hatch at the back of the unit is used to take out the groundnuts.

The unit consumes four litres of diesel per hour and completes digging out groundnuts from a hectare of field in one day. The unit can run on uneven terrain and can also be used to sift out small stones, solid residue and garbage from fields and country roads.



The innovator has been supported under the '*Micro Venture Innovation Fund*' of NIF for commercialising his innovation. In 2006, the technology was licensed to a Vizag based company called Ardee Hi-Tech Pvt. Ltd. This license was targeted for its application as a sea beach cleaner.

## Check Dam and Dual Purpose Tractor

The innovator lives in an arid region, prone to water scarcity. This inspired him to build a dam that could be built on site using local materials, unskilled labour, and at minimal cost.

His path breaking innovation consists of a modular check dam built using the arch shaped bunds in sequence. The innovator was inspired by the strength and durability of arches used vertically in constructing bridges. He used locally available materials such as stones, river sand and deployed one mason and four labourers to build the dam. The low cost dam was built in 4 days and at a total cost of Rs 10,000. This dam has made the area a green haven.

His next major innovation, developed over 15 years was a compact yet powerful 12HP “convertible” tractor. The front axle is designed facilitating its deployment as a “three wheeler” at low speed for farming operations and a “four wheeler” at higher speeds for transporting goods to the market. The tractor is built with an adjustable wheel base for various inter-culturing operations, thereby enabling the farmer to repair the unit with minimal effort or skills.



**Bhanjibhai Mathukia**  
Junagadh, Gujarat







**Madanlal Kumawat**  
Danta, Rajasthan

## Improved Multicrop Thresher

Farmers across India require a reliable machine that achieves threshing with minimal grain breakage, clean output and with capability to handle a variety of crops. The innovator has developed a versatile thresher that can meet these needs.

The modified farm implement reduces setup time to less than 15 minutes to switch over from one crop to another, achieves minimal breakage. Its latest variant can also handle groundnut apart from threshing other cereals and pulses.

The innovator has been supported under the *'Micro Venture Innovation Fund'* of NIF with working capital for his enterprise. More than a hundred farmers have bought the thresher from the innovator benefiting him with a steady income.



## Kudrat-9, An Improved Variety of Wheat

The innovator believes that every farmer should get good quality seeds to deliver high yielding varieties of crops. He has developed a number of improved wheat, paddy, mustard and pigeon pea varieties, which are high yielding, robust stem, having bold seeds with good smell, taste and which are resistant to major pests & diseases.

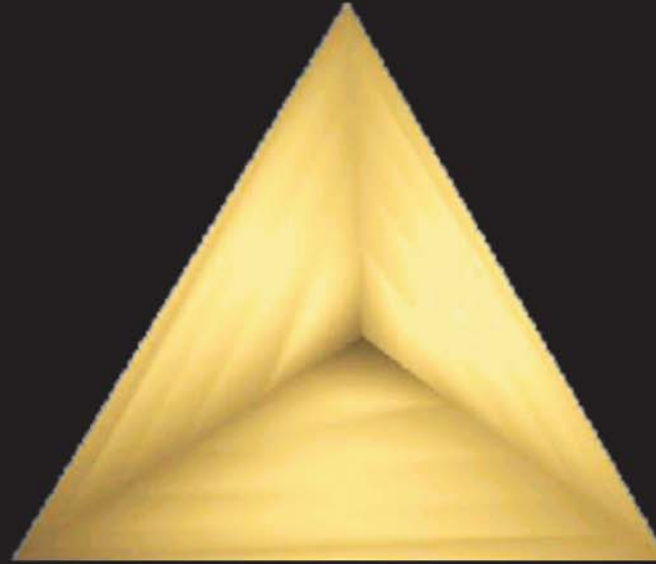
“*Kudrat 9*”, an improved wheat variety, developed by him using simple selection is quite popular among the farmers in different parts of Uttar Pradesh, Madhya Pradesh, Chattisgarh, Maharashtra, Rajasthan, Gujarat and some parts of Bihar, Haryana and Punjab. This variety bears large number of ear tillers with lengthy spikes and has a hardy stem. The grain contains high protein and has great taste. The average yield of this variety is 55-60 quintals / hectares.



**Prakash Singh  
Raghuvanshi**

Varanasi, Uttar Pradesh

Innovation



Investment

Enterprise



**Honey Bee Network**

**SRISTI**

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