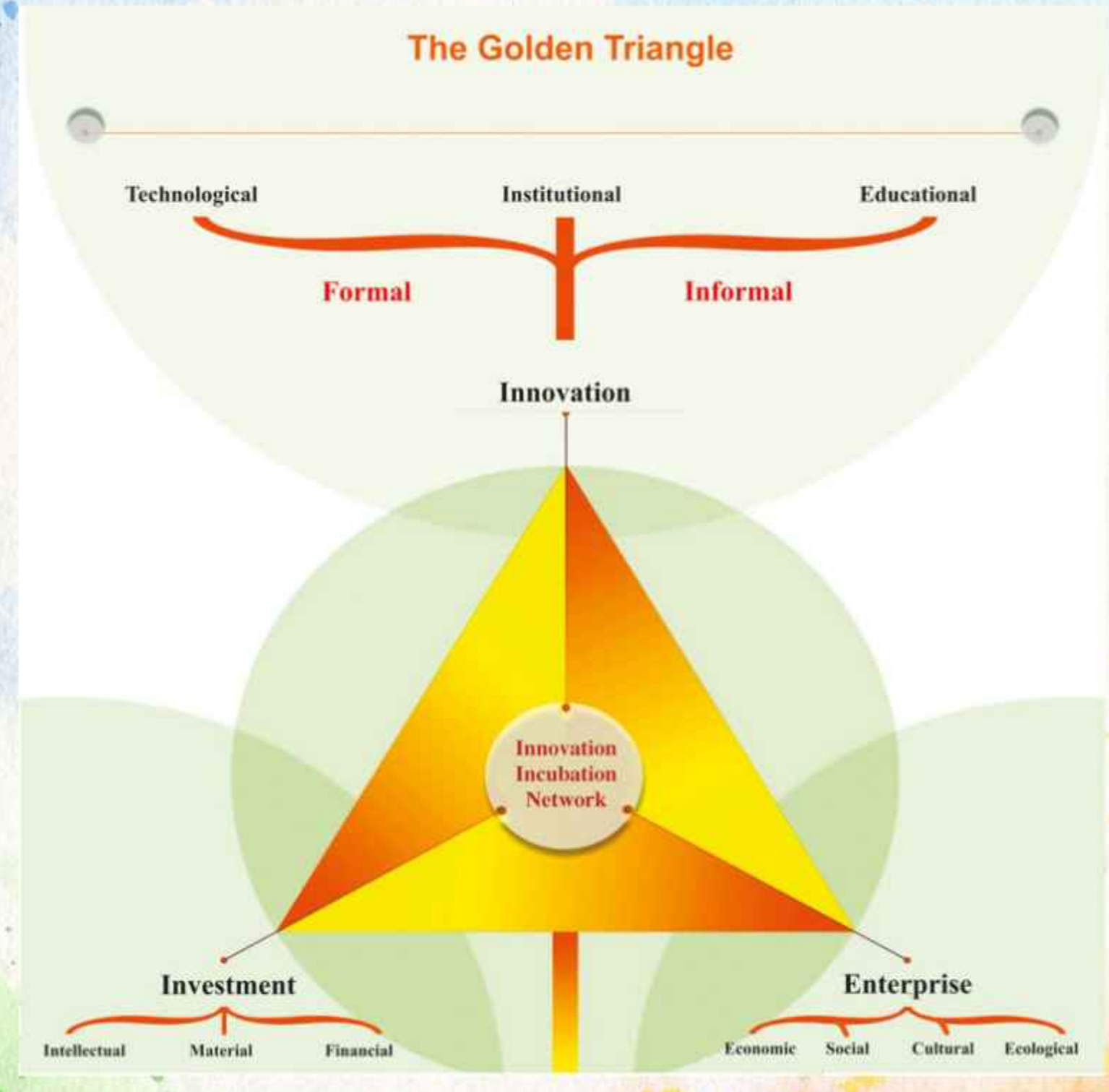

Honey Bee Network

gian

sidbi

INDIA INTERNATIONAL CENTRE IIC where ideas grow

C-CAMP




Motto of Gujarat Grassroots Innovation Augmentation Network [GIAN]

# Preface

The People's Festival of Innovation celebrates both deep tech innovations and grassroots innovations on a common platform. The festival aimed to bridge the gap between these two types of innovations and democratize innovation by providing a space for innovators from diverse backgrounds to showcase their ideas and connect with stakeholders from various sectors. Dr Renu Swarup, former secretary, DBT, Govt of India being a member of the organizing committee of Diamond Jubilee celebration of IIC along with Prof Anil K Gupta and Dr Swati Basu curated the festival bringing deep tech and grassroots innovations on a single platform. Dr Taslimarif Saiyed, Director, C-CAMP along with his team coordinated the deep tech innovations. Dr Swati Basu, former secretary, Principal Scientific Adviser office coordinated with Delhi life-science cluster and PSA office or supporting the Festival. GIAN team was led by Dr Anamika Dey, CEO and Chief Innovation Officer.

The festival showcased around 50 deep tech start-ups curated or supported by C-CAMP and 50 grassroots innovations supported by HBN and GIAN. It attracted a wide range of visitors, including representatives from embassies, institutions, research labs, businesses, policy-makers, and other organizations. The blending of deep tech and grassroots innovations intrigued many visitors, leading to unexpected partnerships and connections between innovators and stakeholders. The festival was inaugurated by the Chairperson, IIC, Shri Shyam Saran, Former Foreign Secretary and Indian Representative in the COP on climate change, in the presence of the organizing committee of the festival. He expressed hope that IIC might be able to support such a confluence of a broad spectrum of innovations at a common platform. In the valedictory session, Shri K N Srivastava traced the long history of IIC and recalled how it has promoted ideas that help in nation-building. He felt that the first People Festival of Innovation has evoked tremendous positive and optimistic energy among the ecosystem's stakeholders and IIC in particular.

Two-panel sessions were organised on deep tech and innovations *for* and *from* the grassroots. Both indicated enormous scope for expanding the opportunities for inclusive innovations. Shri Shivasubramanian Ramann, Chairman & MD, SIDBI, delivered the keynote address at the panel discussion of grassroots innovation at IIC. He shared how SIDBI had been trying to reach the grassroots communities through various programmes.

Notably, the festival positively impacted some grassroots innovators, such as Abdul Kareem and Bijayshanti Tongbram, who saw increased sales and interest in their innovations. Innovators like Prakash Singh Raghuvanshi and Dharambir Kamboj also received support and recognition for their work.

The festival facilitated storytelling sessions, where stories of both deep tech and grassroots innovators were shared, sparking new ideas and collaborations. Innovators found opportunities to repurpose their innovations for community-level applications and explore cooperation with other innovators to enhance mutual effectiveness.

The event also had the presence and support of key figures in the Indian innovation ecosystem, including Dr Rajiv Kumar, former Dy Chair, NITI Aayog, Dr Chintan Vaishnav, Director Atal Innovation Mission, Dr Shailesh Nayak, Director, NIAS and a trustee of IIC, Dr Ajoy Ghatak, former Professor IIT-D, an eminent physicist. A delegation of nine scientists from the Department of Science & Technology also visited the exhibition and showed interest in trying some of the technologies in their country.

Overall, the People's Festival of Innovation appeared to be a successful initiative in promoting inclusive innovation and fostering cooperation among innovators and stakeholders. The organizers expressed hope for future editions of the festival, aiming to expand opportunities for inclusive innovations and continue supporting rural innovation-based entrepreneurs.

Anamika Dey

Dr Anamika Dey
CEO-GIAN

# Acknowledgement

We express our immense gratitude to Shri K. N. Shrivastava, Chairman, India International Centre for hosting the exhibition and making it a part of their annual plan. The staff members from IIC, led by Ms Lalsawmliani Tochhawni and Ms Kanta lent their support throughout the event.

We extend our gratitude and deepest regard to Mr Sivasubramanian Ramann, Chairman of SIDBI for gracing the panel discussion. We are thankful to SIDBI and Social Alpha for being the key sponsors of the event.

We are thankful to our partners from C-Camp, Bangalore headed by Dr Taslimarif Saiyed, for working with us tirelessly. The programme was incepted and mentored by Dr Renu Swarup, former Secretary, DBT, Prof Anil Gupta and Dr Swati Basu Scientific Consultant (Climate and Environmental Science) and Former Scientific Secretary, O/o PSA to the GoI.

I am grateful to our grassroots innovators without whom this event was not possible, the stars, suns and moons of the event; the Honey Bee Network volunteers, collaborators and my colleagues at GIAN and SRISTI for their support and hard work to bring everything together.

Photo credits: GIAN, Vinodh Kumar, Yash Saxena, Priyank Bhardwaj, innovators and collaborators such as SRISTI, SEVA and Palle Srujana

Small Industries Development Bank of India (SIDBI) set up on 2nd April 1990 under an Act of the Indian Parliament, acts as the Principal Financial Institution for the Promotion, Financing and Development of the Micro, Small and Medium Enterprise (MSME) sector as well as for coordination of functions of institutions engaged in similar activities

MISSION: To facilitate and strengthen credit flow to MSMEs and address both financial and developmental gaps in the MSME eco-system

VISION:To emerge as a single window for meeting the financial and developmental needs of the MSME sector to make it strong, vibrant and globally competitive, to position SIDBI Brand as the preferred and customer - friendly institution and for enhancement of share - holder wealth and highest corporate values through modern technology platform

Gujarat Grassroots Innovation Augmentation Network (GIAN) is India's first incubator of grassroots innovations, set up in 1997 in collaboration with the Gujarat government, and supported by SRISTI and IIMA in addition to the Honey Bee Network. In 2003, GIAN shared the Best Technology Incubator awarded by NSTEDB and DST at the hands of then-President Dr. A. P. J. Abdul Kalam, with IIT Madras.
GIAN has entered an MOU with UNDP India and UNDP headquarters in New York, to support inclusive and frugal innovations in 115 countries through 91 innovation acceleration platforms.
GIAN has worked with UNESCAP, UNICEF, UNESCO, UNDP, FAO, and many national organizations like SIDBI, NABARD, NIF, SRISTI, IIMA, etc., and has started a cooperation with Suzuki, a globally renowned industrial leader have largest market share in India.

The Centre for Cellular and Molecular Platforms (C-CAMP) an initiative supported by Department of Biotechnology, Govt of India is a catalyst of cutting-edge research and innovation in the life sciences since 2009. C-CAMP is also a member of the Bangalore Life Science Cluster (BLiSC). We facilitate Bioscience Research and Entrepreneurship by providing Research, Development, Training and Services in state-of-the-art Technology Platforms.
As a part C-CAMP's mandate of promoting entrepreneurship and innovation, C-CAMP has created and fostered an entrepreneur-friendly culture in and around Academic/Research environment through its involvement in Seed Funding Schemes for Startups, Entrepreneur Mentorship program and Bio-Incubation facility.

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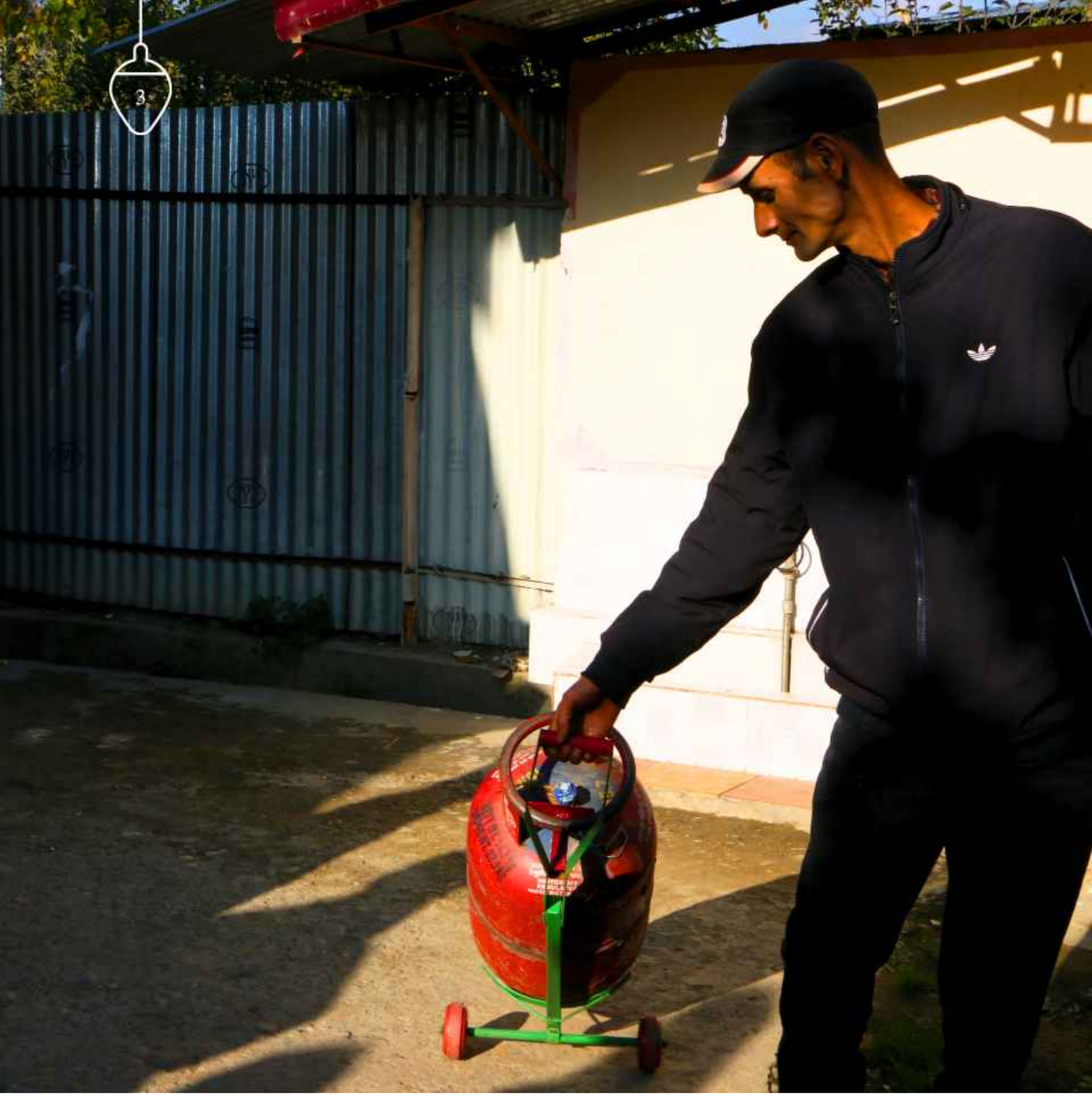
# Jammu & Kashmir

# FOLDABLE CYLINDER CARRIER

MUSHTAQ AHMED DAR
ANANTNAG



Scan to see video of **FOLDABLE CYLINDER CARRIER**

**Problem Addressed:** Mr. Mushtaq observed people in hilly areas carrying loads of LPG cylinder on their shoulders which makes them susceptible to back pain and may suffer back related injury. Even in the plains, women may carry it by rolling it on floor holding it in tilted condition. He made a foldable cylinder carrier that is easy to operate and saves user's time and energy.

**Technology:** The foldable cylinder carrier is supported by 2 wheels for easy mobility. The gas cylinder can be carried by hooking and placing it on the carrier. The handle fixed with carrier can be pulled or pushed which facilitates easy movement in desired direction.

**Societal Impact:** This device saves drudgery among people especially in geographically challenging regions. It allows kids and women easily carry cylinder & load up to 60kg and mitigates any physical injuries as compared to the traditional method. Mushtaq was scouted during 19 shodhyatra organized by Honeybee Network and SRISTI in 2006 in Anantnag district.

He has developed many other innovations such as walnut peeler, corn threshing machine, tree climber, foldable ladder etc. GIAN had facilitated earlier licensing of his tree climber as a pole climber to a company in Ahmedabad.

**Current Status:** The folded cylinder carrier sells @ 500 rupees per unit which makes it highly affordable for every household. Its expected sale is 1000 units in a year. With manufacturing and distribution support, this innovation can reach masses. Compared to other gas cylinders available in market, it has an advantage in the mechanism of lifting and locking while carrying

# Jammu & Kashmir

"सच है, विपत्ति जब आती है,

कायर को ही दहलाती है,

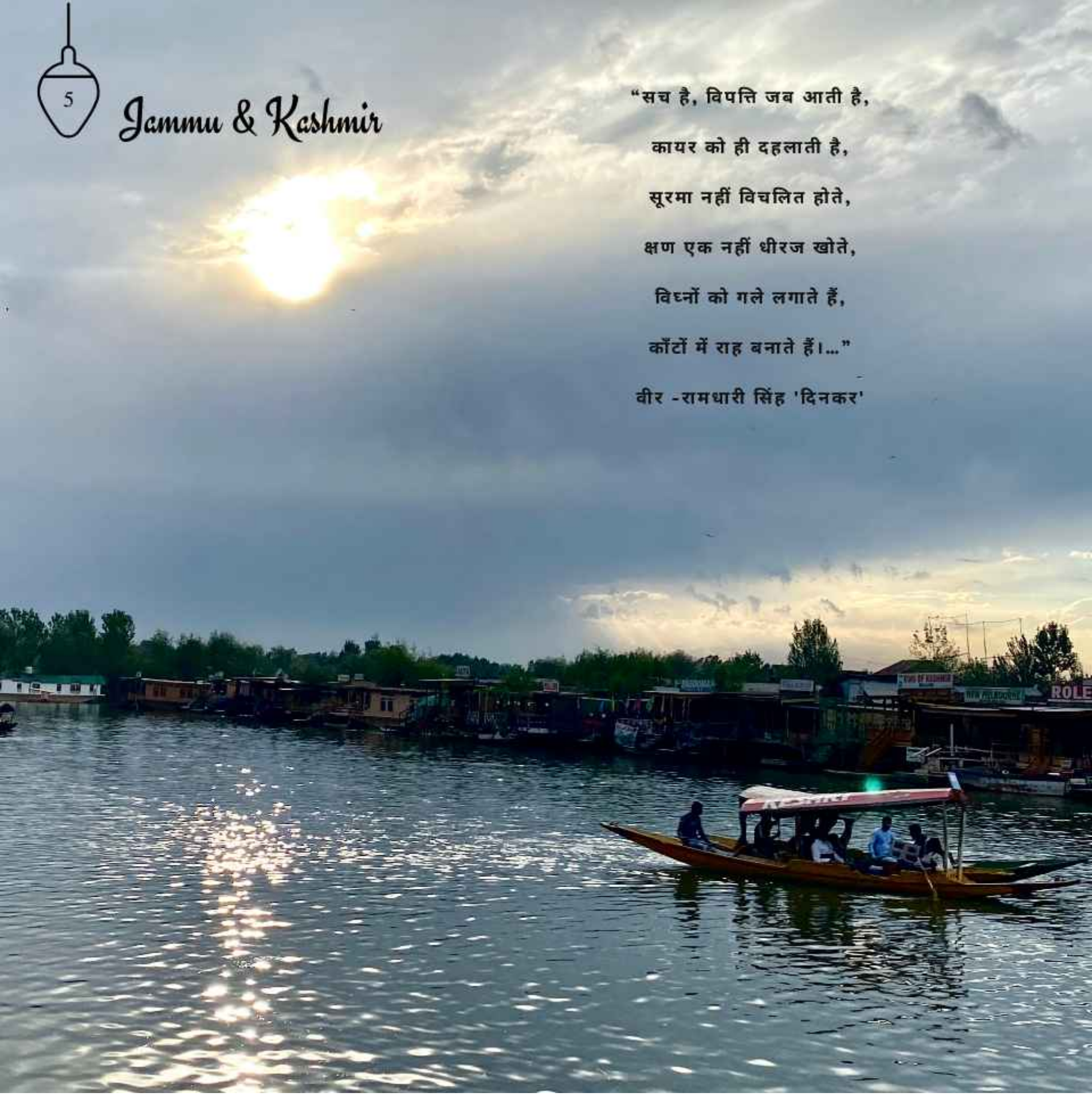
सूरमा नहीं विचलित होते,

क्षण एक नहीं धीरज खोते,

विघ्नों को गले लगाते हैं,

काँटों में राह बनाते हैं।..."

वीर -रामधारी सिंह 'दिनकर'



# FOLDABLE LADDER

MOHD. RAFIQ AHANGER
ANANTNAG

Scan to see video of **FOLDABLE LADDER**

**Problem Addressed:** Pruning and Training of unnecessary growth and damaged tissues of apple plants becomes extremely challenging after the plant attains a height of 6 feet and above. The same challenge occurs while harvesting apples without any mechanical damage. This foldable ladder designed by Mr. Rafiq facilitates these horticultural operations.

**Technology:** It has been designed like a tripod having a full height of up to 12 feet. Due to its wide pillar length. A basket can be pulled up and down by means of an adjustable rope pulley attached to the supporting pillar. This ladder can be folded in half of its size and can be used as a 6 feet ladder also.

**Societal Impact:** This iron ladder has a multipurpose use in horticultural plantations during harvesting and pruning, and is more secure than the existing one. It is a portable ladder and is beneficial for indoor and outdoor means.

**Current Status:** The innovator makes and sells them locally. He is looking for partners to scale this up for regions with large orchards. It has been funded under MVIF by GIAN.

# Jammu & Kashmir

# GAS SAMOVAR

SHAZIA JAN
ANANTNAG

Scan to see video of **GAS SAMOVAR**

**Problem Addressed:** The conventional method of using coal for cooking in rural areas of Kashmir is time-consuming, causes irritation to the eyes, produces lots of ash, causes black patches on hands & clothes.. While sipping tea with her family one day, Shazia Jan, innovator got an idea to use LPG in the samovar.

**Technology:** The innovator has improved the traditional Kashmiri samovar by inserting a modified curved shaped gas burner inside the cylindrical shaped fire container. She has replaced the inner nipple of the regulator with a smaller version to make it convenient for for small gas cylinders. Supports around the rim of the samovar help it to hold cooking utensils.

She has also created an electric version, by installing an electric heating rod within the inner chamber of the samovar. Another interesting addition is the sensor-based tap which prevents the samovar from tilting when one serves tea.

**Societal Impact:** Kashmiri Gas samovar takes only 10 to 15 minutes to serve 25 cups of tea hence not only saving precious time but a lot of human effort as well without producing ash. Moreover, extra heat which got wasted in traditional samovar can also be utilized in this innovative gadget as external supports on the rim have been provided to hold utensils.

**Current Status:** Shazia Jan is a serial inventor and has numerous other innovative ideas for development. She is looking for industrial partners to take her innovation forward. Her innovation has been show cased at several fora. She was also invited at IIMA to share her story with MBA students.

# Jammu & Kashmir

# SNOW REMOVER

AABID REHMAN DAR
(JAMMU & KASHMIR)

Scan to see video of **SNOW REMOVER**

**Problem Addressed:** In Kashmir, during winter the valley receives snowfall several times which results in the closure of all the roads, even the smaller lanes. The heavy snow-cutters are used only in the bigger roads, they cannot move in the small lanes and hence narrow paths & roads are left unattended. Hard ice on these paths poses risks to the local people venturing out for getting daily essentials.

**Technology:** The innovator has added an attachment to tiller plowing machines such that it will clear the snow on surfaces and roads just like heavy snow-cutting machines. It is attached to the front side of the tiller. The attachment can be attached & detached only with the help of 2 bolts just within a few minutes. A curved shovel blade having 48 inches of curved width cleans the snow from the surface of 36 inches in just one go.

**Societal Impact:** The device is cost-effective and can be retrofitted to any power tiller. It is useful not only in case of emergency but also in day to day lives of people living in such far flung snow clad areas.

**Current Status:** Trials have been taken and a patent has been filed with the help of S. S. Rana & Co. The innovator is keen on licensing it to others for manufacturing and sale. GIAN has supported it under MVIF for developing an enterprise around it.

# Gujarat

# MULTIPURPOSE DIGGER (GROUNDNUT, TURMERIC AND GARLIC) AND GROUNDNUT THRESHER

SANJAY BHAI
TILWA
(GUJARAT)

## Scan to see video of MULTIPURPOSE DIGGER (GROUNDNUT, TURMERIC AND GARLIC) AND GROUNDNUT THRESHER

**Problem Addressed:** Sanjay Tilwa observed the difficulties faced by farmers to dig out groundnuts. He often used to discuss the pain points with them. The major pain points that came out of the discussions were, lack of availability of labor and high cost, breaking of groundnut pods or being left in the ground after harvesting that would result in huge losses. He developed a tractor-operated plough to address these challenges, and later a thresher as well.

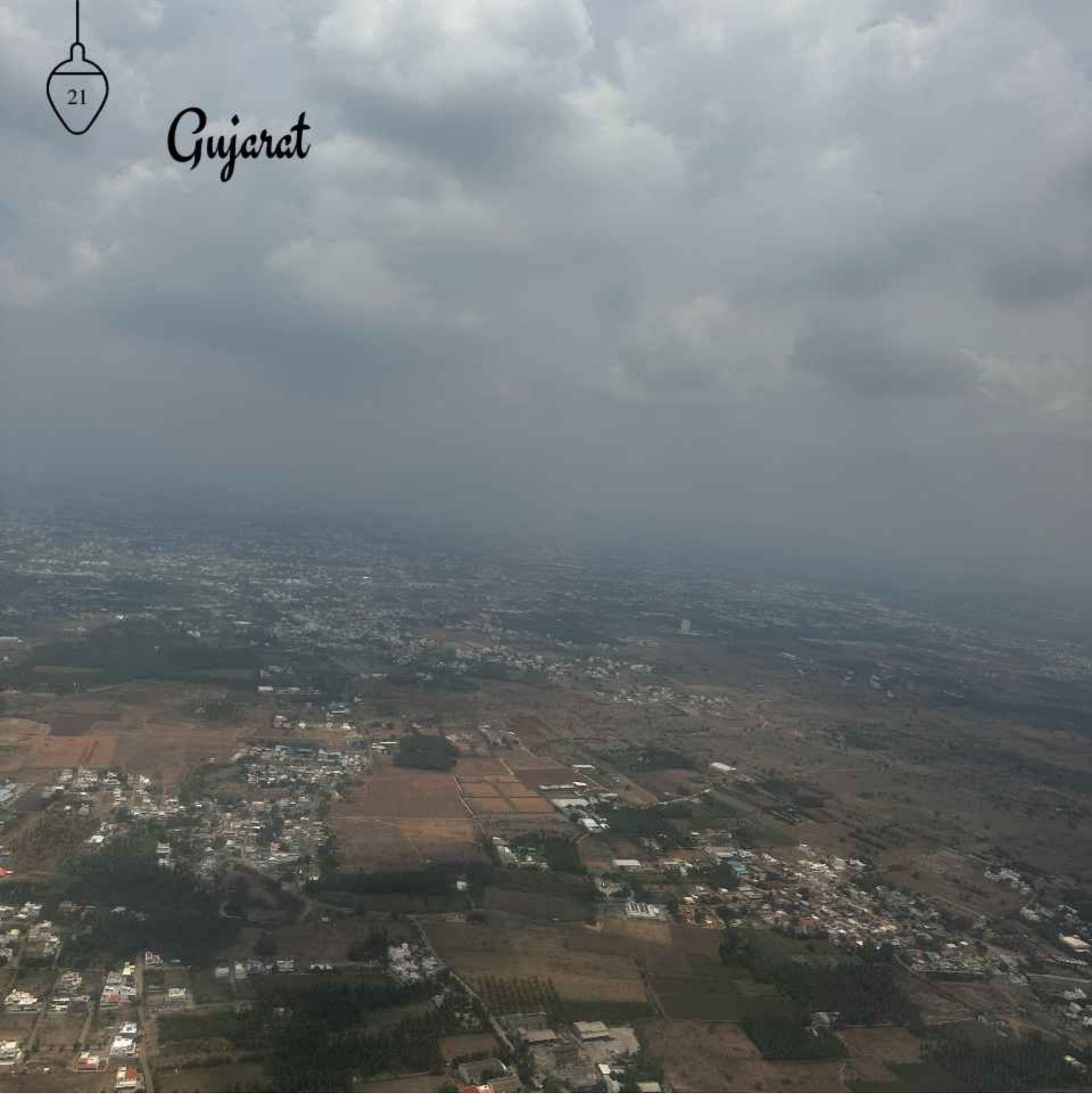
**Technology:** The digger is a tractor-mounted PTO - powered machine with a telescopic propeller shaft suitable for tractors of 35 HP and above to dig out and uproot the groundnut. Harvesting blade (V-shaped) helps in uprooting. The blade has been hardened by treating at a very high temperature in oil and can work in different kinds of soil. The uprooted groundnuts are collected using a conveyor belt. The belt keeps vibrating as a result of which the pods get cleaned off the attached soil. Opening the collection box helps drying of groundnuts. Trials have shown that it can effectively dig out turmeric and garlic pods as well.

The mobile groundnut thresher is PTO-powered by a tractor of 45 HP or more. It is able to cover 1 to 1.25 acre/hour. With its hydraulic system, it automatically picks up groundnuts from the front, and conveys them through a threshing unit.

**Societal Impact:** These machines save considerable labor, operating time, and cost of operation compared to conventional methods. They can be used in different kinds of soil.

**Current Status:** The digger is being sold in many states of India, and the innovator has also sold in a few other countries, especially in Africa. One unit of the thresher has been sold, and production of another unit is underway. They are being sold by Akshar Agro Engineering which he had set up for selling various innovative equipment. GIAN has supported its scaling up through GIANASTRE, a Section 8 incubation company.

# Gujarat



# BANANA FIBER-MAKING MACHINE AND PRODUCTS

MR.MURUGESAN
(TAMIL NADU)

Scan to see video of

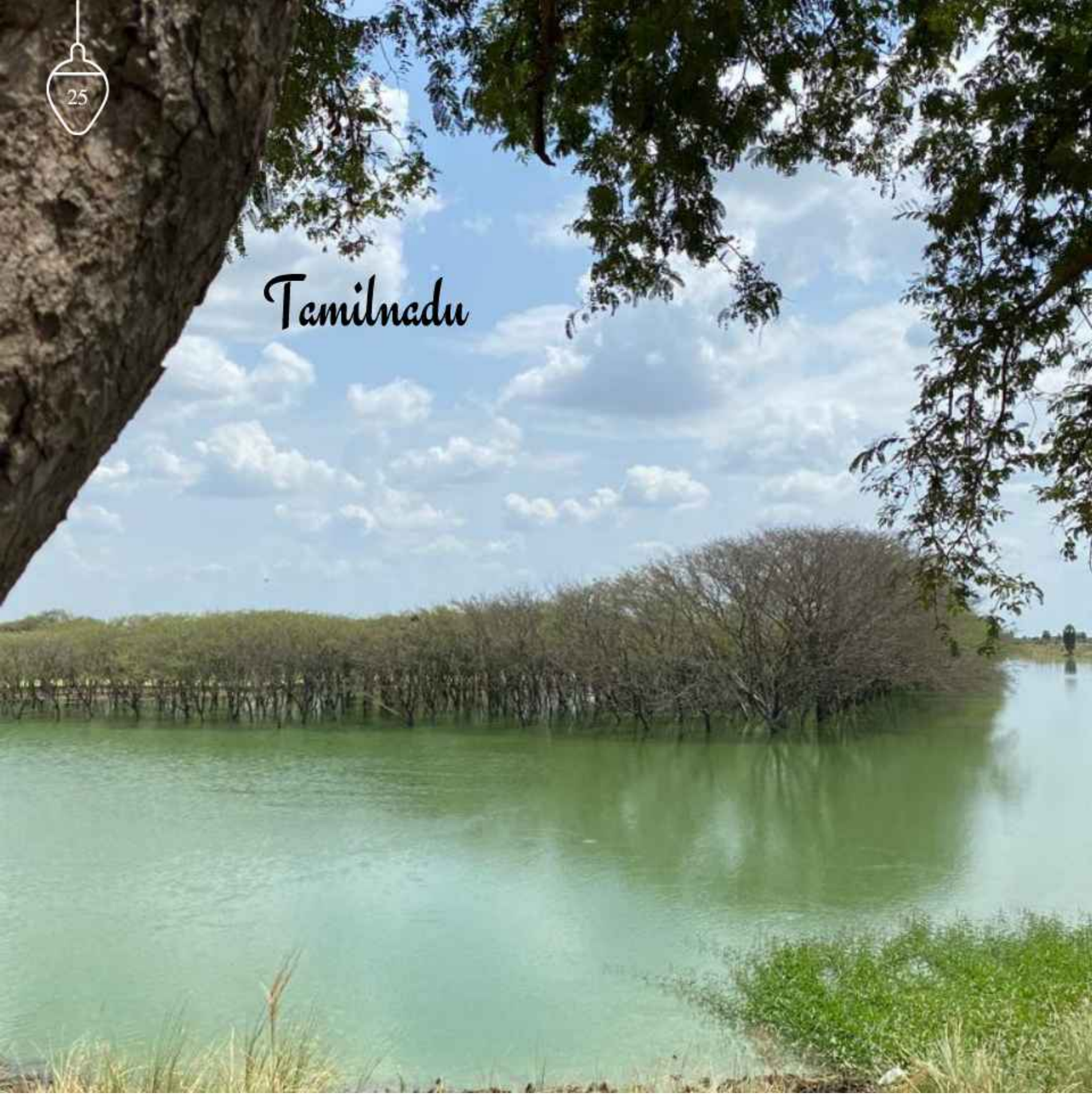
# BANANA FIBER-MAKING MACHINE AND PRODUCTS

**Problem Addressed:** The idea struck an innovator when he saw the difficulty in using banana thread to make garlands. The thread kept splitting. After many attempts, Murugesan developed a spinning machine using bicycle wheel rims and pulleys and perfected his craft.

**Technology:** The hand-wheel mechanism to make rope/fibres from the banana sheath involves five people per wheel for the process, and each wheel yielded only around 2,500 meters of rope. With the new machine, the production capacity is on an average 15 ,000 meters using one machine employing just four people in all.

**Societal Impact:** Murugesan discovered a way to make banana waste into ropes for bags and baskets. It reduces the banana waste and provides a better product at an affordable rate. He employs 350 rural women. He was honoured at Rashtrapati Bhavan.

**Current Status:** Till now he has sold more than 36,000 units of banana fiber products and has created employment for 350 others in the rural areas. He exports the products to the middle east as well as France. He is looking for more market partners as well as investments to upgrade his facility. He was funded under MVIF by GIAN to scale up his business. He has been honoured on several occasions.


Tamilnadu

# PRODUCTION OF GROUNDNUT SEPARATOR AND COCONUT CUTTING MACHINE

MR.SENTHIL
(TAMIL NADU)

Scan to see video of

# PRODUCTION OF GROUNDNUT SEPARATOR AND COCONUT CUTTING MACHINE

**Problem Addressed:** M. Senthil observed that people take out coconuts from the whole nuts harvested from trees using a crowbar. This is time consuming and has a high risk of injury while husking the coconut. He developed an iron cutter that can split the coconut in two-halves to extract oil for culinary purpose. It is easily portable to field/farm, requires less maintenance and has long life.

**Technology:** The coconut cutter has a lever frame with a steel cutter of 70' length, 20' breadth and 5 feet for keeping the machine steady on ground. It has a long handle that holds the semi round blade for cutting and U shape steel holder for holding the coconut in position while splitting the coconut in two halves.

**Societal Impact:** This machine saves 50% of labor's time in separating coconuts. It helps prevent injuries involved in manual husking and cutting process and reduces the overall labor cost.

**Current Status:** The innovator has sold 25 units to fellow farmers. This machine can be easily customized according to the shape and size of products to be cut.

# Tamilnadu

# TOILET ATTACHED COT

SARAVANAMUTHU
(TAMIL NADU)

Scan to see video of **TOILET ATTACHED COT**

**Problem Addressed:** Mr. Saravana's wife became temporarily bedridden after an operation and needed help to go to the toilet. This made her highly uncomfortable to the extent that she would rather control bowel movement than seek help, which further added to her woes. This motivated Saravana Muthu to design a bed with an attached toilet pot for use by his wife to relieve herself without assistance.

**Technology:** He designed a cot fitted with a 12 V battery to operate two gear motors to move the attached toilet pot vertically and sideways. The innovation includes a flush tank, a closet and a pipe connected to the septic tank. The patient can operate the toilet with the help of a remote. The buttons can be used to open the shutter and the closet, and as well as flush the toilet.

**Societal Impact:** This machine helps bed ridden people mitigate dependencies on other for using toilet. It also protects the privacy and dignity of people who need assistance in using toilet. He received a national Presidential award by NIF for his innovation.

**Current Status:** The innovator has received more than 300 orders since 2015 but has been able to sell only 9 due to financial constraints in production. With financial assistance and marketing guidance, the toilet attached cot has potential to be in hospitals, care homes and families with bedridden people. It was supported by GIAN under MVIF.

# Gujarat

# ‘ADHAR’ ADAPTED ELECTRIC VEHICLE FOR ELDERLY AND HANDICAPPED PEOPLE

BHAVESH KUMAR
CHANCHAL
(RAJKOT, GUJARAT)

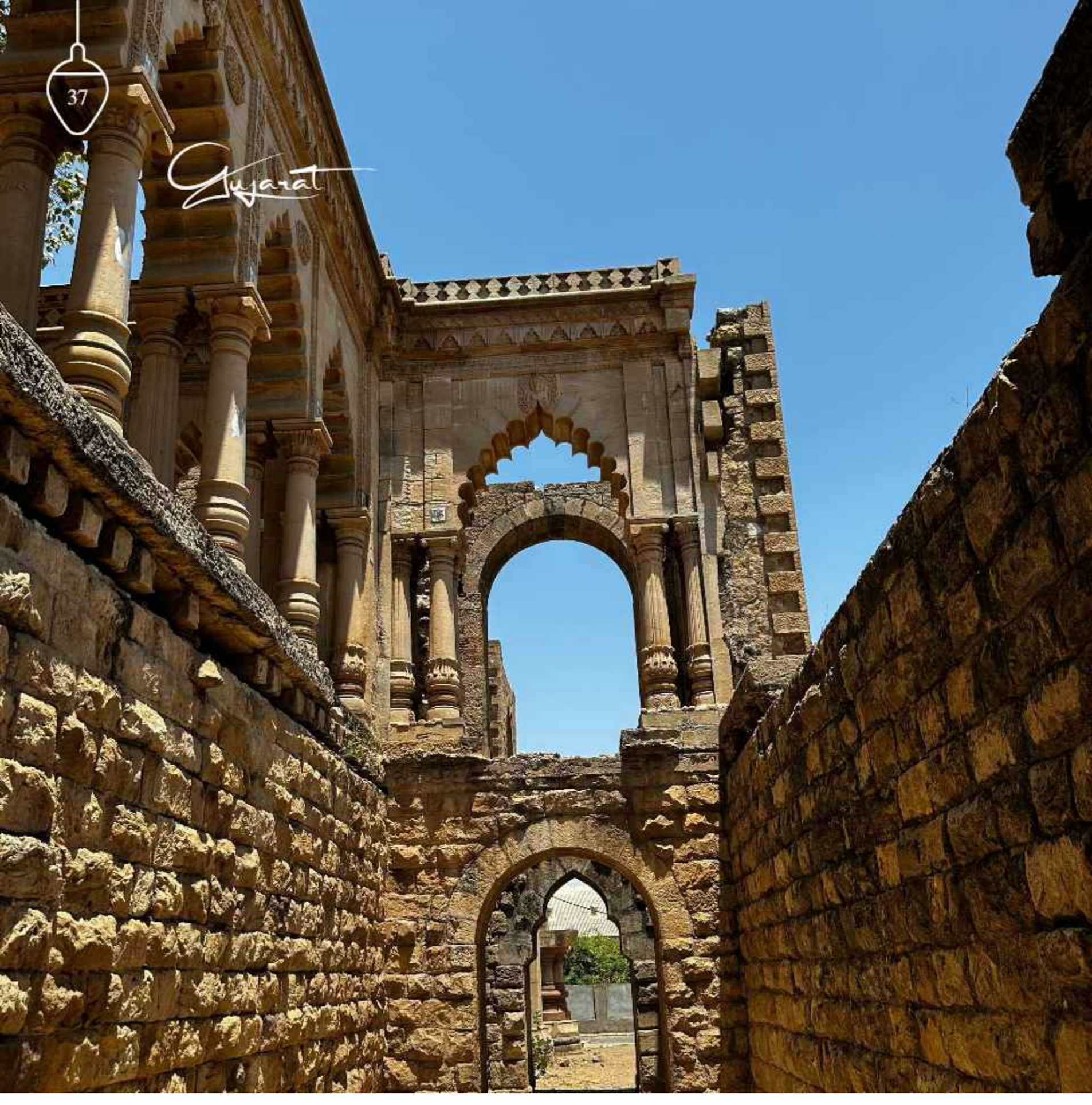
Scan to see video of 'ADHAR' ADAPTED ELECTRIC VEHICLE FOR ELDERLY AND HANDICAPPED PEOPLE

**Problem Addressed:** Bhavesh had observed many elderly customers coming to his family's grocery shop on two-wheelers. He was struck by how difficult it was for them to balance on such vehicles. He researched vehicles designed for elderly and handicapped persons, but was wary of such 'jugad' machines. In India, vehicles are made handicap-friendly either by attaching two side rear wheels, or adding a front wheel to a rear double chassis. These have mechanical brakes, are unstandardized, and tend to be heavy, inefficient and uncomfortable.

**Technology:** Adhar is the first adapted three-wheel electric vehicle for elderly and persons with locomotor disabilities. It produces zero carbon emissions, is designed to be safer and requires less maintenance than other vehicles made for handicapped persons. It can be charged anywhere, gains a speed of up to 25 kmph and can travel 120 kms on a single charge. Bhavesh has provided a differential braking system to prevent the vehicle from tilting forwards. With a width of only 42 inches, it is easy to navigate, even through narrow gullies. It has front headlamps, tail lights as well as side indicators and brake lights. It can travel well on inclines and has a parking brake. Its parts are available in the market and can be easily replaced. The driver's seat is spacious, and the backrest provides comfort. For safety, there is a front leg guard and a rear bumper.

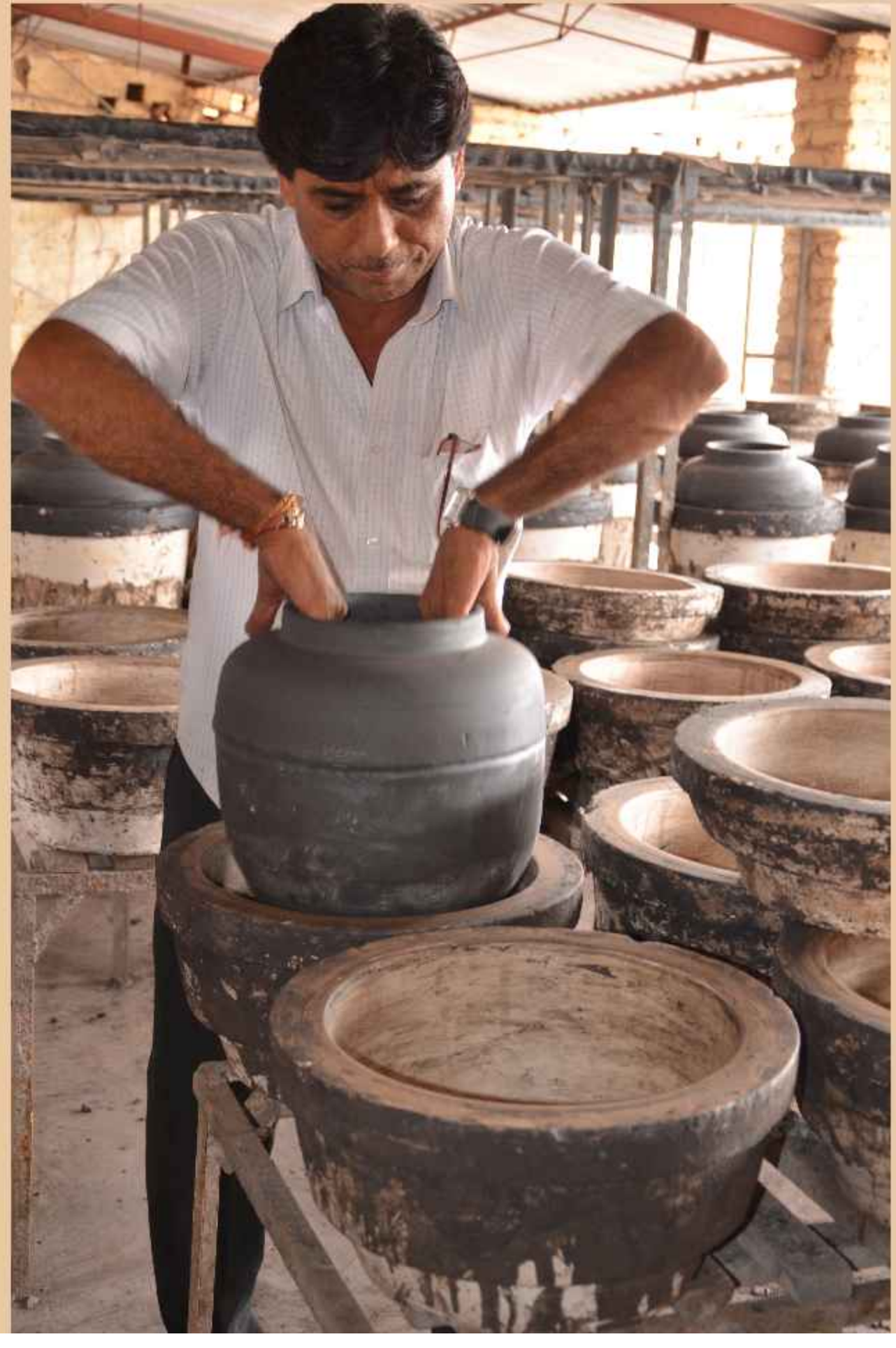
**Societal Impact:** Bhavesh has created a more stable, comfortable, efficient, and affordable alternative, which will safely help elderly and persons with disability become more mobile. His innovation is both inclusive and environmentally sustainable. Apart from transporting people, he hopes it will be used to make deliveries, enabling users to earn from such gigs.

**Current Status:** He always develops blueprints, and is firm on standardization of parts, but also customizes vehicles when needed. He is currently working on Adhar models with hydraulic brakes, and plans to upgrade their speed to 40-50 kmph. His innovation is being supported by SIDBI and GIAN through a MVIF. Adhar has yet to be exported, though Bhavesh's other products have found buyers in the USA. He has no plans to file a patent yet.



# MITTICOOL CLAY CREATION

MANSUKHBHAI PRAJAPATI
(GUJARAT)



Scan to see video of **MITTICOOL CLAY CREATION**

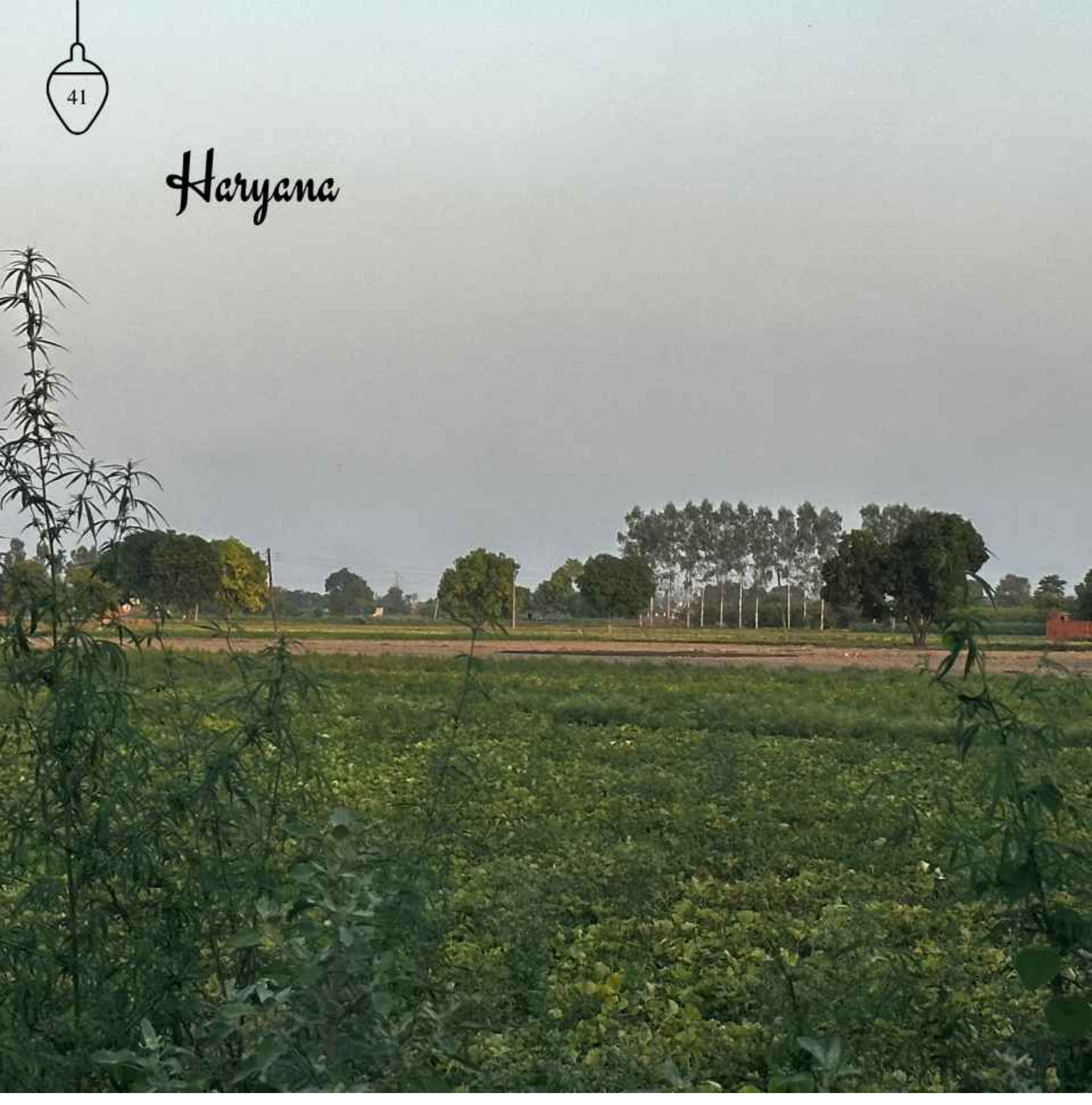
**Problem Addressed:** Mansukh bhai suffered huge loss during the 2001 earthquake, as most of his clay pots were broken. He thought of working on a fridge that would not need electricity and could be used by the masses. It might also help to revive his economic conditions. Thus, was born Mitticool- A clay fridge that keeps food fresh and cool without electricity.

**Technology:** Mitticool refrigerator had two water chambers one at the top and the other at the bottom. Water was filtered from the top chamber (20 liters capacity) and collected in the bottom chamber. Between the two water chambers, there was a space for storing vegetables, fruits (up to 3 kg), and milk. The principle of cooling in Mitticool is the same as that of clay pots i.e. evaporative cooling.

**Societal Impact:** It is a small refrigerator/ earthen unit made of clay storing vegetables, fruits, milk, and water It does not need any external source of energy for cooling and it's quite eco-friendly. He has exported it to more than 20 countries along with hundreds of other products made by him. He employs around 25 women and pays them very well. Many of his products have been copied widely such as tawa, water bottles and thus generating thousands of jobs for potters. He was honoured by the President of India at Rashtrapati Bhavan through HBN and NIF. He was supported by GIAN initially through the TePP scheme of DSIR in 1998-99.

**Current Status:** The innovator sells his products under the brand of Mitticool clay creations. He has won numerous national and international awards. He is one of the first grassroots innovators to become a millionaire. GIAN has mentored him and helped him scale up his numerous products.

# Haryana



# MULTI-PURPOSE FOOD PROCESSING MACHINES

DHARAMBIR KAMBOJ
(HARYANA)


DHARAMBIR FOOD PROCESSING
TECHNOLOGIES (P) LTD.

Scan to see video of

# MULTI-PURPOSE FOOD PROCESSING MACHINES

**Technology:** The multi-purpose food processing machine is a portable machine that works on a single-phase motor and is helpful in processing various fruits, herbs, and seeds. It also works as a big pressure cooker with temperature control and an auto cut-off facility. It offers a condensation mechanism, which helps extract essential oils and other compounds from flowers, seeds and whole medicinal plants.

**Societal Impact:** The machine comes in several sizes, which makes it suitable for a wide array of groups, from families of five to small-scale farmers or self-help groups. It was transferred to Kenya by the Honey Bee Network for wider social applications there. It has been exported to many other countries. Within India, it has gone to more than ten states.

In many cases, when women's groups buy this machine, the innovator trains them, and helps build their capacity to make new products by using this machine including soaps and other utilities. He was honoured by HBN and NIF at Rashtrapati Bhavan.

**Current Status:** Dharambir has made many improvements in this machine besides developing several new agro-processing machines such as corn milk making machine, corn hulling machine, solar drier, vaccum frying machine etc. He has made a huge progress ever since he drove cycle rickshaw on Delhi roads.

# Haryana

# HERBAL FORMULATION FOR PEST CONTROL: KAMAAL 505

ISHWAR SINGH KUNDU
(HARYANA)


# सभी फसलों के लिए उपयोगी उत्पाद

Scan to see video of

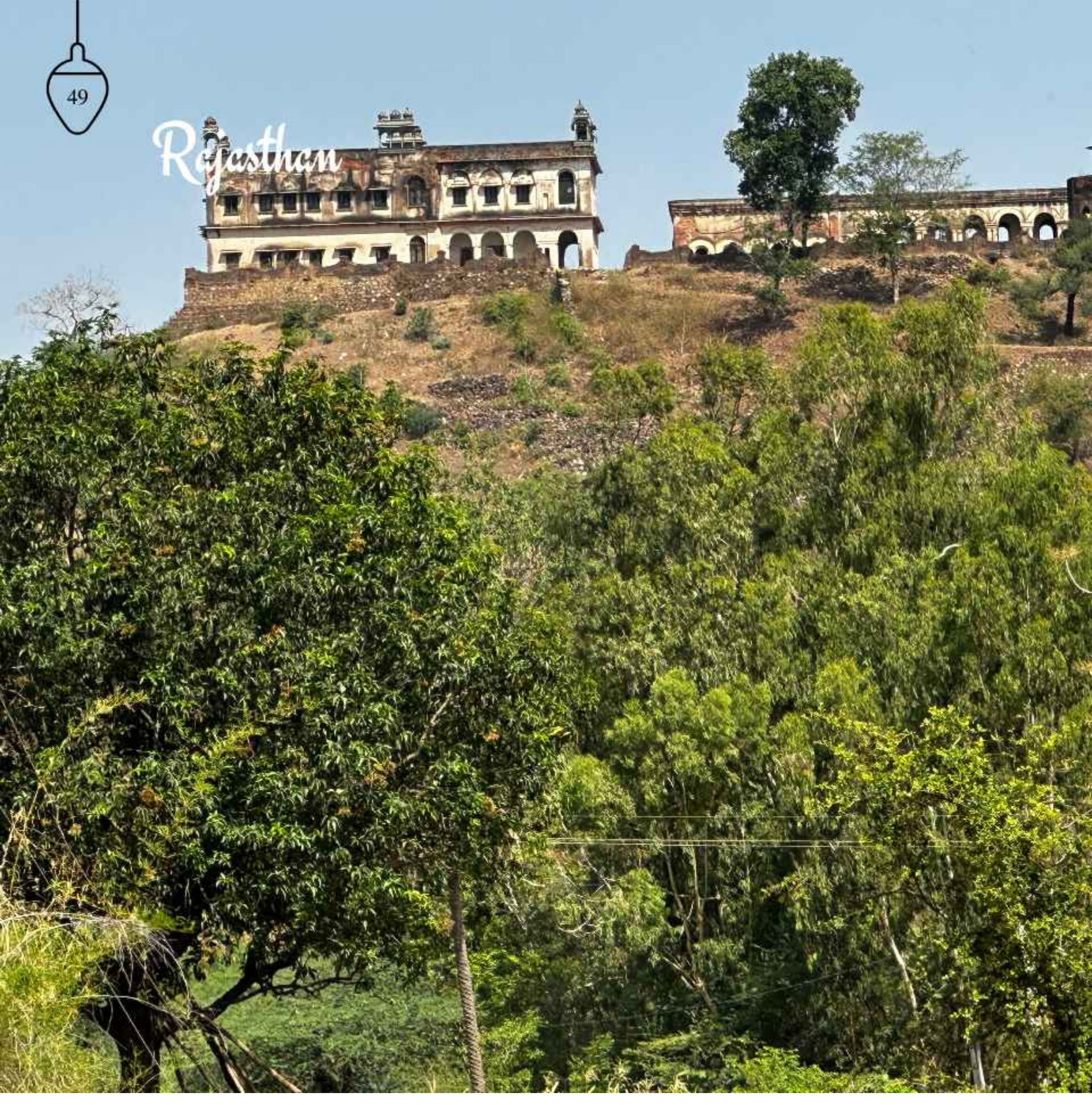
## HERBAL FORMULATION FOR PEST CONTROL: KAMAAL 505

**Problem Addressed:** Excessive reliance on chemical fertilizers and their imbalanced use has affected soil health. The micronutrient deficiency in soil has increased. Organic carbon which is very essential to hold the important nutrients in the soil has also decreased drastically. Loss of Organic carbon can lead to a reduction in soil fertility, land degradation, and even desertification.

**Technology:** This is a "multiutility innovation" based on plant ingredients. It acts as a growth promoter, fungicide, and termiticide. Due to its high organic content, it improves soil fertility, increases water intake, and enhances the water-holding capacity of the soil. Thus, it can also be used for soil reclamation

**Societal Impact:** It can improve soil micro and macro fauna which results in the Cost of cultivation decreasing up to the extent of about 47% and It enhances the waterholding capacity of saline and compact soil.

**Current Status:** Ishwar Singh has won many awards for his innovations including at Rashtrapati Bhavan through HBN and NIF. He had to struggle a lot ot get approval by the agricultural department but his persistence paid. He bought eroded sandune infested land in Haryana and reclaimed it into a green patch through his products and techniques. He sells his products all over the country.


Rajasthan

# IMPROVED VARIETY OF CARROTS (LAXMANGARH SELECTION)

SMT. SANTOSH PACHAR
(RAJASTHAN)

Scan to see video of

# IMPROVED VARIETY OF CARROTS (LAXMANGARH SELECTION)

**Problem Addressed:** many carrot varieties often have forked edge which gets lesser value in market than the ones which have pointed edge. The production practices need to improve apart from the use of good seed to imrove productivity and table quality. Santosh, innovator has addressed some of the challenges in carrot production in semi arid Rajasthan.

**Technology:** The selected seeds are stored in a cotton bag. Five kg/acre seeds are used for sowing. Prior to sowing the seeds are scarified by rubbing them with a palm. After scarification, seeds are treated with sesame oil and then sown in preprepared plots (size 15 x 20 ft) in rows. After sowing the fields are irrigatedwith sprinklers to maintain the high soil moisture. Light irrigation should be given up to one month using sprinklers. After one-month normal irrigation process is followed.

**Societal Impact:** Having distributed seeds of her variety, she has also taught farmers the practices she followed which results in a better farming product.

**Current Status:** Santosh sells seeds at indiamart and several other sites. Pachar has also, "developed a new pollination technique by mixing 15 ml of honey and 5 ml of ghee with 1 kg of carrot seeds and drying them in the shade. The seeds germinated quickly, and with minimal spoilage, it took 75 days to yield carrots 1.5 to 2.5 ft in length. Pachar had not only enhanced the sweetness of the carrots by 5 per cent, but had also amplified production by one-and-a half to two times". She has become a successful entrepreneur and has been awarded by HBN and NIF in 2103 and 2015 at Rashtrapati Bhavan.

# Gujarat

# NATURAL WATER COOLER

ARVINDBHAI PATEL
(GUJARAT)


#startupindia
SOLAR BASED
Natural Water Cooler
"A Zero Energy Cooling Technology"
NaturaCool
HEALTH BENEFITS OF DRINKING COPPER WATER

Scan to see video of **NATURAL WATER COOLER**

**Problem Addressed:** The idea of the water cooler occurred to the innovator when he was running a fever. His wife repeatedly applied cold packs to his forehead to keep the temperature in check. This gave him the idea to use the same principle to develop a water cooler, which would not require electricity and easy to maintain at a low cost.

**Technology:** In his natural water cooler, water is passed through copper coils covered with cotton cloth. The coil is continuously moistened by a dripper. Evaporation of water from the cloth wrapped on the coil cools the water inside. A solar fan has also been installed on the top to hasten the evaporation and thus the cooling.

**Societal Impact:** The cooler is useful for supplying cool drinking water in hot summer, particularly in areas where electricity is absent or erratic. It is suitable for schools, banks, hospitals, bus and railway stations, and similar public places.

**Current Status:** The innovator is manufacturing 100 and 150 liters capacity coolers. About 600 units of different capacities have been sold so far and are in use. Using the same concept, he has also been trying to develop cold storage for vegetables. His son Jaimin currently runs the enterprise and has successfully scaled up the business.

# Telangana

# MODHA TECHNOLOGIES

SIVAKUMAR MODHA
(TELANGANA)

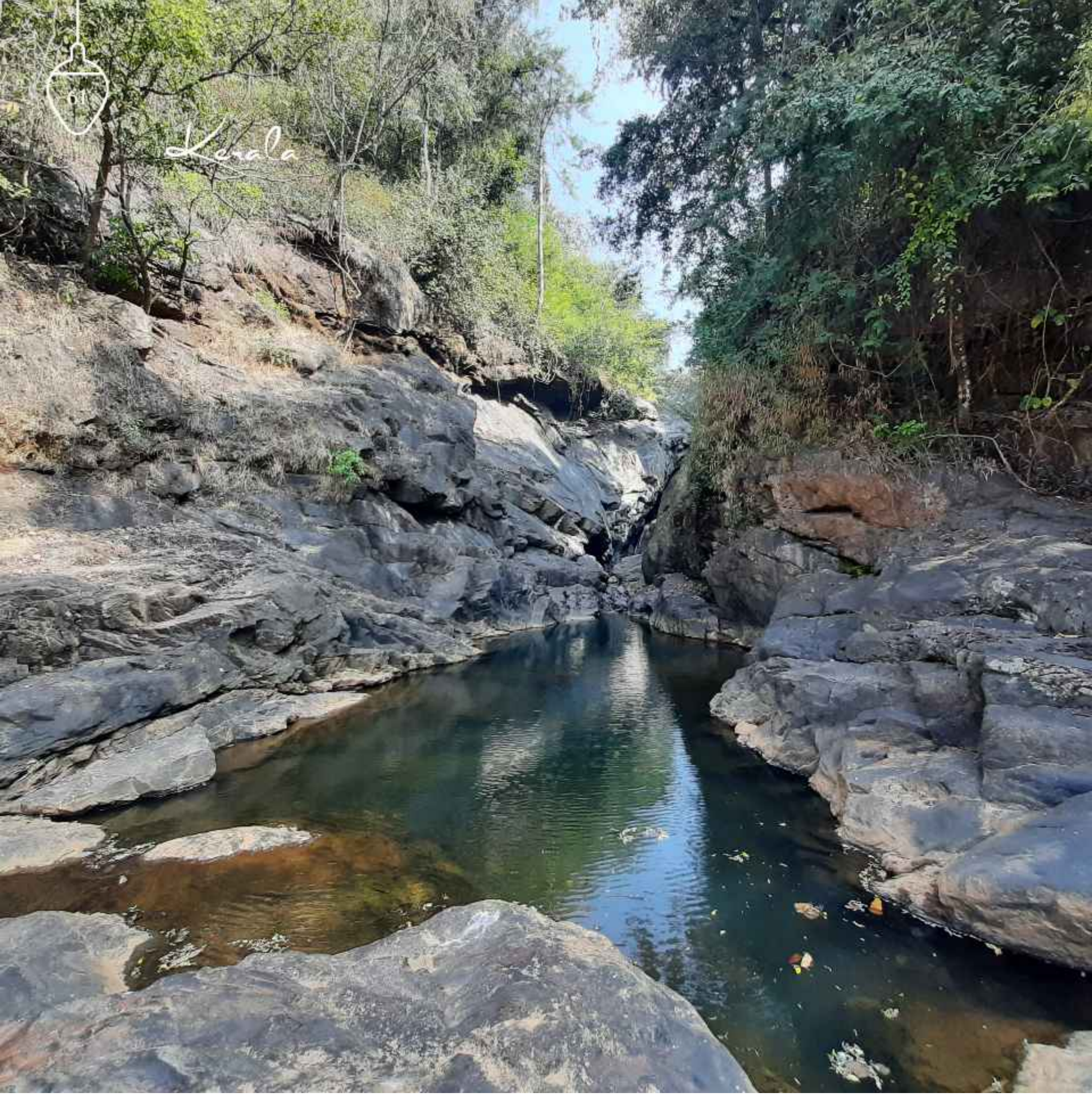
Scan to see video of **MODHA TECHNOLOGIES**

**Problem Addressed:** Everyday, handloom workers must lift 20-45 kg about four to five thousand times with their legs to weave a loom. This repetitive strain causes severe chronic pain in weavers' knees and backs. By the time they turn 45 years old, they are unable to weave any longer. Also, current lifting machines offer a limited number of levers to operate pedals - usually one or two. However some handloom types require more levers, for e.g., some jacquard looms require more than ten levers.

**Technology:** The Modha multi-lever lifting machine transfers the burden of moving heavy weights to the motor fitted into the machine. Weavers need only press pedal switches with their toe to operate it, or paraplegic persons can use a hand-operated switch. The company creates machines withtwo to four levers, and offers customization based on the requirement of the looms. A weaver can easily install the Modha machine within 20 minutes. They can be used on all types of jacquard-based handlooms.

**Societal Impact:** The innovation prevents pain, and strain injuries while weaving. It allows elder weavers to continue or resume work, and can be operated by persons with disability. It could prevent traditional weavers from migrating out of the profession. Thus, more weavers will be able to work for longer periods. It enables weavers to create 13-15 saris in a month, against their earlier average of 10. The quality of cloth also improves due to the machine's efficiency.

**Current Status:** Modha manufacturing facilities have been set up at Hyderabad. They have supplied 45 machines within Telangana and Andhra Pradesh. They are targetting to supply the machine to one lakh handlooms within the first two years, and ten lakh handlooms within five years. Based on central government statistics, they estimate that their machine could enhance at least 28.2 lakh handlooms in the country. Their patent application is under process.


01
Kerala

# ROCKET STOVE

ABDUL KAREEM K A
(KERALA)

Scan to see video of **ROCKET STOVE**

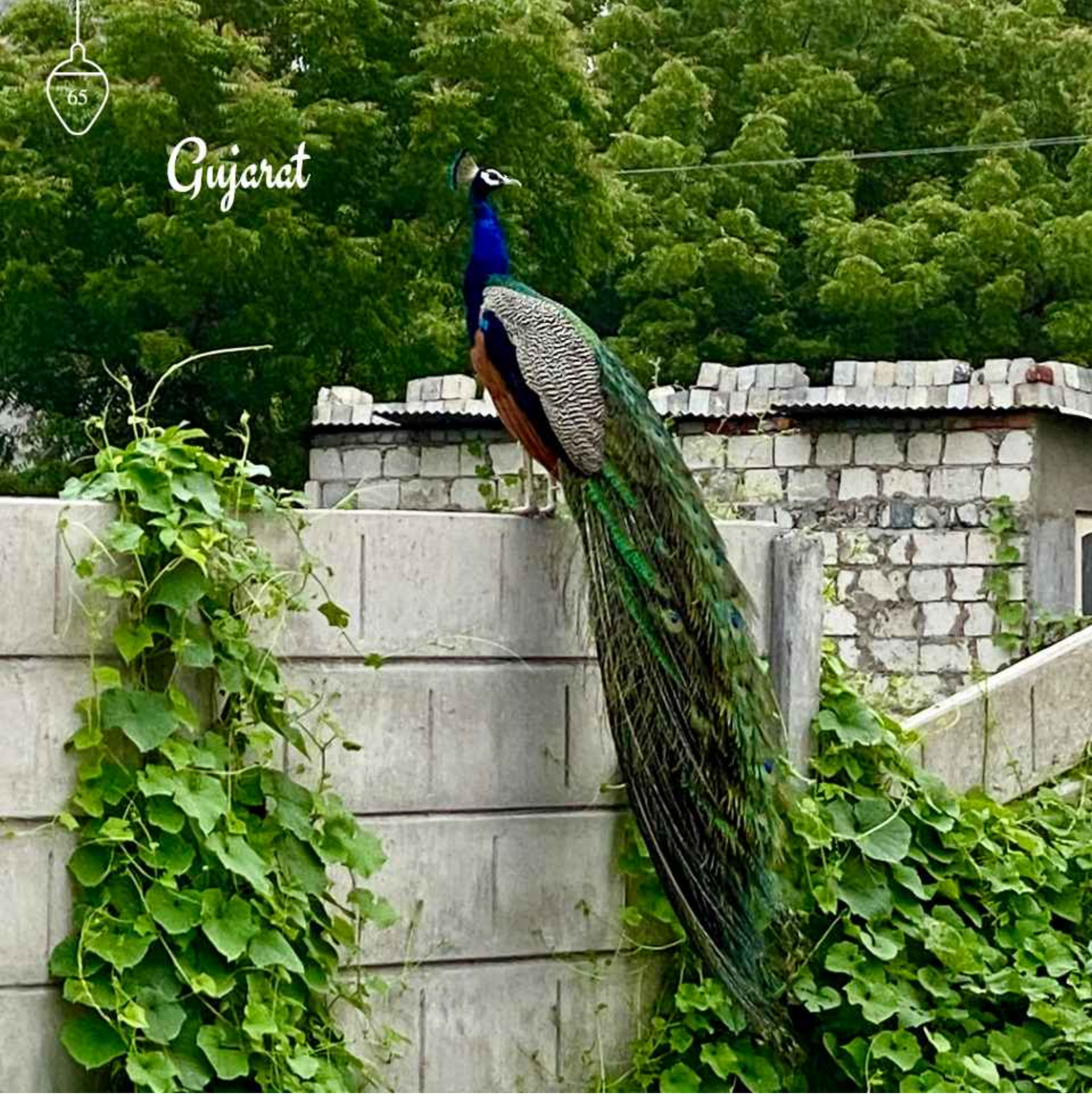
**Problem Addressed:** During the lockdown period, Innovator thought what if the electricity and LPG supply stopped one day? What alternative can be used to cook food? Even though traditional stoves are available in Kerala, many people hesitate to use them due to the smoke. That's when he started work on rocket stove,

**Technology:** The rocket stove is based on a concept developed by the British in the 1850s. A British version contains an insulated vertical chimney. This burning stove ensures complete combustion before the flames reach the cooking surface. It is made using 4 mm mild steel sheets, and the oven chamber is made with stainless steel sheets.

**Societal Impact:** It can run on firewood, coconut shells, waste paper or any other bio-waste and cuts down smoke by 80 percent.

**Current Status:** He has sold more than 330 units of rocket stove and hasgenerated employment for seven others. He has also applied for a patent for his innovation. He is open to partnerships and looking to scale his product line and volume. It has been supported under MVIF by GIAN for scaling up.

# Gujarat



# MODIFIED WOOD-BASED, CULTURALLY ACCEPTED CREMATORIUM

ARJUNBHAI PAGHDHAR
(GUJARAT)

Scan to see video of

# MODIFIED WOOD-BASED, CULTURALLY ACCEPTED CREMATORIUM

**Problem Addressed:** Cremation generally consumes about 400 kg of wood to burn a body. In India, millions of tons of wood are burnt every year in cremating dead bodies. The innovator decided to design a biomass gasification based cremation process, wherein a closed mummy shape is made of refractory bricks to ensure minimum heat loss and amount of wood.

**Technology:** The innovator has placed doors at the front and rear ends of the structure to perform Hindu rituals. The inner side of the top cover is filled with cera-wool, which can tolerate high temperature. Blowers and nozzles help release air to accelerate the cremation process. Charcoal filters and caustic soda filters have been provided for air filtration and a chimney for air exhaust.

**Societal Impact:** The average time taken to burn a dead body (about 80 kg weight) is 70-90 minutes while consuming 70 to 80 kg of wood as compared to 3-4 hours in the conventional method consuming around 3-400 kg of wood.

**Current Status:** Arjunbhai has already sold 27 units of his innovation. He has also installed it at public crematorium in Gandhinagar besides numerous other community crematorium in different villages.

# Gujarat

# JAI KHODIYAR WELDING WORKS

MANSUKHBHAI JAGANI
(GUJARAT)


Bullet Sati

Scan to see video of **JAI KHODIYAR WELDING WORKS**

**Problem Addressed:** Most small farmers can not afford the tractors available in market. Also increase in the cost of fodder for bullocks, the regular occurrence of drought, and the shortage of farm labor forced the innovator to look for an alternative to bullocks. Inspired by a local mode of transport, the innovator has developed a multipurpose farming machine that can do all the operations which can be carried out by a conventional bullock driven plough.

**Technology:** Began with using the self-fabricated chassis, drive, and power of an Enfield Bullet motorcycle, the innovatoretrofitted an attachment with two wheels at the rear with a toolbar to fit various farm implements. The rear wheel of the motorcycle has been removed and an innovative assembly unit has been attached. This meets various needs such as plowing, weeding and sowing seeds, and spraying.

**Societal Impact:** It is fuel efficient, sturdy, easy to handle and operate, and easy to assemble and dismantle (can be also used as a regular motorcycle). The innovator was one of the first grassroots creative person to get a US patent in 2003. However, he decided not to enforce it on fellow farmers and small fabricators and hence, thousands of Santi now ply in Saurashtra, Gujarat and several models are made by hundreds of fabricators to suit their particular requirements. He was honoured by HBN and NIF at Rashtrapati Bhavan.

**Current Status:** The innovation is one of the most widely adapted and adopted grassroots innovations. Almost 10, 000 santis, sanedo and handiyo -various adaptation of original santi are sold and every year. The current version does not use motorcycle chassis, instead innovator and other fabricators make new chassis and make three and four wheel ploughs/small tractors

# Rajasthan

# MODIFIED BOILER-BASED MAWA MAKER

SUBHASH OLA
(RAJASTHAN)


Agricultural Sector
Boiling and Vacuum System
Jaggery Plant
NIFientreC
Heat Saving
Boiling Kettle
Heat Exchange AND Cooling System
Manual kettle
Cleaning kettle
Water Sealing
Final Product

Scan to see video of **MODIFIED BOILER-BASED MAWA MAKER**

**Problem Addressed:** Mawa is traditionally made by boiling milk over firewood until it reaches a semi solid stage. It is an important ingredient for making sweets. Subhash innovated a more efficient method of making Mawa by using steam to boil the milk in place of direct flame heating.

**Technology:** In this machine, the wood is burned in the boiler and steam produced is distributed to kadais fitted with steam jacket. After heating the milk, exhaust steam is collected at bottom and condensed in open tank. This improved design helps cut down the consumption of firewood, water and electricity for making Mawa.

**Societal Impact:** This cost effective machine allows smaller cohort of dairy farmers or small scale enterprises to process their product and fetch a better price in the market as compared to raw milk.

**Current Status:** He has been getting good response from the buyers and with customized design as per requirements, the product is likely to get to more buys.

# Gujarat

# NEERAM PRIVATE LIMITED

AMIT DOSHI
(GUJARAT)

Scan to see video of **NEERAIN PRIVATE LIMITED**

**Problem Addressed:** More than sixty per cent of human diseases are said to be water borne. Clean water is not only a basic need but also a universal human right. The need for affordable solutions for clean filtered water in each habitat is a way forward. Neerain, the innovator has identified this problem as a serious gap in public clean water supply by harvesting rain water.

**Technology:** The machine has two stages of filtration with microfiltration of up to 200 microns which has the following advantages, Live monitoring of rainwater harvesting, Low plumbing cost, Fix it yourself feature and No stagnant impurities.

**Societal Impact:** Water Secure life can serve Millions of people in semi-urban and rural areas. It can help avert water scarcity by recharging and raising groundwater levels. It can contribute towards reduction in electricity bills, lower carbon footprint and mitigating effects of Climate change.

**Current Status:** The innovator is already at the scale-up level of their product and sold around 2800 pieces in the market. The innovator received many awards & recognitions regarding his innovation.

# Telangana

# HYACINTH REMOVER MACHINE

GODASU NARSIMHA
(TELANGANA)

Scan to see video of **HYACINTH REMOVER MACHINE**

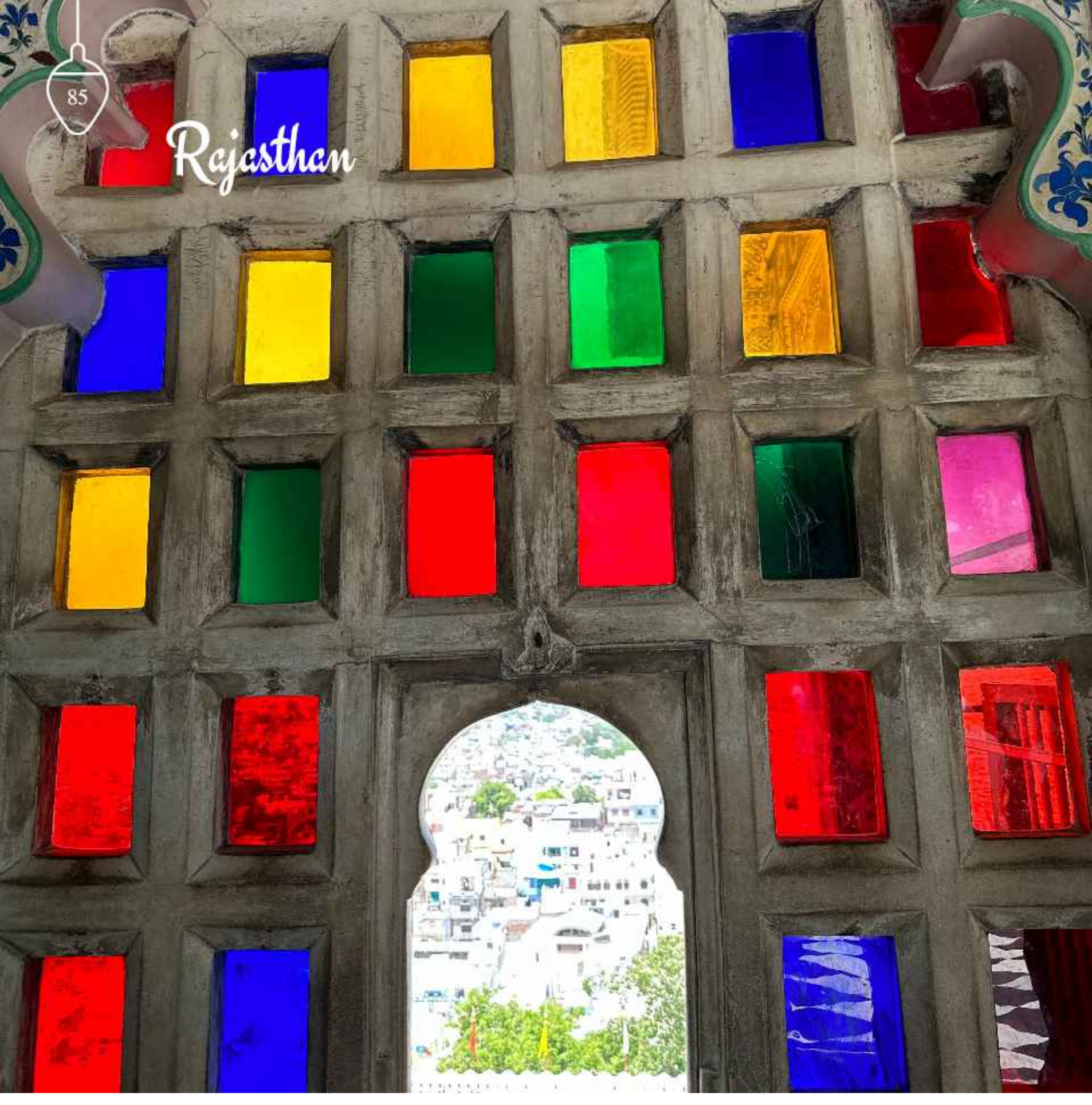
**Problem Addressed:** The innovator, Narsimha belongs to the fishermen community of Muktapur village. He felt the pain and drudgery experienced by his community in getting rid of an aquatic weed, a hyacinth growing in the village lake meant for growing fish. He decided to solve this problem by innovating a hyacinth removal machine.

**Technology:** The innovator used a 5 hp motor to rotate a shaft with eight cutters positioned diametrically. A grill at the bottom of the cutter provides a platform for cutting and the pieces drop down from the grill. Hyacinth is supplied to the cutter through a conveyer belt positioned in front of the cutter towards the water. Hyacinth plants are manually pushed onto the conveyer and then onto the cutter. It is cut into pieces of 3-4 inches in length by the cutter and it flows down with water downstream. He can pull this cut biomass on the bank of the lake.

**Societal Impact:** He saved the ecosystem in the lake and improved the livelihood generation of the community also The manual process of management involved the cost of Rs 3 lakh and with this machine, it reduces to Rs 7000 -10,000 and with less labor for the management of hyacinth.

**Current Status:** He also exported a machine to lake Victoria through Honey Bee Network, Palle Srujana and MEA. He has presented his innovation at various fora including Rashtrapati Bhavan and LBSNAA. He is ready to supply this machine globally wherever this problem of water hyacinth exists. Since hyacinth regenerates and multiplies very fast, cleaning may be required periodically. He has now attached a conveyer belt to deposit the cut hyacinth in a truck for disposal elsewhere.

# Rajasthan



# DRYLAND AGROFORESTRY

SUNDARAM VERMA
(RAJASTHAN)

Scan to see video of **DRYLAND AGROFORESTRY**

**Problem Addressed:** The survival rate of tree sapling plantation is generally less than 35 per cent in arid and semi-arid regions. Sundaram realised the value of agroforestry plantations in Dry regions not only for augmenting income of farmers but also for inducing climate resilience. His technique ensures more than 80 per cent survival rate of saplings with just one litre water per plant once in its lifetime.

**Technology:** The technique involves plowing the field up to a foot deep before the rains. The field is planked and pressed so as to break the capillaries soon after the rains are over. Water that has already charged the soil can not easily be lost by evaporation now. The saplings that are to be grown are sowed in a pit six inches further deep and then covered with soil and watered (one liter) in October-November. Idea is that unlike the plants sown in monsoon season; these will need to send roots deeper because there is no moisture in the upper layers of the soil.

**Societal Impact:** The technique utilizes only one liter of water throughout the lifetime of the plant and provides a best-suited solution for conserving water in arid, semi-arid regions as well as avenues of agroforestry leading to land management, revenue generation, and sustainable livelihood.

**Current Status:** Sundaram has shown effectiveness of his technique in dryland plantations sponsored by ONGC and several other agencies/individuals. He has pursued many other improvements such as rainwater storage in farm ponds and development of several crop varieties for chilies, chickpea Mung bean, cluster bean etc., among many others. He was awarded with Padma Shree honour in 2021, besides numerous other awards. He has been a very devoted collaborator of Honey Bee Network and has helped in scouted many other grassroots innovators.

# Madhya Pradesh

# RICHA 2000

RAJKUMAR RATHORE
(MADHYA PRADESH)


RICHA
2001
BLACK BEAUTY
RICHA
2002
WHITE
BEAUTY
RICHA
2003
YELLOW
BEAUTY
RICHA
2000

Scan to see video of **RICHA 2000**

**Problem Addressed:** In 1997, Innovator chanced upon a different plant in his field of ICPL-87 variety of pigeon pea. He marked this unusual plant. It had bigger flowers with two colors; its leaves were long and it remained green for a longer duration. Further, its pods grew at the top and in bunches. Noticing the feature, he thought if he was able to increase the pod bearing and the number of branches in the then the yield can be improved.

**Technology:** The Innovator tried cutting the top a day prior to weeding to facilitate better growth, restrict further vegetative growth, and enhance branching . Six branches emerged as a result. He repeated the practice of clipping/topping twice (45 and 90 DAS) and observed that a total of 12-14 branches emerged from the plant. He repeated this for three crop seasons thereby standardizing the technique and multiplying seeds to a sufficient number by 2000.

**Societal Impact:** Having distributed seeds of variety, he has also taught farmers the practices they followed which results in a better farming product and profit for farmers.

**Current Status:** The innovator has good demand for his product and he has already sold more than 50 quintiles of seed till now. There is good demand for his seed. He does not mind if the farmers, after buying once, make their own seeds.

# Gujarat

# SOLAR WEEDER AND SEED DRILL

BHARATBHAI AGRAWAT
(GUJARAT)

Scan to see video of **SOLAR WEEDER AND SEED DRILL**

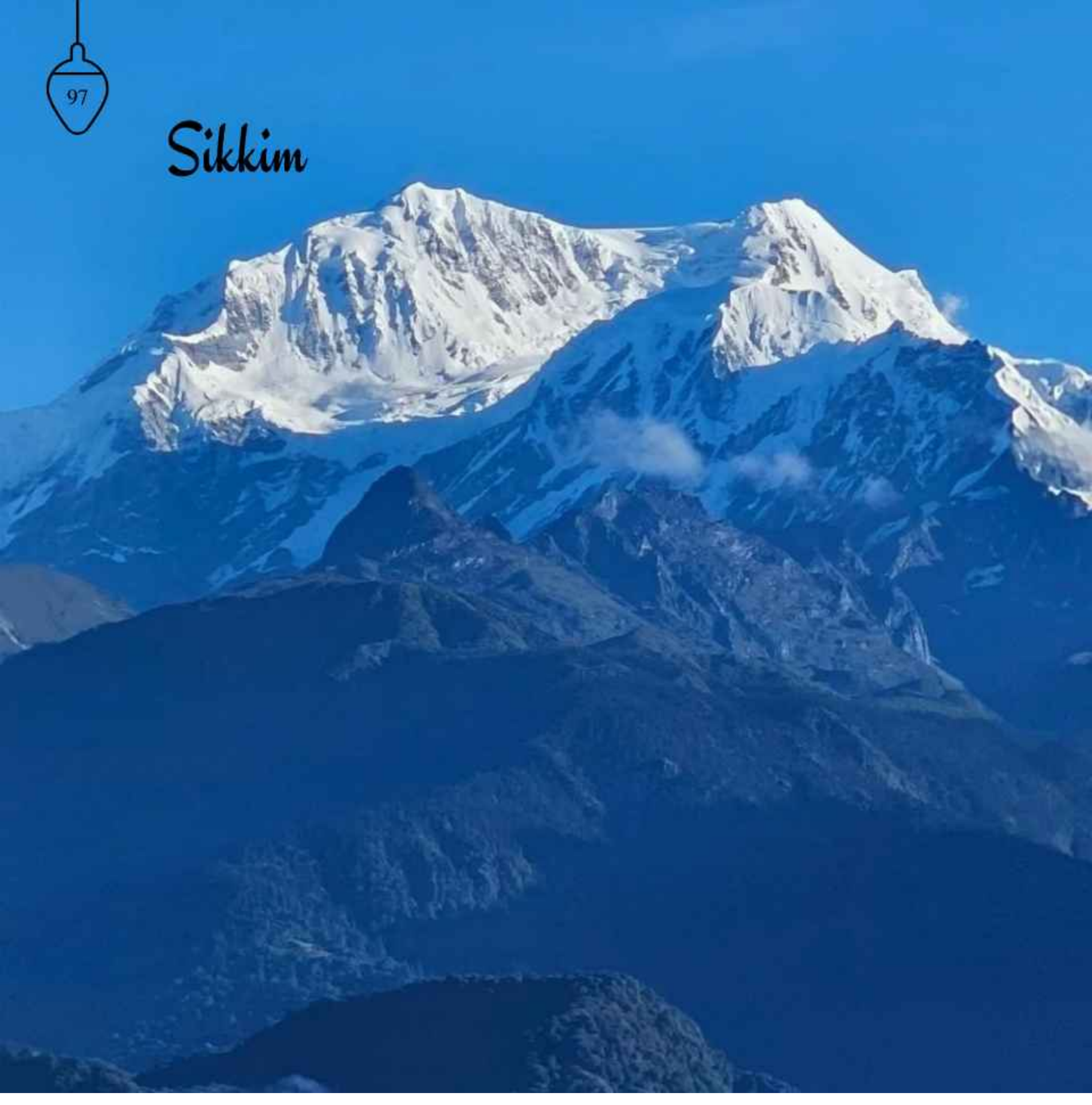
**Problem Addressed:** Manual method of seed planting, results in irregular seed placement, spacing inefficiencies, and drudgery for the farmer limiting the area sown. A Seed Sowing Machine was designed and developed to improve planting efficiency and reduce the drudgery involved in the manual planting method.

**Technology:** Cycle weeder not only uproots the weeds between the crops but also breaks the crust and clods in the soil ensuring better soil aeration and water intake capacity. Cycle weeder is needed to reduce drudgery and increase the productivity of small farmers and laborers, particularly women laborers. It has two versions. One is a simple manual two wheel seed drill and another is solar powered which increases output even more.

**Societal Impact:** It is helpful for small and medium-scale former. It increases crop yield and improves fertilizer use efficiency by removing weeds better. The technology of drill was transferred to Kenya under a USAID project by Honey Bee network, SRISTI and GIAN. Bharat Bhai has done many more innovations following the foot steps of his illustrious father, Amrut Bhai. Amrut bhai was also a serial inventor.

**Current Status:** Bharatbhai has already sold around 50 units of his innovative drill cum weeder. Bharat has a community fabrication lab supported by NIFindia. org. He makes many other farm implements, often on demand and helps other fellow mechanics also.

# Sikkim



# VEHICLE DISINFECTANT BAY

BISU HANG LIMBU
(SIKKIM)


VEHICLE DISINFECTANT BAY
INSTALLED BY


MAN

Scan to see video of **VEHICLE DISINFECTANT BAY**

**Problem Addressed:** In its efforts to maintain its zero-case status during the COVID-19 pandemic, the Sikkim state government mandated that every vehicle crossing the state border should be sanitized.

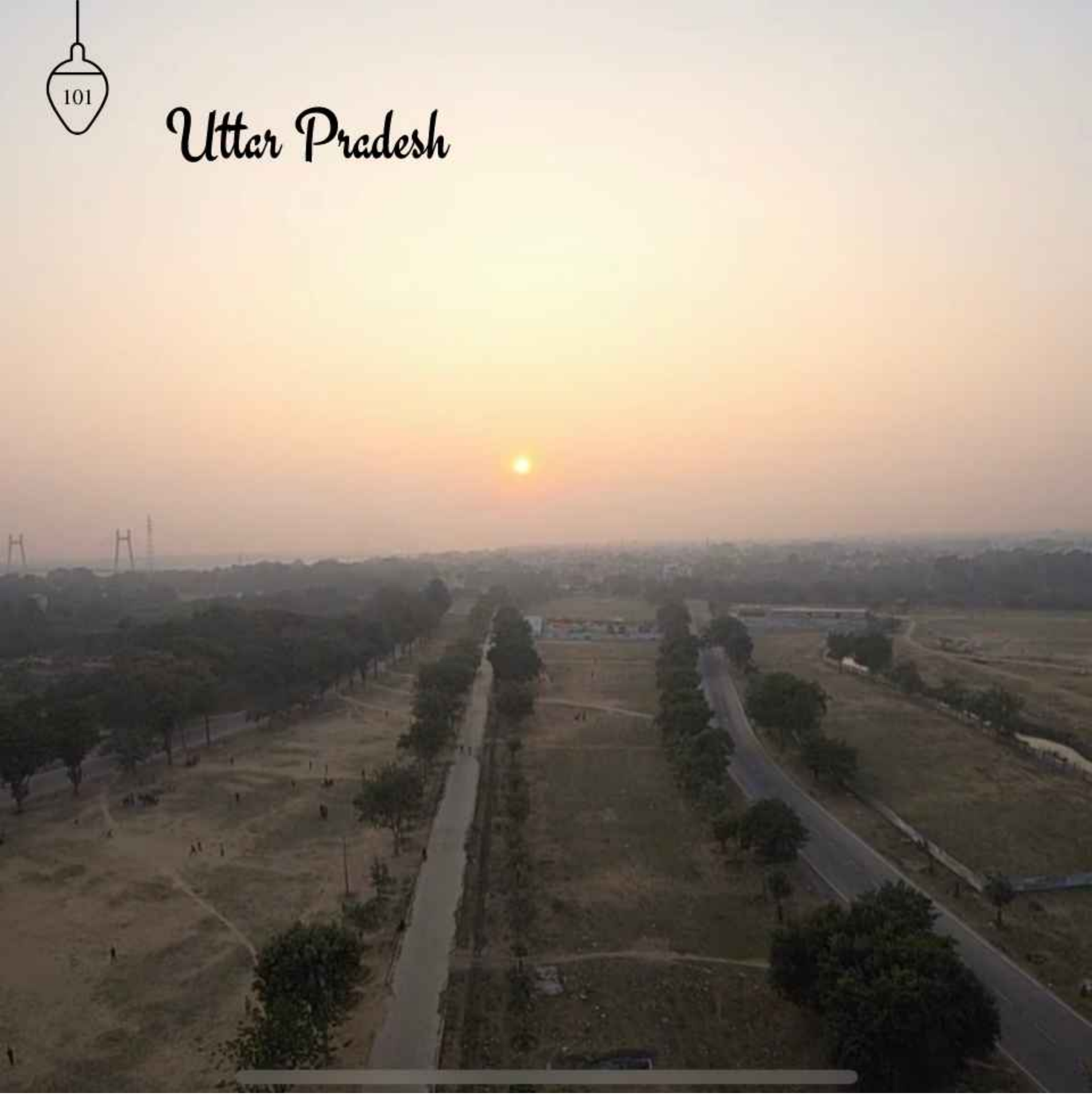
Bisu Hang Limbu, a 22 year-old innovation enthusiast from West Sikkim, noted that the methods used at check posts to sanitize cars were tedious, time-consuming and unsafe.

**Technology:** He developed an electric disinfecting device designated to sanitize vehicles at check posts to regulate the spread of coronavirus. The vehicle sanitization bay is a gate-like structure containing nozzles for spraying disinfectant. The device is attached to a storage tank, and the force and pressure of the liquid to be sprayed are decided by the motor of 250 volts attached to the bay.

**Societal Impact:** Bisu's machine was a miracle for the government in the tough time of COVID-19 and was approved by the Sikkim state government to be used at the checkpost of Melli and Rangpo. It was a cost-effective and timely solution. GIAN and the Honey Bee Network appreciated and supported this innovation to ensure it can reach the maximum places in and around Sikkim.

**Current Status:** Bisu is a young inspired innovator who has innovated other equipment besides vehicle disinfectants, such as the Noha Selroti maker, Sena 05 Broom, Corn Roaster, Security foot mat, Milk carrying tank, and Crocodile fork, Handset fork.

# Uttar Pradesh



# SMART WALKING STICK

AKASH SINGH
(UTTAR PRADESH)

Scan to see video of **SMART WALKING STICK**

**Problem Addressed:** The innovator observed that his septuagenarian grandfather always carries a walking stick with him during morning and evening walks. He also had to carry his cell phone and torch in his other hand. He tried making an Innovative walking stick that could enable easier mobility and be lightweight while offering other safety features.

**Technology:** The walking stick is equipped with a wheel that has a power-braking system. The device has an internal power-generating mechanism that lets the user charge their mobile phones on the go. It is also equipped with an emergency alarm, a torch, and a compass to guide.

**Societal Impact:** The wheel in the stick may not only help the elderly but also others with mobility issues (this feature needs more user trials, though). The horn/alarm in it can help alert or call someone during an emergency, while its lightness might facilitate easier mobility.

**Current Status:** Akash has sold more than 262 units with the support of MVIF from GIAN and has applied for a patent for his innovation. It helped generate direct employment for four other people. He has developed many other innovative solutions such as using incense stick ash from temples to make idols under his 'ash for cash' venture. He was recognized recently by the Finance Minister for his innovations.

105

# Gujarat

# DESTONER MACHINE

JANAKBHAI RATHOD
(GUJARAT)


અંબિકા
એગ્રીકલ્ચર

Scan to see video of **DESTONER MACHINE**

**Problem Addressed:** when groundnuts are dug out from the field, the pods have soil clods, small stones and other such material attached to them. This machine separates the soil and any other pebbles attached to the pods.

**Technology:** The soil is cleared from 2000 to 2500 kg of complete peanuts in 1 hour. Dry grass sticks are also separated from the peanuts along with the soil. This machine consumes 2 to 2.5 liters of diesel per hour. It does not require frequent replacement of spare parts. Its maintenance cost is low. The machine has to be greased regularly. It runs on a tractor and can be carried anywhere.

**Societal Impact:** This machine reduces the burden of farmers in removing the soil from peanuts manually. This machine also saves labor costs and labor time. It has gained wide acceptance and helps improve marketability of crop due to much lesser soil or other inert material.

**Current Status:** The innovator has produced 83 units so far. He was funded during Covid period under MVIF supported by SIDBI at GIAN

# Uttar Pradesh

# CYCLE OPERATED ATTA CHAKKI

GANGA RAM CHAUHAN
(UTTAR PRADESH)


TINY-TOT PLAY-W
CINEMA ROAD, GKP. (3291
ABC
123
We Make
Learning Fun!!

Scan to see video of **CYCLE OPERATED ATTA CHAKKI**

**Problem Addressed:** When the lockdown took place during the Covid-19, the innovator found that people were facing problems milling flour. He made this flour mill in two months of tireless labor costing around 10 thousand rupees. It can mill eight kilograms of grains in an hour and is mounted on a bicycle.

**Technology:** The grains poured into a funnel-shaped hopper are fed into the milling chamber having a pair of milling stones. When the person cycles, the stones grind the grains as it happens in conventional flour mill. Wheat, rice, and other coarse grains can be ground in it. It will not lose the nutritious values too due to the slow and cool milling process.

**Societal Impact:** With the help of this innovation people can make flour without electricity anytime anywhere which can be very beneficial for health as well.

**Current Status:** The innovator has sold eight machines till now. He looks forward to selling to people who live in far-flung areas where the electricity supply is erratic.

# Manipur

# SANAJING SANA THAMBAL

MS.TONGBRAM
BIJAYASHANTI DEVI
(MANIPUR)

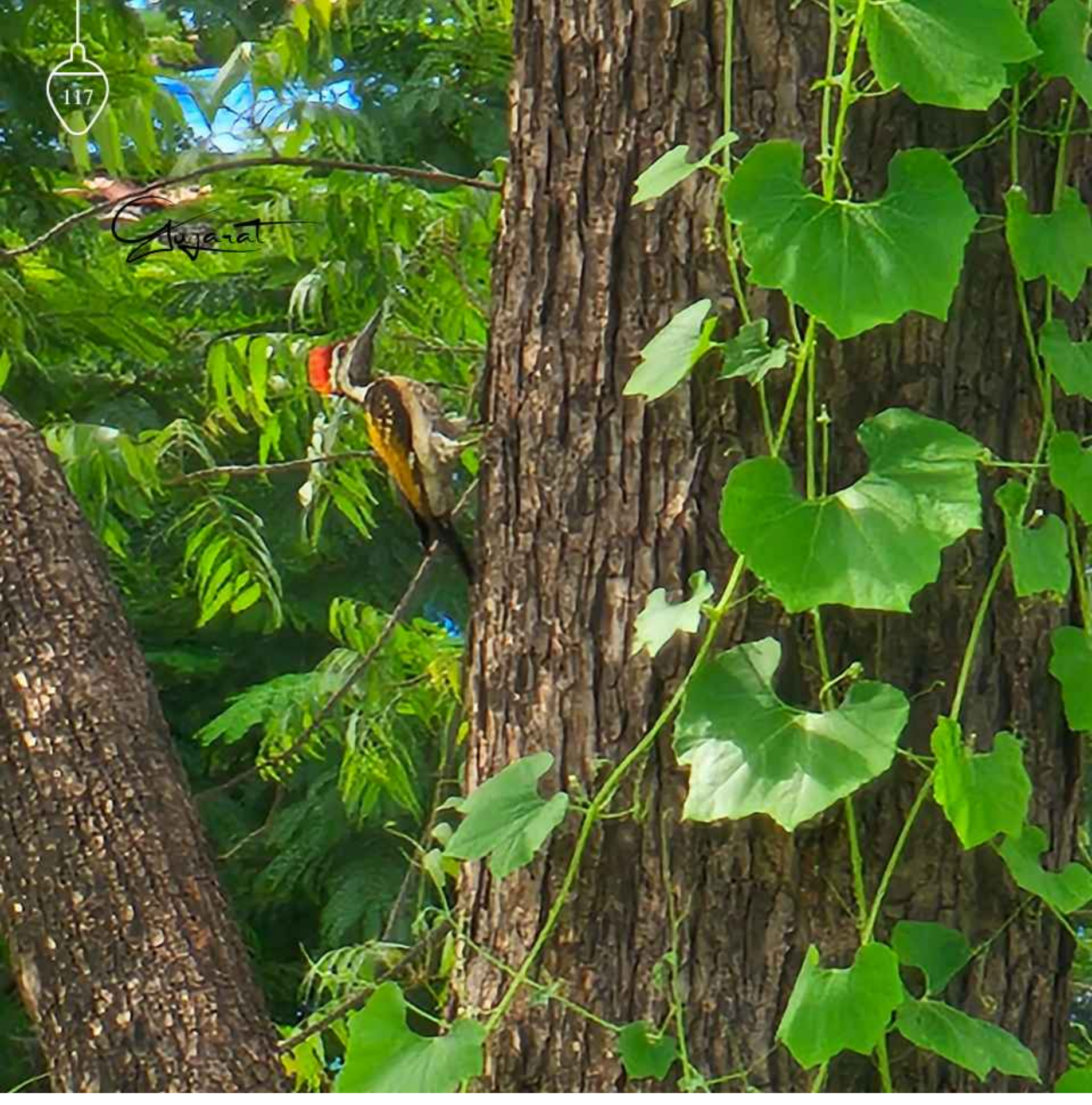
Scan to see video of **SANAJING SANA THAMBAL**

**Problem Addressed:** Clothes made from lotus stem fibre are in high demand in foreign countries. There are only a few places in the world where this kind of work is done – Myanmar and Cambodia. Bijayshanti, the innovator started spinning yarn from lotus stems and weaving neckties, mufflers, etc., with the help of a handful of women from her locality. This has opened new avenues in the field of lotus farming and textile besides women empowerment.

**Technology:** The innovator breaks the lotus stem at the length of a thumb and pulls and expands the fiber from the lotus stem. Using their palms and the wooden plank, the fiber is then hand-rolled at its desired size. The fiber extracted from the lotus stems and stalk is produced as yarns for weaving cloths, neckties, and scarves on a loin loom.

**Societal Impact:** Lotus flowers are abundant in Phumdi Loktak lake and it has the potential to generate more employment, especially for women. The skill to weave lotus fabric is highly localised. It is a relatively rare and highly soughtafter silk.

**Current Status:** Bijiyashanti Devi employs about 30 women to make the silk and sell at a small scale. The extraction of fibres being a labour intensive work increases the price of the garment. She is looking for engineers who can make machines to ease the tasks of extraction. GIAN has funded her under MVIF to seek wider markets


Gujarat

# LOW-COST ORCHARD SPRAYER

DEEPAKBHAI PATEL
(GUJARAT)

Scan to see video of **LOW-COST ORCHARD SPRAYER**

**Problem Addressed:** While discussing with local farmers, the innovator found that spraying pesticide in orchards has a very high labor cos. A shortage of Labor, unproductive methods, and lack of specialized devices for applying it to plants cause high losses. Deepakbhai has made a low-cost tractor-operated Hybrid sprayer.

**Technology:** Innovator came up with a blowing sprayer that runs with a tractor of more than 20 HP and with a 3 HP pressure pump for applying pesticide more efficiently onto the plants with the speed of 15 km / hr. The fan has 450 to 550 RPM which makes the drop of pesticide into the microparticle.

**Societal Impact:** Low-cost tractoroperated Hybrid sprayer is a boon for all the farmers who are in orchard crop production, particularly where pests as well insects, and labor are the major problems.

**Current Status:** This machine was used by the local municipal corporation for sanitization during the Covid-19. This is another example where grassroots innovations have scaled up into other domains. It is a cost effective machine, far cheaper than other somewhat similar models and has a wider span of spray.

# Gujarat

# FARMYARD MANURE DISTRIBUTOR IN THE FIELD

ASHIKBHAI GANI
(GUJARAT)


Design No:311779 ISO 9001:2015 Certified
Farmland®
Manure Spreader
Greenland Agro Kanodar Ta.Palanpur. Di.(B.K.)
Gujarat - Mo:9825411510
ખાતર ફેલાવાનું મશીન - गोबर खाद फैलानेकी आधुनिक मशीन

Scan to see video of

# FARMYARD MANURE DISTRIBUTOR IN THE FIELD

**Problem Addressed:** If any farmer wants to spread farm yard manure on their farm they always need help from the service provider who comes with their own tractor, trolley, and JCB with labour. They pick manure from the farmer's dump site and make piles in the farms. Afterwards, farmers need to spread piles in the field which is labour-intensive and time-consuming. The innovator came up with a machine that can do both operations simultaneously.

**Technology:** Ashik bhai made trolleys with a height of 2 feet to make them compatible with conventional arrangements in the tractors. The final design was made after a lot of experiments on RPM, torque, weight balancing, turning, weight optimization, etc. Both dry and wet manure can be spread by the machine.

**Societal Impact:** By use of this trolley farmers save their time, spread farm yard manure more uniformly, and reduce labor expenses.

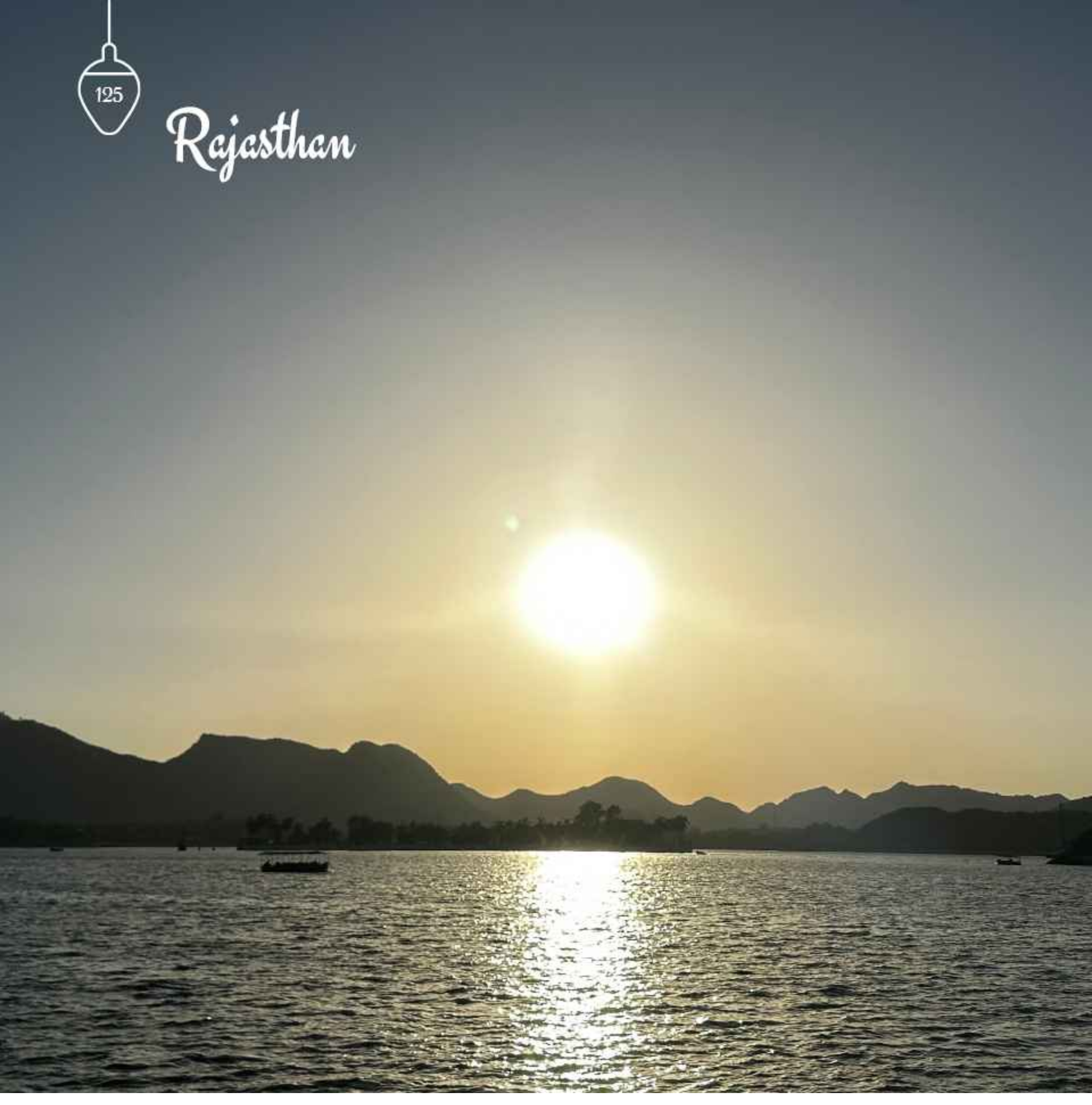
**Current Status:** Ashik Bhai has set up greenlandagro enterprise and can be contacted at:

greenlandagro2018@gmail.com ,
www.indiamart.com/greenland-agrobanaskantha/

Video available at:
www.youtube.com/watch?v=8Ftum5WCbTw

He is getting queries from far and wide for his manure spreader. GIAN is helping him in scaling it up.

# Rajasthan



# BIOMASS GASIFIER SYSTEM

RAI SINGH DAHIYA
(RAJASTHAN)

Scan to see video of **BIOMASS GASIFIER SYSTEM**

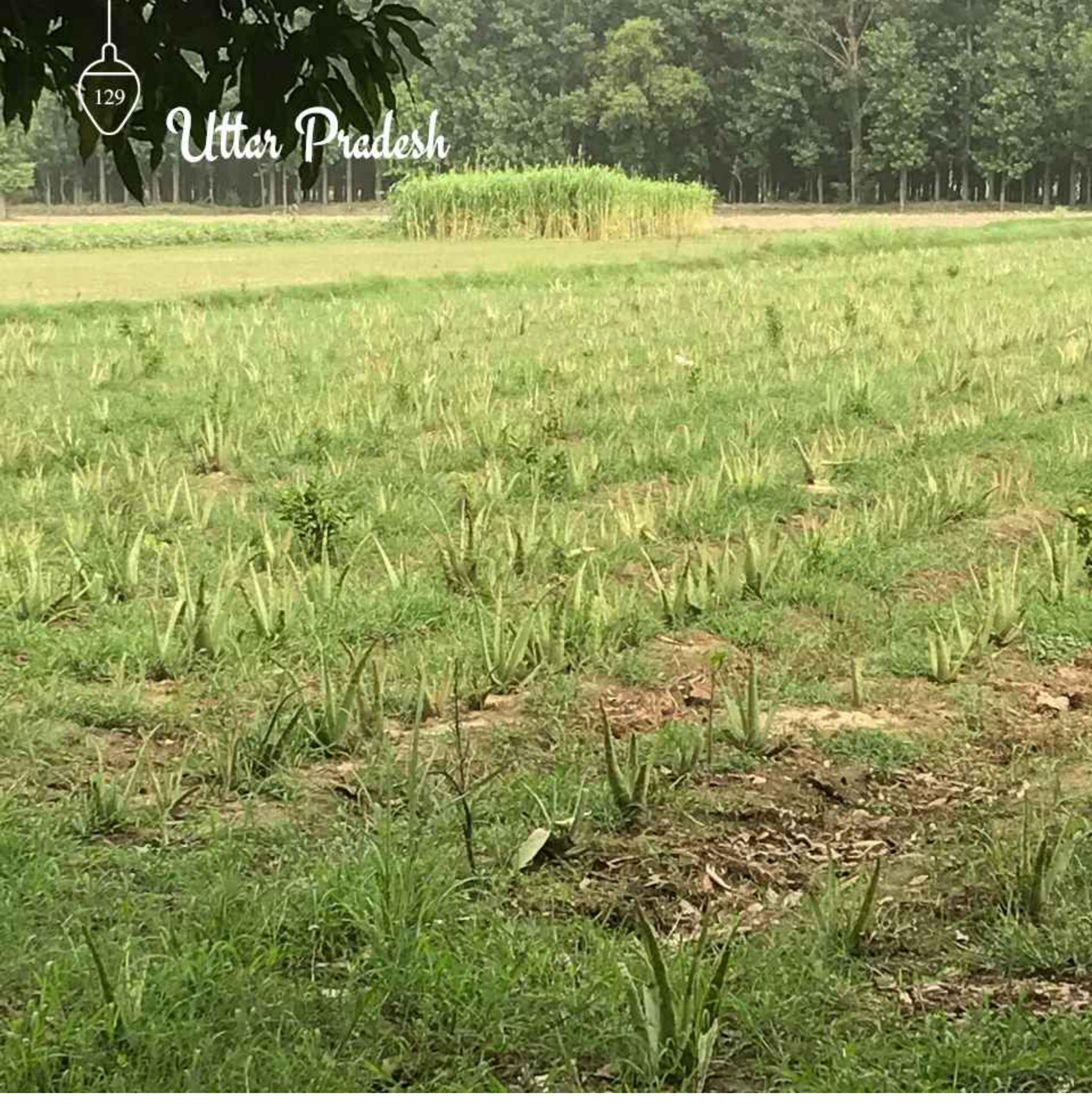
**Problem Addressed:** The innovator found that increasing demand for diesel engines in agriculture may result in costlier energy source for small farmers due to rising cost of diesel. He decided to build a gasifier that could convert biomass into producer gas using hardwood pieces initially.

**Technology:** The unit consists of a gasifier, which generates producer gas from bio-waste and uses it to run an engine. The gasifier is conical in shape, compact in design, and surrounded by a water jacket with the capability to handle multiple fuel sources. The air inlet is provided at the bottom. The system has two stages for removing ash, charred residue, and tar. The primary filter unit comprises a series of rows of filtration units; each series consists of a rod over which semicircular baffles having perforation are welded. Perforation becomes progressively smaller from the first to the third filtration unit.

**Societal Impact:** All types of wood waste and fuel wood Stalks of cotton, pluses, coconut shells, coconut palm stalks, Maize cobs, Rice husk, Branches & twinges, briquettes of various agricultural residues, Certain Industrial wastes of paper mills, plywood industry, etc., can be used as a fuel and The fuel consumption is reported to be 1 kg/kVA, claimed to be almost 30-35 per cent lesser than conventional gasifiers which are beneficiary for farmers and other users. He has won many awards for his technology. He was honoured like many others by NIF at Rashtrapati Bhavan.

**Current Status:** Enersol Biopower Private Limited, Raj Singh's company also manufactures and supplies biogas services like anaerobic digester systems and CSTR biogas plants for both thermal and electrical applications, biomass cook stoves, pellet cook stoves, and biomass heat burners. They are a pioneer in the field of small-size biomass gasifiers for power generation. He has sold gasifiers all over the country and some abroad too.

# Uttar Pradesh



# IMPROVED VARIETIES OF WHEAT, PADDY, AND PIGEON PEA

PRAKASH SINGH
RAGHUVANSHI
(UTTAR PRADESH)

Scan to see video of

# IMPROVED VARIETIES OF WHEAT, PADDY, AND PIGEON PEA

**Problem Addressed:** He had been looking for low cost, high yielding varieties of crops grown in his field. He had learned to look for odd plants from his father. Prakash Singh Raghuvanshi, the innovator wanted to look for odd plants that might yield higher and may also be pest resistant. Despite having poor vision, his eye for oddity in the field was very strong.

**Technology:** The innovator has developed a number of improved high-yielding wheat, paddy, mustard, and pigeon pea varieties. These are tolerant to major pests and diseases, and have good aroma, flavor, and taste. These varieties have been developed using a mass selection method based on specific characteristics/ features/traits of the plants.

**Societal Impact:** He has been distributing seeds freely all over the country with particularly encouraging results in Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Maharashtra, Gujarat, Rajasthan, Haryana, Punjab, Uttarakhand, Bihar, West Bengal, Assam, Jharkhand, etc. Till now more than one lakh farmers all over the country have benefited from the varieties improved by him. He names his varieties as Kudrat, which is prakriti or nature.

**Current Status:** The innovator is able to produce and sell on average 2 to 3 tons of his varieties of seeds. Wheat kudrat 9 and Paddy kudrat 5 are two of his varieties in most demand. His children are also now following his path and are contributing towards the selection of new varieties. He has received numerous awards at Rashtrapati Bhavan through HBN and NIF besides at many other platforms.

# Gujarat

# COW DUNG POT-MAKING MACHINES

GOPAL SURATIA AND
PARESH PANCHAL
(GUJARAT)

Scan to see video of **COW DUNG POT-MAKING MACHINES**

**Problem Addressed:** In nurseries, conventionally plastic bags are used to grow plant saplings. There are many disadvantages associated with plastic bags like not being biodegradable, having zero porosity, and hence not being eco-friendly. Moreover, after germination, the bag has to be torn off to facilitate root growth and in case the bag is not torn properly the plant gets damaged. So, innovators decide to make pots from cow dung.

**Technology:** Gopal Bhai Suratia made a crude pot manually. Paresh bhai was linked with him by Honey Bee Network and a machine for this purpose was designed by Paresh Bhai. They have used animal manure normally called Cow dung and wheat flour (in the ratio of 20:1 Kg) and agriculture waste (residue of harvested produce like wheat husk etc.) as a basic raw material to prepare the pot. To protect the pot from pest attacks (like termites), spoiled bajra flour or powder or shells of castor leaf or neem leaf can be added to the mixture. Spoiled bajra flour or castor leaf or neem leaf are having insecticidal properties which prevent termite attack

**Societal Impact:** It is bio-degradable and fertile and the manufacturing process does not cause pollution. The water absorption rate by the pot is very slow and therefore prevents the leaching of nutrients. The growth of the plant is faster in a cow dung pot than in other/normal pots. This can also be used for sowing costly seeds directly in the field to get maximum germination and growth of the plants/saplings. Employment generation is possible through local manufacturing and sourcing of these cow dung cups.

**Current Status:** Pareshbhai has sold more than 3500 units of their innovative product. Both Gopal Bhai and Paresh bhai have filed a patent in 2017 on this machine, application number 201721021475 A. This was displayed at Rashtrapati Bhavan at Festival of innovation by HBN and NIF.

# Mizoram

# BAMBOO SPLINT AND STICK MAKING MACHINE

RALTE AND L SALIO
(MIZORAM)

Scan to see video of

# BAMBOO SPLINT AND STICK MAKING MACHINE

**Problem Addressed:** Incense sticks made from bamboo are the major raw materials used in the Agarbatti industry. India is the largest producer of Incense sticks in the world. The tribal people in the interior part of North-Eastern states like Tripura, Assam, Mizoram, etc., make strips and sticks by conventional methods using knives. It is a very tedious, time-consuming way of making sticks. Electricity-operated high-capacity machines are only suitable for industries.There is a need for low cost, easy to operate machinery for individual rural poor who often do not have access to electricity.

**Technology:** The innovator has developed a manually operated machine that can slice bamboo strips as well as convert the strips into sticks. One needs to load the thick bamboo piece and slide the cutter to and fro through the handle. This results in 1.2 mm thin slices of bamboo. Those slices are collected and at a time about 50 slices are fed vertically. The cutter is again moved to and fro resulting in splints of 1.2 mm in width and thickness at a time. An average person can make about 5000 splints per hour. It first makes a strip and the same machine cuts these into sticks.

**Societal Impact:** The machine is easy to operate and Useful to generate employment in rural areas. Also useful for making toothpicks, ice cream sticks, etc.

**Current Status:** The innovator, Ralte started business in a partnership with Silo in the beginning. But now he runs it independently. The sticks imported from China are round and cheaper. He is developing a machine to make similar sticks at competitive cost. His business has expanded a great deal. He has made many more machines for making noodles, dressing chicken, cutting fodder for pigs etc.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Gujarat

# TRACTOR-MOUNTED MINI CRANE

NIKI BHARATBHAI PARMAR
(GUJARAT)

Scan to see video of **TRACTOR-MOUNTED MINI CRANE**

**Problem Addressed:** The craft used with tractors in the majority of circumstances are bulky and face space constraint when required to pass through narrow lanes or carry out light tasks. Bharatbhai designed mini crafts like mini crane or tractor loader that are portable, low cost and more efficient.

**Technology:** There are multiple products under the brand name of Parmar Engineers on Indiamart. The mini crafts are equipped with advanced technologies, necessary tools and design to carry out assigned tasks efficiently. It can be customized as per the customer's requirement.

**Societal Impact:** These mini crafts provide options to the buyers across India who earlier were strained by higher cost of machines. It will directly create employment opportunities for the operator and aid in farming and infrastructure building.

**Current Status:** He is getting good orders for his attachment and business is likely to pick up with higher investments.

# Uttar Pradesh

# BATTERY-OPERATED BIKE

MANISH PATEL
(UTTAR PRADESH)


147
NV

Scan to see video of **BATTERY-OPERATED BIKE**

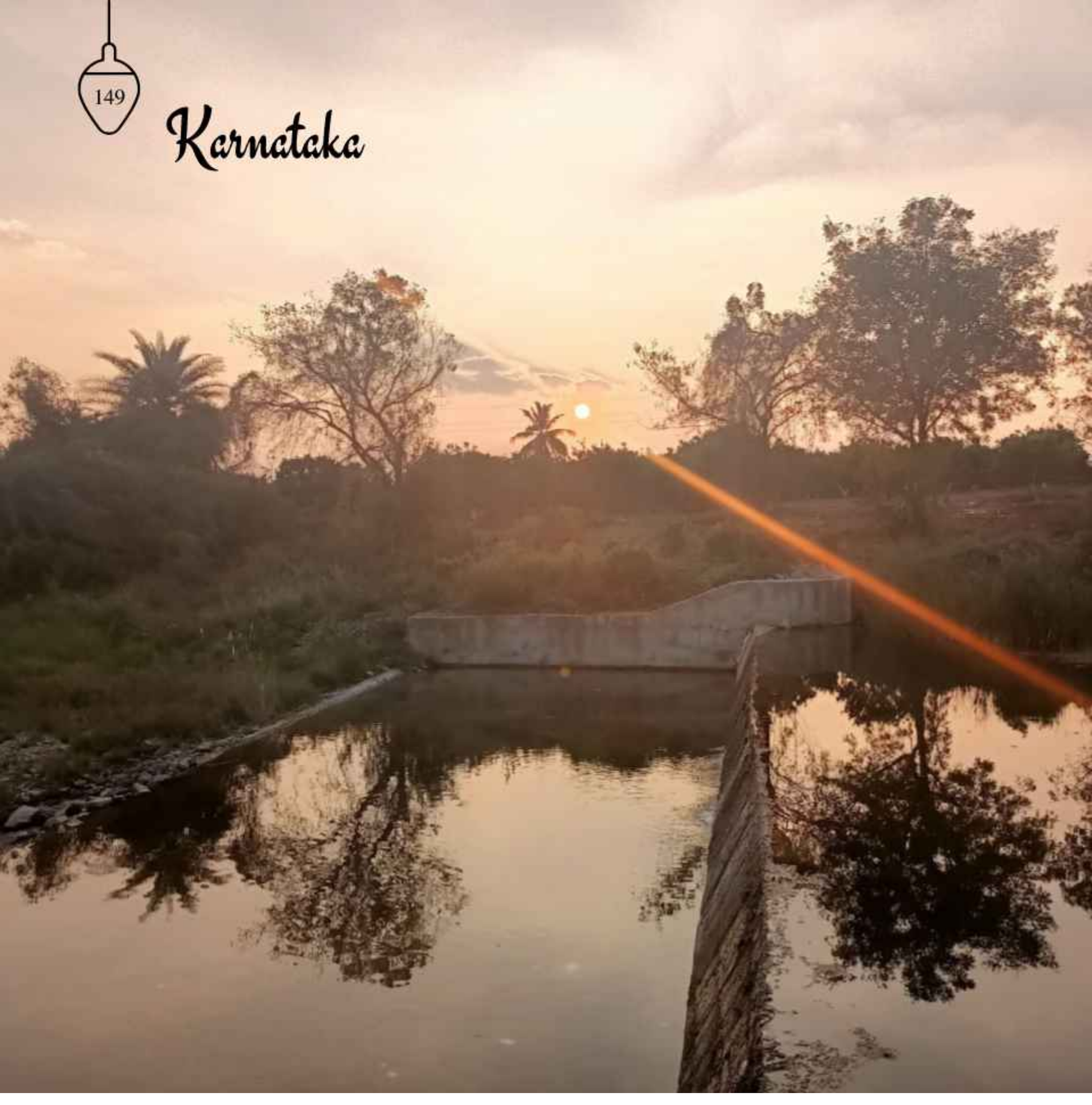
**Problem Addressed:** People often ride bikes without wearing helmets. The innovator has made such a device with a bike that if you want to ride it without a helmet and after drinking alcohol, then the bike will not run.

**Technology:** The innovator has designed its own circuits for a cycle with the dynamo. The sensors detect the innovator's face and smell alcohol that will not allow starting the bike if the rider is not wearing a helmet or is drunk.

**Societal Impact:** With the help of this device, we can save the life of riders if they do not wear helmets or ride bikes in drunk conditions.

**Current Status:** His prototype is already ready but he has not commercialized it in the market. There is a need for design inputs, better manufacturability and also robustness to its functionality. He is open to getting investments and also design mentoring.

# Karnataka



# SUNBIRD STRAW: DRINKING STRAWS FROM COCONUT LEAVES

PROF. SAJI VARGHESE
(KARNATAKA)


SUNBIRD
DRINKING
Straws

Scan to see video of **SUNBIRD STRAW: DRINKING STRAWS FROM COCONUT LEAVES**

**Problem Addressed:** Plastic Straws are one of the classic examples of single-use plastics, and a majority of these straws are made from Polypropylene, a material that is harmful to nature. As a result, straws always end up in a landfill or damage our oceans and marine wildlife. Prof. Saji Vargese decided to create an eco-friendly product out of coconut leaves.

**Technology:** A simple cleaning and steaming process brings out the natural healthy wax of the fallen coconut leaf itself onto the surface. It makes the leaf antifungal and hydrophobic and easy to shape into straws. These straws have a shelf life of nine months and stay steady in beverages for more than six hours.

**Societal Impact:** Along with eliminating the use of single-use plastics, it provides income-generating opportunities for women in coconut-growing regions of India.

**Current Status:** He has recently received a global order of 20 million straws worth 60 million INR and has generated employment for more than 60 women in rural households. It was recognized as a Top 500 startup by Kuberans House. It will work with SwissRe Bangalore to drive green change and empower rural communities. It was funded by GIAN under MVIF during a very difficult period of COVID-19.

Sikkim

# SELROTI MAKER

## BISU HANG LIMBU
## (SIKKIM)

Scan to see video of **SELROTI MAKER**

**Problem Addressed:** Selroti is the most famous traditional sweetbread of Nepali culture. There is a high risk of burning the skin with the splash of hot cooking oil while making Selroti with hand by inexperienced people. Looking at the problem, he innovated hand equipment that helps in making Selroti safely.

**Technology:** It has two main components i.e., a food-grade stainless steel cup with a hole for consistent and even flow of batter and a wooden handle to prevent the flow of heat to the user's hand.

**Societal Impact:** It is portable, easy to use, and can be cleaned quickly for further use. It has helped reduce first and second-degree burns from splashes of hot cooking oil on the hand and body of the Selroti maker and also increased their efficiency.

**Current Status:** It is widely accepted in households of hill regions for making Selroti. The innovator has sold several units in Sikkim and West Bengal. It also has demand in Nepal and Bhutan.

# Karnataka

# RISE BIONICS

ARUN CHERIAN
(KARNATAKA)

159
Rise
AK
AK
AK
Essential
Personalised Comfort in
Tough Environ
Beauty & Style
Comfort Corn
Digital Exo
Rugged Device for Daily Use
Rise

Scan to see video of **RISE BIONICS**

**Problem Addressed:** An estimated 1.5 million people undergo amputations each year and require prosthetic services. Yet, only 5-15% of amputees have access to devices in low- and middle-income countries (LMICs) as per WHO estimates. Over 70% of patients in India do not have access to prosthetic devices, despite their significant capability to improve mobility and reduce mortality. It is estimated that the demand for orthotic devices is over ten times that for prosthetics. Dominant factors are the concentration of medical centers in urban areas leading to large travel and stay expense, traditional casting methods limiting the geographical reach of each center, high device prices and delivery times that stretch into months.

**Technology:** Rise-Bionics provide custom-fitted prosthetic or orthotic devices (such as arm and hand) within a day or two of scanning the patient. Local healthcare practitioners scan the patient in just 2 minutes in their home or neighborhood hospital and upload the file to the cloud. A central facility then digitally modifies the file as per the diagnosis and fabricates it couriers within a few hours to the medical practitioner for patient fitting and device service throughout its life. We can now fabricate devices with a sub-millimeter accurate fitting for the head, neck, spine, hand and leg for both prosthetics and orthotics.

**Societal Impact:** It is important to reintegrate patients back into society as soon as possible because physical disability in a family can be financially stressful. In addition to the patient, another family member will have to work reduced hours or leave their job to take care of the patient. Rise Bionics provides a portfolio of choices based on budget and performance along with delivery within hours or a couple of days.

**Current Status:** Rise Bionics has catered to about 1000 patients across India with assistive devices for the whole body. We serve at corporate hospitals, community hospitals and not-for-profit organizations to provide for their patients. The innovator is open to seed-stage funding and looking to scale across India and other countries.

# Arunachal Pradesh

# INTELLIGENT SUNGLASSES FOR THE BLIND

ANANG TADAR
(ARUNACHAL PRADESH)

Scan to see video of

# INTELLIGENT SUNGLASSES FOR THE BLIND

**Problem Addressed:** Visually impaired individuals face a lot of challenges in daily life like identifying obstacles while walking or crossing roads. Helping a blind lady find the direction prompted him to find a solution to this problem. He developed smart sunglasses for blind people to help them identify obstacles at the waist level and above.

**Technology**: The sunglasses are equipped with ultrasonic transmitters, receivers, and microprocessors. It provides alerts in the form of vibration. The vibration gets stronger as the user gets to an obstacle.

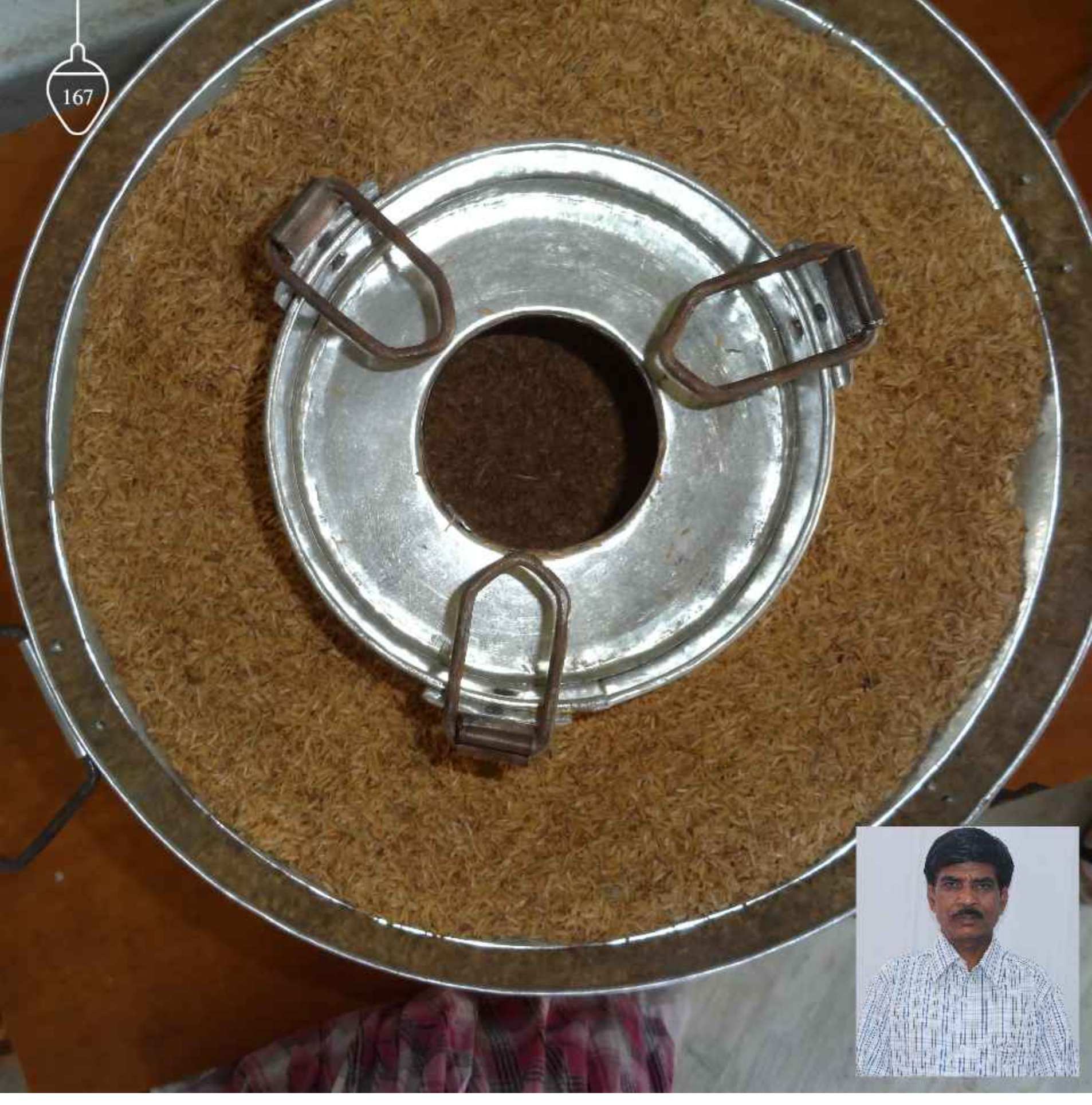
**Societal Impact:** With intelligent sunglasses complemented with a smart walking stick, visually impaired people can locate obstacles more accurately. It will ease the difficulty of finding ways for their day to-day activities.

**Current Status:** The innovator has already sold several units of his innovation. He is looking for investors who can help him scale up his innovation and improve the life of visually impaired people.

# Bihar

# PADDY HUSK STOVE

ASHOK THAKUR
(BIHAR)



Scan to see video of **PADDY HUSK STOVE**

**Problem Addressed:** Paddy husk is generally discarded as agricultural waste and is available in plenty in paddy growing regions. He observed that paddy husk could not be used effectively as fuel in conventional wood stoves. So, he modified the old stove developed for wood dust so as to use paddy husk as fuel.

**Technology:** The stove's design allows the use of paddy husk as fuel. Paddy husk is spread completely between the outer frustum and cylinder. A fire is ignited with the help of some kerosene oil to fuel through the inner frustum. In a few minutes, a good smokeless flame of fire is obtained.

**Societal Impact:** It is portable, mobile and easy to handle. It will help lower the fuel cost for the users in paddy-growing regions.

**Current Status:** The innovator has sold multiple units of the stove in his local area and observed the demand for his stove in other regions as well. He is open to getting investments and assistance for marketing his innovation.

# Rajasthan

# GROUNDNUT DIGGER WITH VIBRATION PADS

RATANRAM DUDHVAL
(RAJASTHAN)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Scan to see video of

# GROUNDNUT DIGGER WITH VIBRATION PADS

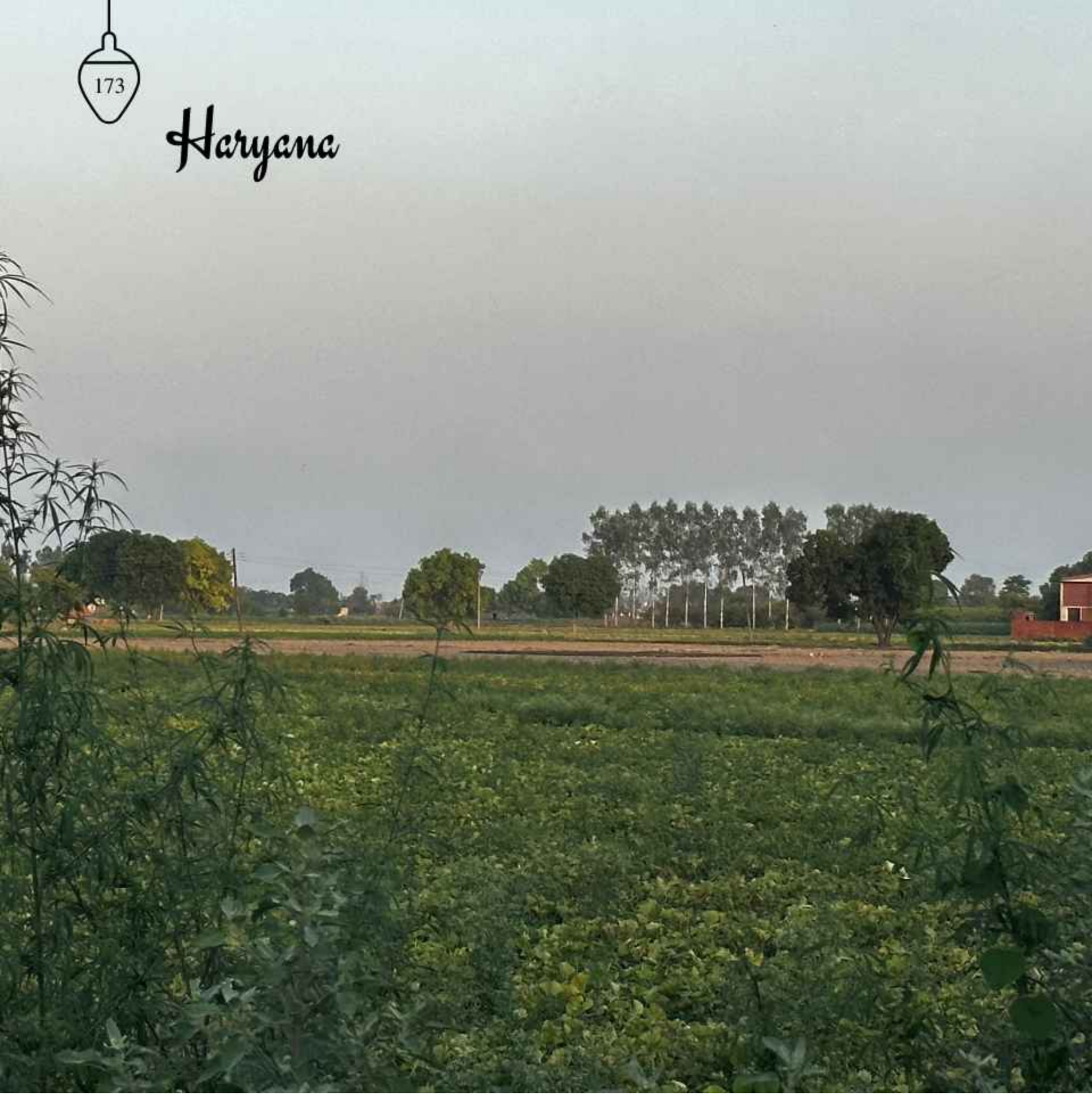
**Problem Addressed:** Commercial tractor operated groundnut diggers face problem of frequent wear and tear and maneuverability especially at the corners. Ratanram Dudhval modified the ground nut digger by adding a vibration pad/shock absorber spring and two pivoted wheels to its rear.

**Technology:** He has added vibration pad/shock absorber spring and two pivoted wheels in the rear of groundnut digger. It reduces load on the tractor's three point linkages reducing breakages in bearings. The machine can be fitted to a standard 540 rpm tractor and covers 4 ha in 8 hours, consuming 6 lit of diesel.

**Societal Impact:** This machine improves the life of ground nut diggers reducing the overall cost of the machine and also machinery operation costs on ground nut farmers.

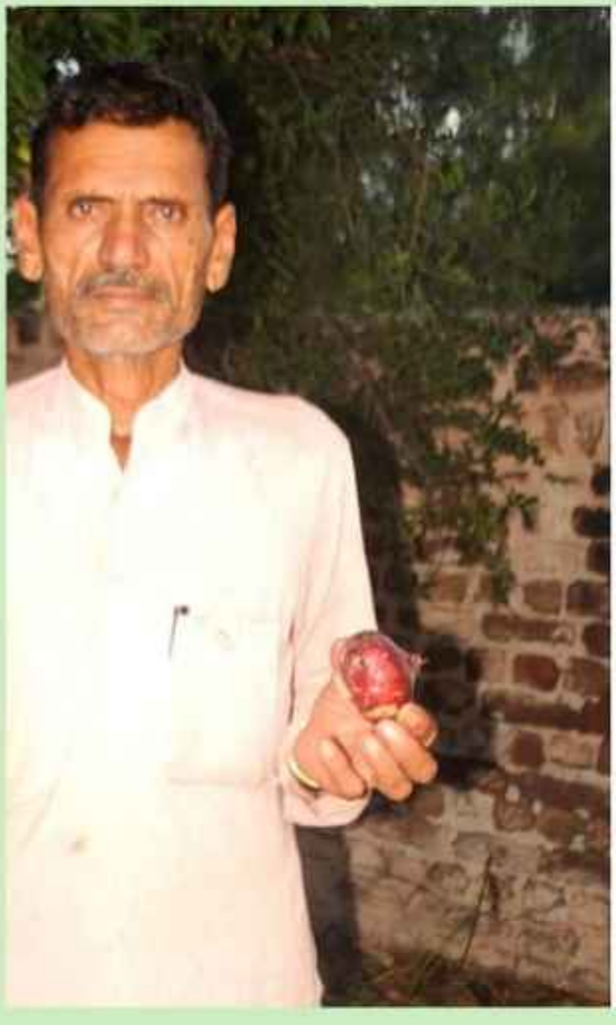
**Current Status:** The customers who purchased this groundnut digger with vibration pads in 2011 are still using the machine and the sale is mainly based on word of mouth, which confirms the acceptability of machine among the farmers. The innovator is open to investments and assistance for scaling up his innovation's production and distribution.

# Haryana



# BALWAN PYAJ - ONION

BALWAN SINGH
(HARYANA)



Scan to see video of **BALWAN PYAJ - ONION**

**Problem Addressed:** Low yield of onion has always been a concern for the onion farmers. The shape, size, color and shelf life decide the commercial viability of this commodity. Balwan Pyaj has a higher shelf life and produces a higher yield of onion compared to the regular variety.

**Technology:** It is a high-yielding variety with a very good shelf life due to its tightly attached skin. Its yield is about 350 q/ha which is 150 quintals higher than a regular variety. The good thickness of rings, bright red color, tolerance to blight, moderate pungency and 50-60 g weight appears more attractive and fetch a better price than the conventional ones.

**Societal Impact:** It has a higher yield even with the low requirement of water, less chemical fertilizers and a higher focus on organic manures. It can help onion farmers improve their livelihoods by fetching better prices and also positively contribute to the environment due to less usage of chemical fertilizers.

**Current Status:** Balwan Singh has sold several quintals of onion seeds to farmers from diverse places. With support for seed production and marketing, it can reach a larger number of customers.

# Odisha

# AUTOMATIC WEFT WINDING MACHINE

RAM PRASAD MEHER
(ODISHA)

Scan to see video of **AUTOMATIC WEFT WINDING MACHINE**

**Problem Addressed:** Prasad's father used to make bundles of thread for dyeing and for making different designs for which he had to walk around two tree trunks making an elliptical shape for winding the thread bundle that consumes more time. Prasad started designing a machine that could do winding and spinning work at a faster rate and after working hard for 2 months, he came up with a prototype, which was able to wind cotton automatically.

**Technology:** The machine has a drum over which weft winding work is done, a 0.25 hp electric motor that rotates periodically and flat bars to provide the impulse for feeding the threads in forward and backward direction. Purra bed (uniform thread distribution system) is attached to the chain and moves along the length of the drum. The forward and reverse action of Purra is controlled by a lever. A foot pedal-actuated brake system is provided to stop the rotation of the drum.

**Societal Impact:** The machine can wind 5 bundles of yarn within an hour, which otherwise takes 2 days if done manually. It will help the users save time, energy, labor costs and improve their livelihoood.

**Current Status:** The innovator has good demand for his product and he has sold several units of the product. With financial support for production and distribution assistance, the innovation can reach a greater number of people.

# Kerala

# AUTOMATED ARECANUT CLIMBING AND HARVESTING MACHINE

SURESH P V
(KERALA)

Scan to see video of

# AUTOMATED ARECANUT CLIMBING AND HARVESTING MACHINE

**Problem Addressed:** Skilled laborers climb Arecanut tree thrice every year for harvesting. Suresh came up with the idea of a machine that could be helpful for climbing the Arecanut tree as the task is very risky. First, he came up with a machine that worked on electricity and could carry a man with it. However, the power supply was an issue, so he designed a petrol engine based automated Arecanut climbing and harvesting machine.

**Technology:** It is powered by a 42cc petrol engine operated using a remote/mobile app. It consists of dumbbell shaped rubber-grip rollers, which are clamped on tree trunk to provide upward motion. The machine is self- adjusting for varying diameter and climbing rate can be controlled with an accelerator. The device can remotely be put in forward, reverse, neutral and cutting modes.

**Societal Impact:** It can climb 50-60 feet the tree in one min and cut the tree in a minute. It works for about 3 hours in 1 liter of petrol. It will help reduce the risk of injury and allow users to carry harvesting easily at lower costs.

**Current Status:** The innovator was awarded the third prize in the 10th biennial innovation award of NIF. He has sold multiple units of his machine to fellow farmers in Kerela. He is open to getting investments and assistance with design changes for expanding its reach to more customers.

# Himachal Pradesh

# HRMN 99 APPLE VARIETY FOR LOW ALTITUDE

HARIMAN SHARMA
(HIMACHAL PRADESH)

Scan to see video of

# HRMN 99 APPLE VARIETY FOR LOW ALTITUDE

**Problem Addressed:** Apple is majorly cultivated at high altitudes with low temperature and chilling hours that facilitate flowering and fruit setting on the tree. Hariman, the innovator, has developed an apple variety that is suitable for growing in plain tropical and sub-tropical regions.

**Technology:** This variety can grow at an altitude of 1800 feet above sea level. It is scab disease tolerant and starts fruiting after three years and gives an average yield of 1 quintal post seven years of planting.

**Societal Impact:** This variety has given a good source of livelihood for people in the lower hilly region of several states and has inspired thousands of farmers across the nation.

**Current Status:** The innovator has sold thousands of saplings of his variety to farmers. Successful fruiting in multiple states has increased the demand for his saplings throughout the country.

# Telangana

# INNOVATIVE AIR SEALANT TO STOP PUNCTURES

K PANDU RANGA RAO
(TELANGANA)


SHIN
Finolex

Scan to see video of

# INNOVATIVE AIR SEALANT TO STOP PUNCTURES

**Problem Addressed:** In 2008, the innovator was returning home on his motorcycle with his family. The bike tyre got punctured and his family had to walk 12 km to home. He started to think about a solution to this problem and innovated a sealant to stop puncture in bike and auto rickshaw tyre.

**Technology:** The innovator's natural air sealant consists of mica powder, rubber powder, gum, color and a pressure sealant filling machine that fills 250 ml of sealant in 10 seconds. The sealant rotates through the tube and prevents puncture in the tyre.

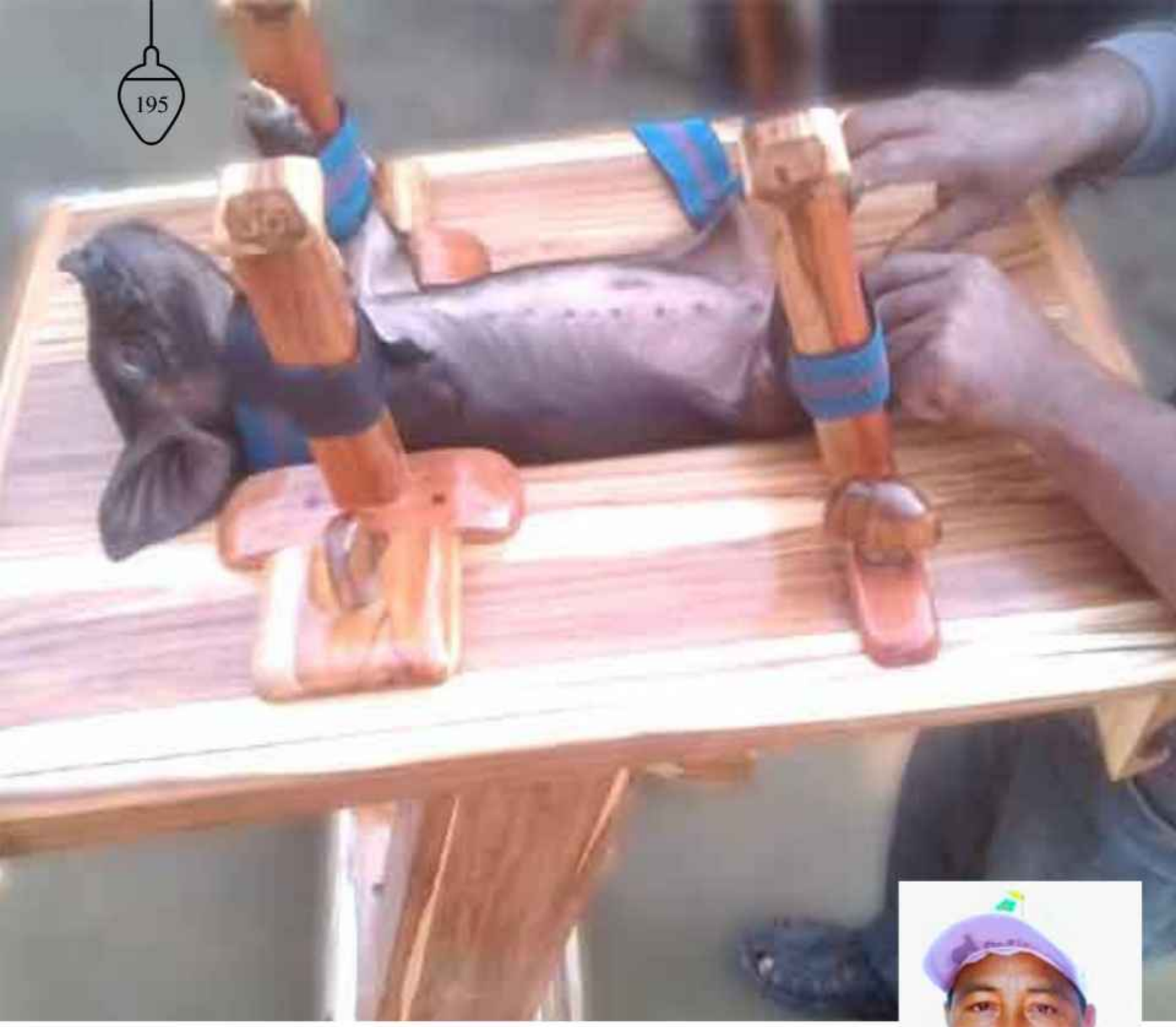
**Societal Impact:** This natural sealant works nicely both in hot and cold regions. This innovation has been a boon for bike and autorickshaw owners as it is cheap and lasts longer than chemical sealants. It's all-natural elements help reduce the usage of chemicals and contribute positively to the environment.

**Current Status:** The innovator has been manufacturing the sealant locally and has sold over 11000 units through tube and tyre manufacturing companies. He has applied for a patent for his innovation and is open for assistance in manufacturing and distribution.

# Nagaland

# SMALL ANIMAL RESTRAIN CUM OPERATION TABLE

IMNA MEREN IMSONG
(NAGALAND)



Scan to see video of

# SMALL ANIMAL RESTRAIN CUM OPERATION TABLE

**Problem Addressed:** The local veterinary centers in his region were very and did not have a proper operation table or tool leaving only option of restraining the livestock by multiple people that causes more stress to the sick animal. He then started working and developed a small restraining cum operation table from the locally available teak wood for performing simple medical routines such as vaccination, castration and administering medicines to goats, pigs and dogs.

**Technology:** The table consists of a detachable IV- drip stand, surgical instruments compartment, straps, curved bed and provision for draining out stool and urine. It is hydraulically controlled and also provides an option for tilting the operation platform.

**Societal Impact:** His innovation reduces the requirement of labor, provides comfort to the animal and secures the limbs and body of the animal causing minimal pain. It is very helpful for the livestock owners.

**Current Status:** The innovation is being received positively in the local community and encouraging feedback from ICAR. He is looking for guidance to reduce the cost of the restraint cum operation for increasing is affordability and take it to a greater number of buyers.

# COLOUR STOP FOR FABRIC WASHING

MR. MUSHTAQ AHMAD
KUMAR
(SHOPIAN)


COLOUR STOP
For Fabric Washing

# COLOUR STOP FOR FABRIC WASHING

**Problem Addressed:** Daily wear and tear and frequent washing often cause clothing to become dull. Also, dark coloured clothes tend to bleed when they are washed, and people may either run two separate washing cycles or wash some clothes by hand, which requires more effort, power and water.

**Technology:** Mushtaqbhai has created products which help fix the colours of clothes. His Liquid Colour Stop solutions use a unique formula that is not found in any similar product. These liquids preserve the lustre of the dye on garments, and prevent them from bleeding. The liquid is to be added at the time of washing clothes, and works well with any soap and detergent.

**Social Impact:** The process of manufacturing the solution leaves a very small carbon footprint. Its power requirement is very less, and generates almost nil hazardous residue. It does not add to air pollution at all, nor produce effluents. Additionally, by increasing the life of clothes, it has the potential to reduce the rate at which textile waste is generated. It helps households to conserve water and save money.

**Current status:** Mushtaqbhai has tested the market, finding sufficient demand and good product acceptability. The bottles are capped, sealed and shrink wrapped to prevent pilferage and make them safe for transport. He has set up a small unit using only his own limited resources. Since he has decided to grow slowly, the capacity of the unit is low and employs very basic machinery. His plans to scale include expanding manufacturing capacity and the product range. GIAN has helped him file a patent, which is under process at the moment.

The 2nd edition of People's Festival Of Innovation will be held At IIC, New Delhi during November 27 to December 01,2023

For more information Visit

www.gian.org


People's Festival of Innovations, 2023 will be organized during November 28 to December 02, 2023 at the India International Centre, Delhi

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